

Policy change for cheaper staples and greater food security in the East African Community

Recommendations for national and regional policy makers

RECOMMENDATIONS

1. **Putting a price on ecosystem services** and letting national policies reflect it can ensure that resource users who degrade ecosystems or related services pay for resource replacement or rehabilitation of ecosystems. This will **conserve and sustain natural resources** essential to food production, such as land.
2. **Matching crops with suitable agro-ecologies** will decrease the need for inputs such as fertilizer and support increase in yields, thereby promoting sustainable ecosystem service management and ultimately **increasing food security**. This can be achieved through establishing and implementing policies that ensure production of different crops according to suitability zones in each of the EAC countries.
3. Promoting policies that support **increased inter-regional** trade by improving infrastructure (as enshrined in the East African Common Market Protocol) and ultimately lowering transportation costs will contribute to **increased agricultural productivity and reduce cost of staple foods**.
4. Greater **gender equality contributes to economic efficiency** and the achievement of key development outcomes. Proactively promoting the **participation of women and youth in trade** in national policies will boost exports and generate revenue for the individual nations as well as improve household status.
5. Forming national policies that emphasize **equal access to land and other productive resources** for men and women, and implementing such policies through institutions with appropriate mandates, will foster improved management and **more sustainable use of land**, ultimately increasing sustainable food production.
6. Instating national and regional policies that support the private sector to innovate and promote **labor-saving technologies that are women friendly** will support **sustainable ecosystem management**.



Beans are among the staple foods in EAC.
Credit: Georgina Smith, CIAT



Terracing can help restore degraded land.
Credit: Désiré Hakizimana, Kilimo Trust

SUMMARY

Updating national and regional policies to promote 1) sustainable and optimal use of natural resources, 2) reduced transportation costs in food trade, and 3) equal access to land and business for women and men can boost inter-regional trade of staples and improve food security across the region, while preserving ecosystems and their services. Harmonizing such policies across the EAC region will optimize the benefits by boosting inter-regional trade and allowing each country to leverage its natural resources for optimal agricultural productivity. Ultimately, implementing the recommended package of coordinated policy interventions, which leverage the interconnections between environment, productivity, trade and gender equity, can enhance productivity and reduce prices of staple foods such as maize, beans and rice.

THE CHALLENGE

Food insecurity and ecosystem degradation are worsening in the EAC region. Soil health is decreasing due to excessive nutrient mining and increased erosion; pest resistance and pest outbreaks are becoming more frequent due to inefficient use of fertilizer and pesticides; biodiversity is declining; and ecosystems and their related services, crucial to food production, are at risk.

Food insecurity is on the rise in most countries in the region (Table 1). Water scarcity is projected to become increasingly severe in EAC countries. (Table 2). The threshold for water stress resulting in disruptive water shortages is estimated at 1,700 m³ per capita per year, while water availability below 1,000 m³ per capita per year leads to serious challenges for food production and human health.

Furthermore, nutrient mining in East Africa is among the highest in sub-Saharan Africa, with an estimated annual nutrient depletion rate of 41 kg nitrogen (N), 4 kg phosphorus (P) and 31 kg potassium (K) per hectare (Bekunda *et al.*, 2002).

Failure to halt ecosystem deterioration comes with a heavy financial cost on the individual countries. For instance, in Kenya and Tanzania, over a 30-year planning horizon, the respective costs of action against land degradation has been estimated at about 18.1 and 36.3 billion USD; but the costs of inaction are substantially higher, i.e., 74.9 and 138.8 billion USD, respectively (Kirui and Mirza-baev, 2015). In other words, land degradation prevention activities could save four dollars for every dollar spent.

Achieving food and nutrition security at national and regional levels will depend on urgently addressing ecosystem degradation and ensuring sustainable use of ecosystems. Our recommended solution is to implement a coordinated package of national policy changes that harness the interconnections between environment, productivity, trade and gender equity to ensure greater productivity and lower prices for staple foods as well as more sustainable use of ecosystem services.

RESEARCH FINDINGS

Value ecosystems for sustainable use of natural resources

A review of key national policies related to trade, water, land and food security in each of the EAC countries revealed that, except for in Kenya, environmental preservation is inadequately embedded in trade policy frameworks. Particularly, no framework for valuation of ecosystem services exists in policy. Similarly, neither the environment nor trade policy frameworks attach ecosystem value to pricing and marketing of goods and services. Current policies therefore fail to provide incentive for production of staple foods that have minimal negative impacts on ecosystems.

However, embedding and, most importantly, implementing policy mechanisms to ensure that resource users who degrade ecosystems or related services pay for resource replacement or rehabilitation could create incentive for sustainable use of ecosystems. For example, governments could institute a natural resources tax on commodities whose market prices do not accurately reflect the true environmental and social costs incurred in their production, such as the cost of land degradation. Furthermore, revenues generated from environment and natural resource taxes could be used to promote sustainable resource use and environmental protection.

Use suitable agro-ecologies for increased productivity

A comparison of the biological requirements of maize production with land characteristics showed that maize is not necessarily produced in suitable agro-ecologies.

This study was carried out in five different areas, i.e., in Burundi; Rwanda; the agro-ecologies of Lake Zone in Kenya; the Kyoga plains and the Southern High-

TABLE 1: THE GLOBAL FOOD SECURITY INDICES FOR EAC COUNTRIES

COUNTRY	FOOD SECURITY INDEX		
	2014	2015	2016
Burundi	28.8	25.1	24.0
Kenya	40.1	41.2	42.7
Rwanda	34.2	35.1	40.7
Tanzania	29.9	33.7	36.9
Uganda	45.6	42.8	44.2

Source: GFSI (2014; 2015; & 2016)

TABLE 2: WATER AVAILABILITY (M³) PER CAPITA IN EAC COUNTRIES

COUNTRY	WATER AVAILABILITY (M ³) PER CAPITA IN EAC COUNTRIES	
	2007	2030 (POSTULATED)
Burundi	442.2	264
Kenya	938.6	734
Rwanda	550.7	387
Tanzania	2,291.2	1,599
Uganda	2,132.8	1,032

Source: FAO Aquastat (2007)

Downloaded from <http://www.fao.org/ag/agl/aglw/aquastatdbase/index.stm>

lands of Uganda; and the Lake Zone and Southern Highlands of Tanzania.

The mismatch between production and agro-ecologies was explored by comparing the biological requirements of maize with land characteristics such as soil and climate. GIS maps were developed considering no external input application. Four different classes, ranging from

“Unsuitable” to “Highly Suitable”, were defined to identify how suitable each of the agro-ecologies were for production of four different crops (Figure 1-4).

It was found that more than 41%, 75% and 84% of the area of arable land under maize production in the Southern Highlands of Tanzania, Burundi and Rwanda respectively, is only marginally suitable for

maize production. This failure to match suitable land to maize production was observed across all the study areas.

Establishing suitability zones to ensure that crops are produced in suitable agro-ecologies in each of the EAC countries could help increase productivity as well as halt ecosystem degradation.

FIGURE 1: EAC RAIN-FED MAIZE SUITABILITY MAP FOR SELECTED AGRO-ECOLOGIES

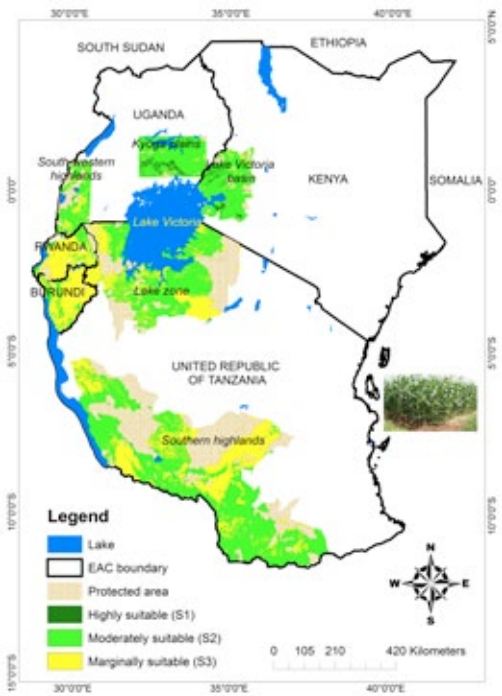


FIGURE 2: EAC RAIN-FED LOWLAND RICE SUITABILITY MAP FOR SELECTED AGRO-ECOLOGIES

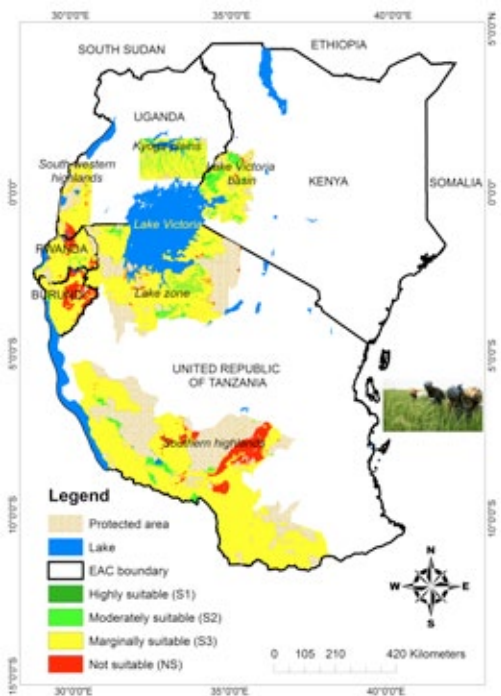


FIGURE 3: EAC RAIN-FED UPLAND RICE SUITABILITY MAP FOR SELECTED AGRO-ECOLOGIES

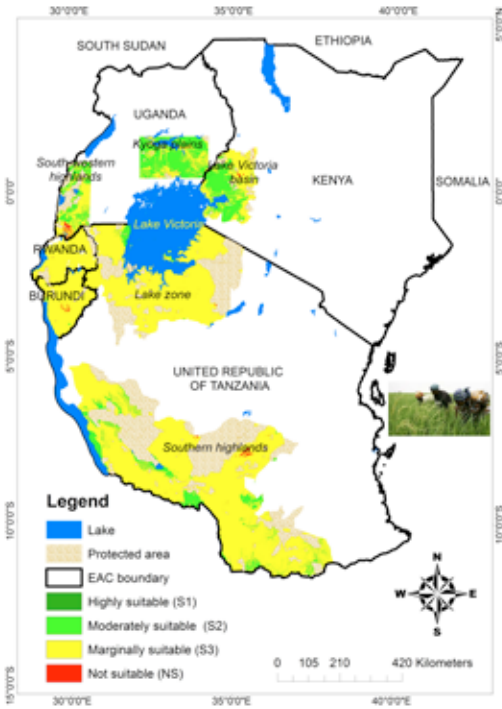
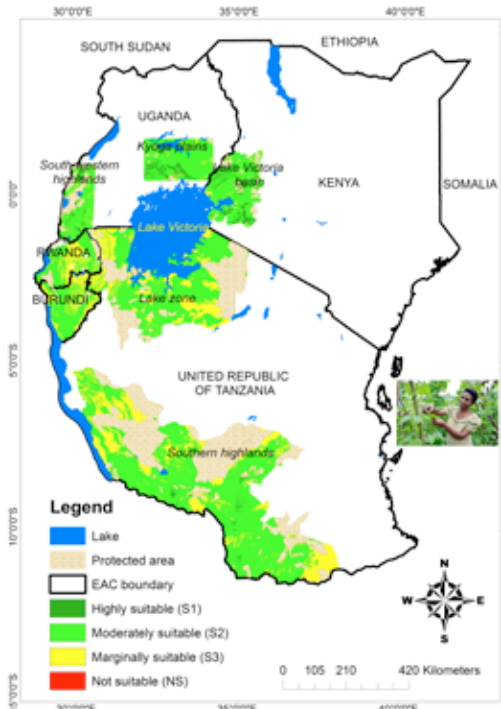


FIGURE 4: EAC CLIMBING BEANS SUITABILITY MAP FOR SELECTED AGRO-ECOLOGIES





Goods are being transported in rural Rwanda.
Credit: Gwendolyn Stansbury, IFPRI

Matching crop production with suitable agro-ecologies is expected to lessen the need to use synthetic chemical products and other technologies that have a negative impact on the environment and human health.

Boost inter-regional trade for cheaper staples and greater food security

To assess how inter-regional trade can be harnessed for increased agricultural productivity and sustainable use of eco-systems, two scenarios were developed, using a regional economic multi-market model of agriculture. Data on regional supply, demand and trade as well as input on yield potential from experts within the EAC region was used to construct the model, which was designed to connect the dynamics of supply and demand of the key staple crops to prices and trade patterns across the five EAC countries.

The trade patterns and price differences across the region were tied to differences in supply and demand patterns as well as to transportation and transaction costs. Both scenarios explored the effects of



Fresh beans on sale in a Rwandan market.
Credit: Stephanie Malyon, CIAT

reducing the cost of transporting staple foods within the EAC region by improving regional road and railway networks and removing unnecessary barriers to trade, such as inconsistent protocols for weighing of goods, controls and checkpoints.

The first scenario proposes to reduce all transportation costs across the EAC by 50%. This is projected to support increased trade and benefit consumers, traders and governments. Reduced transport costs will reduce prices of staple foods in those countries able to import more, leading to increased demand and consumption of the staples in those regions, and greater benefits for their consumers. Prices will rise slightly in those regions now able to export to their neighbors, thereby stimulating increased production for the expanding market and providing benefits for producers. However, this intervention alone would not necessarily ensure that maize, rice and beans would be produced in zones of higher suitability. In this scenario, the overall harvested areas will be reduced by 1.9% (from 9,350,000 hectares to 9,171,000 hectares).

The second scenario explores lowering transportation costs by 50% and increasing productivity of maize, rice and beans by 10%, such as through use of improved agricultural practices and technologies. As in the first scenario, lowering transportation costs is projected to reduce prices of staple foods in countries importing more from their neighbors, while increasing prices in the countries that export. The increase in yield, however, has the biggest effect on bean prices, making the price decreases in Rwanda and Burundi (the regional importers) greater and the price increases in Tanzania and Uganda (the exporters) smaller.

In addition, improving crop productivity while also establishing better conditions for regional trade is projected to increase incentives for matching crop production with suitable agro-ecologies. In this scenario, crop choice becomes decoupled from both existing national demand and from immediate food needs because export to and import from other countries in the EAC becomes a viable option. This means that countries (and regions within countries) can leverage their comparative advantage and produce the crops most

suitable for their local agro-ecologies and export domestically grown crops to elsewhere in the region, where demand is high, while importing those crops that are in demand, but not suitable for local agro-ecologies.

For example, the area of maize produced under low suitability is projected to decrease by 20.7%; bean under low suitability by 18.3%; and bean in unsuitable zones by 91.1%. In contrast, beans and rice under high suitability are projected to increase by 4.6% and 1.5%, respectively.

Finally, this second scenario projects a reduction of the overall harvested area by 5.5% (from 9,350,000 to 8,839,000 hectares), contributing to further reducing agricultural production's ecological footprint, particularly by reducing water and soil pollution.

Improve gender equity for increased productivity, trade and more sustainable use of land

National policies within the EAC region were also reviewed to identify policy gaps related to gender equity. Gender mainstreaming was found to be weak in the national trade policies for Burundi, Tanzania and Uganda. For example, although policies recognize that empowering the private sector with business and entrepreneurial skills is key to boosting trade, no strategy exists for ensuring that marginalized groups, such as women, benefit. Besides, policies favor production for export under a trade liberalized setting, but have no clear agenda for supporting access to credit and inputs, barriers that generally prevent women from participating in trade. These disadvantages reduce women's productivity and competitive-

ness as actors in the agricultural value chain as well as their overall market effectiveness.

Furthermore, weak enforcement of rights of women and other marginalized groups on access to and control of land is eminent in the EAC countries (FIDA Kenya, 2009; Human Rights Watch, 2003; and Mugabo, 2015). In Uganda for example, women's land and property rights have been favored in recent policy reforms (such as the National Land Policy of 2013), but the implementation and enforcement of such laws and policies remains a huge challenge (Mugabo 2015).

Information collected both through focus group discussions in all the agro-ecologies studied and by interviewing key informants and stakeholders complemented these findings. The initial conclusions show that males and females play dif-



A Tanzanian woman with an armful of beans.
Credit: Georgina Smith, CIAT



Drip irrigation.
Credit: Désiré Hakizimana, Kilimo Trust

ferent roles in ecosystem management, crop production and trade. Currently, women mainly exploit the resources for household welfare, such as firewood and water, while men focus on income-generating activities like fishing, charcoal burning and rice farming.

It is mainly men who have control and decision making power over ecosystem resources use. However, women provide more than half of the labor for crop production, while the men dominate marketing and control of proceeds from agricultural produce (except for in Rwanda where all activities are equally shared between men and women). These findings are supported by a survey by Palacios-Lopez *et al.* (2015) that reported average female labor share in crop production at slightly above 50% in Uganda and in Tanzania and by an earlier report by Ahabwe (2011), which stated that women in the region contribute 80% of the labor force.

Greater gender equality can contribute to economic efficiency and the achievement of other key development outcomes. For instance, greater control over household resources by women could enhance

countries' growth prospects by changing spending patterns in ways that benefit children (World Bank, 2012). Research has shown that women traders are more likely to use their income to buy food and other items for the household, pay school fees, health care services and rent, save and reinvest in their businesses (UNIFEM, 2009).

Furthermore, it is reported that women are the majority participants of cross-border trade in East Africa (Stiftung, 2006). Increasing the ability of women to engage freely in cross-border agricultural trade has the potential to improve food security and reduce poverty among vulnerable populations (USAID, 2012). Therefore, as pointed out earlier by Higgins (2012), removing the impediments faced by women and proactively promoting their participation in trade will boost exports and revenue for the various countries.

Similarly, enhancing women's access and control over land resources is likely to lead to more sustainable management of land and other natural resources. Notably, women in the region contribute approximately 80% of the labor force (Ahabwe, 2011), but women's lack of land tenure

means that they have limited incentives for conserving or investing in land, as pointed out by Eswaran *et al.*, 2001; Gebremedhin and Swinton, 2003; and Gebreselassie *et al.*, 2009. Thus, giving women greater control over land will lead to more sustainable use and, in turn, greater agricultural productivity.

Finally, putting in place policy measures to encourage development of women-friendly agricultural technologies that support preservation of ecosystems will be helpful. Women are important ecosystem stewards, but currently the majority of technologies developed are by and for men, and they are not always appropriate or accessible for women. There are limited education and training opportunities for women, as well as scarce resources and support for women's movements, networks, and entrepreneurship in green industry. Public and private expenditures towards the creation of gender friendly work environments remain low (UNIDO, 2015). Reversing this status quo and facilitating a more equal inclusion of both women and men could propel sustainable ecosystem management and lead to better development outcomes.



Contour farming.
Credit: Désiré Hakizimana, Kilimo Trust

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