

**WEALTH CREATION THROUGH GREEN GROWTH STRATEGIES: A
STUDY OF RONGO SUB COUNTY, KENYA**

Sedina Misango
South Eastern Kenya University, Kitui
P.O Box 170, 90200

Abstract

The general purpose of this study was to investigate the role of green growth and wealth creation in Rongo Sub County. Three questions arose: Can green growth create wealth? And if so? Can it be adopted? If adopted, how? Poverty is a hindrance to any society that seeks to grow and hence cannot be ignored. Wealth is viewed or understood to mean accumulation of material wealth. However, this is not true especially in dry land regions where wealth is defined as per community aspects. This paper therefore sought to understand community participation in wealth creation through approaches that are community specific and adoption of such strategies in other regions. The paper attempts to explain that wealth creation does not need excess capital or money accumulation to improve the lives of communities. Successful poverty reduction and wealth creation does not require complex approaches with heavy inputs. The study used cross sectional and descriptive research design approach. The study sampled a total 120 homesteads through systemic random selection in Rongo Sub County. Regression analysis on green growth and the independent variable aspects of wealth creation indicated the following: All the aspects of the independent variables of green growth were found to be significant towards wealth creation. We therefore reject the null hypothesis and conclude that wealth creation depends on adoption of green growth strategies. The study recommends that there is need for the members of the community at large to adopt green growth strategies as this leads to wealth creation aspects including but not limited to: land ownership, improved lifestyle, improved health, ability to accumulate savings and ability to access education. It also recommends that the County government should have policies to promote the green growth strategies.

Keywords: Wealth creation, Innovation, green growth strategies, training, food security

BACKGROUND

Green growth is not new to many scholars and can be described as a form of economic growth that uses already existing and other forms of man-made natural resources to improve livelihoods or sustain the environment. Green growth is used globally to provide an alternative concept to typical industrial economic growth (OECD, 2011). The green economy is a deliberate tree planting exercise that works towards minimizing risk to the environment while at the same time realizing financial benefit to the society. In recent developments, we have witnessed rapid wealth creation through green growth technology. These strategies are not new developments and happenings but they were not fully exploited in the past. The use and employment of green growth strategies started as early as the industrial revolution but was not well understood or explained (UNEP, 2011). People had large farms mainly for food production, export, cash crop

production and animal rearing but not to preserve or protect the environment. when machines came in place and more cottage industries established, people saw the need for wealth creation in green growth. The rise of cottage industries brought about opening of more cottage industries and eventually what we see today as modern industrialization where green growth has heavily contributed to industrial growth and business avenues.

The industries have therefore attracted people who go out to look for employment in the facilities hence creation of wealth and job creation (UN-Habitat, 2011). A study by Reilly (2012) explains that green growth is a strategy that is used to enable society to carry out activities that are beneficial to the environment while at the same time improving the eco system. These strategies in turn create jobs, bring about innovation, protect the environment, allows for technology transfer and improves overall economic growth for any given country/society. This green growth strategy has brought about a modern form of industrial revolution that has led to safe society, through people adopting lifestyles that do not endanger the environment and at the same time make wealth. The people are able to build safe infrastructures. Make use of safe power supply and protect water sources as they use the water for consumption and commercial purposes.

Several countries have benefited from green growth and green economy such as China where the government has committed to produce 16% of its energy from green sources and recycling technology by the year 2020. Kenya has also not been left behind with the Ministry of Energy having adopted a Feed-in Tariff by using renewable sources of energy to generate power for both commercial and domestic use such as: solar, biogas, recycling of water, use of wind to generate power, as well as using municipal waste to generate energy.

Nepal has adopted forest protection and community forest participation where the community has set up ways of ensuring forests are protected through policy formulation and laws. This has seen the government give in full support and has stepped in as a facilitator rather than an enforcer. The forests are now community managed and owned which has therefore made the work of the government very easy. These strategies named above have ended up creating jobs and have great potential for income generation and hence reduction of crime. It is important to note that, many countries are now adopting green growth strategies since they can witness success stories. Uganda is another country that has taken measures and steps in revolutionizing its agricultural production (OECD, 2012). It has adopted the organic farming methods that have now become beneficial to people and the environment. The farmers are no longer using artificial fertilizers. Nigeria for example has committed to reduce and eventually eliminate forest destruction by the year 2030.

Profile of Rongo Sub County

Rongo Sub County is found in Migori County of western Kenya. It is in an area of 1700m above sea level. There are three sub locations that are in Rongo Sub County are: they are Kabuoro sub location, Koderobara sub location and Kanying'ombe sub locations respectively. These three sub locations form Central Kamagambo Location. The sub County is of modified equatorial climate

and some areas are of steppe climate in nature making them appear semi arid in nature. There are two rainy seasons in the region as from March to June being long rains the while the short rainy season are from September to November. The area experiences dry seasons from December to mid-March. Other months such as July and August also have some scanty rainfall. The government is currently engaged in the process of transforming arid and semi-arid lands (Asal) to be the country's bread basket as explained by Lwanga (2018).

The region however has two rivers that supply the eastern side and western side but only well supplied during rainy season. The rivers are: Misadhe and Odundu. Kobil stream also serves the area. The people in these areas use water mainly for domestic use but not for irrigation nor farming. When the rivers are low, the people struggle to survive since they have not made use of the water sources for irrigation purposes. The soil is loamy on some parts but clay soil is found on the lower side of the area making the County not to be productive and less food secure unlike its neighboring regions or highlands of Kisii. use borehole water for domestic purposes. These aspects and much more make Rongo Sub County experience a semi arid zone. Some parts of the County which could be though as fertile and near water bodies have ended up being classified under food insecure regions due to deforestation and are namely Siaya, Kisumu, Homa Bay, Migori (which hosts Rongo Sub County) and yet they are around Lake Victoria; which happens to be the world's second largest fresh water lake. These counties are also ranked among the poorest in forest cover in Kenya (Okoth, 2016).

Statement of the problem

Planning is important in green growth and green economy strategy. Any country that does not plan to adopt green growth strategies is planning to fail. Planning should be both short term and long term in nature to ensure that strategies are carried out to avoid lapses (Vedder, & Gallaway, 2001). Freshwater availability and food insecurity continues to be pronounced in many regions. It is ironical with 2.3 billion who experience water shortage and food insecurity issues yet they live near water bodies. This means that, more than 40% of the world's population will begin to experience water shortage and poor food production yet they live near water bodies. Overall water demand is expected to increase by a whopping 55% due to other aspects that have put pressure on the environment such as: manufacturing (4 times more), generation of thermal electricity (1.4 times more), increased physical infrastructure and domestic use (by 1.3 times more) etc. The pressure would limit the growth of societies and reduce economic activities and eventually lead to water depletion. This would further undermine agricultural yields and threaten overall water supplies (OECD, 2012).

Forest establishment and growth for example is major step towards green growth and requires several heavy resources among them vast land, machinery and equipment. These resources also need long term measures and maintenance as well as systems, policies, structures and law enforcement if called upon to be able to protect that which has been started. However, the state of Rongo Sub County is not doing well in food security especially in the dry seasons considering the soils are not conducive for growth purposes; despite the fact that the County experiences

relatively some good amount of rainfall up to an amount of 1594 mm precipitation annually but is very unpredictable in form (Migori County Integrated Report, 2013-2017). The County is struggling with many issues that are not environmental friendly such as acidic soils, lack of good soil management, lack of land and unpredictable rainfall patterns, deforestation due to excess reliance on firewood as a source of fuel, poor farming methods and lack of cultivation of alternative crops.

The Sub County lacks the following: proper planning in terms of agriculture, lack of agricultural educators, and lack of structures to implement formulated national policies to grassroots levels. The people still use traditional methods of cooking such as firewood and charcoal; hence destroying the environment. There is sprawling of structures/buildings leading to destruction of forests so as to get wood for building purposes making the situation worse. This has led to slow development and deforestation making the climate semi arid in nature due to unfriendly environmental practices. Temperatures range from 20 minimum to 35 on hot days. These temperatures however can drop to 10 degrees on cold days. The weather is very diverse making agriculture quite unpredictable.

Research Hypothesis

H₀-There is no significant effect of green growth strategies on wealth creation

LITERATURE REVIEW

The country and in general the world is faced with two key challenges: fast growing global population and the related increasing pressure on the environment. Due to the scale of existing risks, the key challenges concern issues connected with climate changes. These challenges necessitate undertaking the required preventive measures to save the environment, reduce poverty and create wealth. The lack of a clear pathway in wealth creation and an agreed position among key stakeholders as led to deterioration in the environment as well as increase in poor farming methods as identified by Brubarer (2003). Countries as well as international organizations are not able to fully agree on who is primarily responsible for improvements. African countries particular are trying to get ways of creating sound negotiations with western countries in an effort to lessen the poverty gap.

Other areas of interest and concern have led to division of burdens being made by respective countries to try and look independently for possible ways to create wealth, balance their national paths, and improve livelihoods in an effort to reach each citizen (Basargekar, 2009). The urge to grow the economic and reduce poverty levels among African countries has not been without potential problems, such as environmental pollution and exhausting natural resources. The above-mentioned challenges and conditions as however resulted, among other things, in the emergence of the concept of green growth and its influence on wealth creation (Satbyul et al., 2014). Semi-arid regions are particularly known for not being suitable to explore green technology and are usually unable to support forests due to high dependence on seasonal rainfall.

The other challenge is the destruction of large vegetation by illegal settlers and hence poor management of forests (Government of Kenya, 2007). Small plants, usually grasses, shrubs and small trees dominate the landscape of semi-arid regions and most Kenyan regions and in particular the south Nyanza region is well pronounced with such vegetation. Certain plants which are commonly indigenous in semi-arid regions may have some ways of adaptation as exhibited by desert plants (OECD, 2010). These adaptation methods or forms include to name but a few: thorny branches, thorny leaves, or waxy cuticles in an effort to reduce evaporation and water loss through their trunks and leaves.

However, since the human population is not well versed with these adaptation methods of plants (mainly indigenous ones), they cut them down to burn charcoal and use them for firewood (Lwanga, 2018). This then creates a vicious cycle of perpetual drought and hunger. Environmental conservation is necessary in both rural and in the urban centers as it ensures that the surroundings and food sustainability is adequately maintained for the benefit of human beings. One of the most spectacular and known methods of environmental conservation is forestation and more forestation as explained by UNEP (2011). In most cases, forests have many benefits: they make nature delightful, they are habitats to most animals, they are a source of food to animals and people, source of fresh air and they are a source of cool climate, Rongo sub County should set aside some parcels of land in each and every estate for forestation (Wang'ombe, 2014). This would ensure fresh air in the region and the town.

Trees and plants in particular absorb carbon dioxide and releases oxygen which is used by animals for respiration. Most trees grown in the region would be of much benefit to the locals who are still relying on traditional methods of farming Since the sub County borders the rich wet lake basin and Kisii high lands education to locals on forestation and green growth would go a long way in ensuring food security as well as creating wealth through commercialization of food crops and other forms of vegetation. Trees in particular are a good source of income but if only they are planted more frequently than they are cut for firewood and charcoal. Trees which are quick growing and can be grown in such areas and include the following species: eucalyptus, Cyprus, African black wood, neem, tamarind, graveliea among others (UNEP, 2011). The importance of trees cannot be over emphasized because even soil erosion is controlled by the roots of trees that hold the soil together and the leaves that drop absorb rain water and thus conserve water. Roofs of buildings are also protected from fierce winds. It is trees that protect buildings from strong winds by reducing the speed of wind towards a building and acts as wind breaker.

The active growth of artificial forests and deliberate planting of forests even in cities and towns is of benefit since they act as protection against storm destruction and Rongo Town as well as the environs should not be left behind. Trees are a good source of rainfall and offer good meteorological cycle (Lwanga, 2018). They are the ones that release moisture into the atmosphere and in the end regulate the water vapor in the atmosphere which finally bring about the rainfall that we experience. If trees are aggressively planted more than they are cut/destroyed,

Rongo Sub County will experience rainfall which will be distributed almost throughout the year and this will transform the Sub County into a wealthy place.

There is need to plant more trees in Rongo to replace the ones that are being harvested at an alarming rate and used for construction purposes as well as introduce more food crops . The planting of trees in Rongo Sub County should go along with the growth of alternative food crops to replace the excess reliance on maize from neighboring Kisii County and sorghum from Homa-bay County (Migori County Integrated Report, 2013-2017). This will not only make the Sub County food secure but will also create wealth for residents who will be able to sell the food stuffs to surrounding areas as an alternative source of income. The residents no longer rely on fish trade from Lake Victoria which used to be the main source of income since the supply is now minimal due to threat by the water hyacinth weed that invaded Lake Victoria.

METHODOLOGY

The study made use of descriptive and cross sectional study design method. This type of design was appropriate for the study since the respondents were from selected areas that informed the stratified and systematic sampling technique. The respondents were also many in number and the area of study was big in size (Mugenda & Mugenda, 2003). The area of study was divided into smaller areas known as strata and used the sampled population in the study. The study made use of quantitative and qualitative designs. Quantitative used numerical figures from the area of study while the Qualitative design involved mainly verbal communication

The total population of Rongo Count was 27756. This population was the entire population of the three sub locations which were: Kabuoro, Koderobara and Kanying'ombe. The total number of households in these sub locations was 6095 (KNBS- Population Census, 2009). Systematic Random sampling method was used to select respondents due to the nature of the study and 120 people were sampled

RESULTS AND DISCUSSIONS

A green growth economy is the best way to go for any society and County. It is the best pathway that represents a new approach to food security and economic growth. 67% of residents indicated that they were more food secure upon adopting green growth strategies such as: moving from fish business to farming, growing of plants and trees. Developing counties for *example have* the opportunity to leap-from the benefits of going green. With the devolved government, most counties are now working towards self reliance and sustainability. It is for this very reason that the sub County residents have realized the importance of green technology. However they indicate that the County government of Migori has to actively put it as a policy to ensure forestation is adopted for it to be beneficial to all residents. Green economy goes beyond just planting trees. It also includes: using safe and environmental friendly fuel for domestic use or commercial use. A green economy should come up with ways of conserving water, reduce

pollution, manage waste disposal, encourage safe buildings, improve transport and make use of renewable energy among others.

The farming techniques in Rongo Sub County are also not friendly to the environment. 56% of respondents indicated that they still used unfriendly farming traditional methods such as tilling the land, ploughing and burning of harvested vegetation. Overgrazing was also reported by 65% of the respondents, urban sprawling and commercial development has also led to reduction in farming and forestation making the region move from equatorial climate to semi arid in nature. Majority of respondents (68%) indicated that they were not able to sustain farming as a source of livelihood due to its low and unreliable market trends. It is for this reason that most opted to carry out other business activities and some which were destructive in nature such as logging and construction. At a macroeconomic level, low-income families that had land were unable to transform what they had into income generating forms due to unavailable markets. The natural resources (particularly trees) have only attracted income through sale of charcoal, furniture and firewood.

However, some residents comprising of 62% indicated that they had benefited from green growth by selling fruits in the local market, selling wood and medicinal products from some plants. They however fear that the rate of depletion of forests is so high and could lead to reduced income in the future if not well managed. The residents comprising 78% said the County of Migori had no plans of how green growth can be effectively realized but farmers and residents only grew trees out of their own initiative. At a sectoral or enterprise level, the residents felt there was not ready market for some of their produce since these fetched low prices as a result of exploitation by middle men.

Introduction of modern food crops was beginning to pick up as indicated by 69% of respondents but they however expressed concern that the lack of agriculturalists to train them on plant protection would make their efforts futile. The practices to protect the farm produce were purely traditional and non sustainable rendering them vulnerable as reported by 78% of the residents. Management of farms and use of renewable energy resources was foreign to many as expressed by 88 % of respondents who felt they did not know of any environmental safe energy techniques but just over heard about them. They wished to be taught and adopt the same as expressed by 97% of residents. The question on use of modern farming techniques, the residents indicated they still used traditional farming methods such as tilling, cutting and bush burning to clear vegetation since that is what they were familiar with. As a matter of fact this is untapped area and they wished as expressed by 90% of them to be educated on modern farming techniques which will transform the land and society so that they are not permanently relying on neighboring counties for food security. Economic growth will depend on the ability to improve productivity and adopt modern methods as indicated by 78% of the respondents. The quality of products was also low since most of them were not familiar with methods of increasing the yield. They heavily relied on artificial fertilizers which were beyond the reach of many and hence crops were not well managed.

Rongo residents have made use of green growth strategies to create wealth in their own local way but the methods are heavily traditional in nature and need modern interventions. They grow trees and other plants for commercial purposes in the local markets but to a limited level. The information is on table 1 below. The types of trees grown are indicated below: the fig tree is the most popular and indigenous in nature. It is grown for medicinal purposes and, firewood and the trunk is also a rich source of wood for sale. Umbrella tree which is an exotic tree is grown for its medicinal purposes and for sold for furniture.

The Euphorbia tree is popular at 23.3% and used for medicinal purposes as well as for firewood in the homes and for sale as a source of fuel for cooking. The avocado tree is most popular since it was also used as a source of fruit by the community and for commercial purposes. The cedar tree is an indigenous tree and sold for furniture purposes (22.5%)

Table 1: Type of trees grown in the County

	Frequency	Percent	Cumulative Percent
Mango tree	14	11.7	11.7
Cedar tree	27	22.5	34.2
Blue gum tree	13	10.8	45.0
Fig tree	32	26.7	71.7
Euphorbia tree	28	23.3	95.0
Umbrella tree	2	1.7	96.7
Avocado tree	2	1.7	98.3
Gravelia tree	2	1.7	100.0
Total	120	100.0	

Residents expressed the need to move up the value addition process and improve the value chain systems. They indicated the wish to add value to produce by incorporating modern storage techniques, processing and modern harvesting which they did not know about as indicated by 87% of respondents. The adoption of value chain methods would enhance more production and wealth creation as indicated by 79% of residents. The 21% of the population did not know what value chain and value addition is all about. This study also found out that this feedback would in turn require linkages with other sectors, such as: manufacturing and energy

Plants grown other than trees are named on table 2 below. The most popular is the cassava plant at 46.7% due to its ability to withstand harsh climate and is popular in semi-arid regions. The cassava is grown both for domestic consumption and for sale in nearby local markets. The pawpaw plant is also popular as represented by 14.2% and its fruit is sold for commercial purposes.

Table 2: Type of plants other than trees grown in the County

	Frequency	Percent	Cumulative Percent
Cassava plant	56	46.7	46.7
Banana	11	9.2	55.8
Napier grass	13	10.8	66.7
Pawpaw	17	14.2	80.8
Maize plant	6	5.0	85.8
Sorghum	17	14.2	100.0
Total	120	100.0	

Income from plants is shown on table 3 below and includes: Cyprus for wood and furniture at 55%, cassava at 20%, Guava at 8.3%, Grevillea at 8%, Euphorbia for medicinal value and wood at 7.5% in that order

Table 3: Type of plant and economic benefit

Type of plant and benefit	Frequency	%	Cumulative %
Cyprus for firewood and charcoal	66	55.0	55.0
Grevillea for timber, shelter, wood	10	8.3	63.3
Guava for fruit	5	4.2	67.5
Cedar for carpentry, firewood, medicinal	1	.8	68.3
Blue gum for timber, firewood, medicinal	2	1.7	70.0
Mango tree for fruit, medicinal value	1	.8	70.8
Grevillea for meals, firewood, timber	1	.8	71.7
Napier grass for animal feed	1	.8	72.5
Cassava for sell	24	20.0	92.5
Euphorbia for medicinal and firewood	9	7.5	100.0
Total	120	100.0	

The information on table 4 below indicated that adjusted R square of 0.025 means that the variables studied contributed to 2.5% of the factors that influenced wealth creation through green growth strategies and hence other factors contributed to 97.5%. Since the R square is 0.033, a conclusion was made that wealth creation was positively correlated with the green growth strategies but the relationship was very weak since R is close to 0.

Table 4: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.181 ^a	.033	.025	.508

a. Predictors: (Constant), Green growth

From the ANOVA results on table 5 below, the p-value is 0.048 less than significance level; meaning the level of effect of green growth strategies on wealth creation was significant. Hence we reject the null hypothesis that there was no significant effect of green growth strategies on wealth creation and conclude that green growth strategies are a form of wealth creation in the County

Table 5 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.030	1	1.030	3.994	.048 ^b
	Residual	30.436	118	.258		
	Total	31.467	119			

a. Dependent Variable: Income generating

b. Predictors: (Constant), Green growth

CONCLUSION

The positive role in green growth cannot be overemphasized. It creates rich support for communities as explained above and increases productivity of residents as well as health. The natural resources are particularly a good source of income for both the local market and distant markets. With the increase in green technology knowledge, developing countries and the rural poor groups cannot be sidelined when it comes to development since both have positive and significant effects through food production and green growth. The large ecosystems, provide a home for most animals which in turn leads to conservation of rare species and in the long term is a tourist attraction; hence more wealth creation. The tropical forests are important in soil-conservation, water-retention and therefore also high-carbon. Policy challenges in the County pose a threat to green technology and green growth. But however many residents have adopted green growth strategies as a way of life and are now realizing the benefits of the adoption. Many of the strategies are now economically visible and their value is captured through marketed products, such as: timber, medicine (herbs), furniture and fuel. There is however much to be done in terms of creating awareness to the locals on value addition and opening markets that go beyond the immediate and local markets. There is also much to be done to improve acceptance of planting alternative foods by the local community as well as planting more than they harvest so as to replenish the already depleted land.

RECOMMENDATIONS

There is need by the local government and other stakeholders to have policies on Green growth, biodiversity and also encourage the local community to cultivate alternative food crops. There is need to improve knowledge and create awareness on importance value addition as well as best practices to increase production and attract consumers (Baro & Sarania, 2014). Improving biodiversity and developing the ecosystem has to be part and parcel of the local County mandate so as to promote all aspects of wealth creation.

The economic value of green growth strategies have to be incorporated in the agricultural policy and investment policy of the County so that it becomes part of the County manifesto and hence continues beyond the life of local politics. There is need by stakeholders and organizations to support related markets as well as enable access to external markets so as to increase the lifestyle of the community and hence encourage adoption of green growth. There is need to improve infrastructure in area so as to reach the interior community who may not have access to ready markets and knowledge. The government should introduce ways of educating the community on modern farming methods and green growth strategies and these adopted beyond Migori County in which Rongo is a sub County; this is through reintroduction of agricultural extension officers considering food security cannot be ignored since it is one of the big 4 agenda in the Kenya Government policy document (2018-2022). These strategies and modern methods include smart agriculture and use of more friendly farming techniques, while ending the challenge of deforestation and land degradation

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