

## 8 Livestock Intensification Strategies in Rwanda: Ethical Implications for Animals and a Consideration of Potential Alternatives

Robert M. Chiles and Celize Christy

Over the past several decades, meat production and consumption have come under increasing scrutiny over concerns about public health, sustainability, and ethical obligations toward animals. In the global south, the demand for meat continues to rise alongside growing populations and higher incomes (Nam, Jo, and Lee 2010; Rae 2008), and the industrial model of meat production is assuming increasing prominence in these regions (Fraser 2008; Li 2009).

While much of the social science literature focuses on the pros and cons of traditional, small-scale versus industrial food systems, the animal rights movement historically has regarded both forms of animal agriculture as inherently problematic with respect to ethical obligations toward animals. Supporters of this movement have long premised their arguments on the concept of *speciesism*—the notion that it is just as arbitrary to discriminate against the basic interests and suffering of another being on the basis of species as it is to discriminate on the basis of sex, race, nationality, or creed (Regan 1983; Singer 1975). While nonhuman animals obviously do not have an interest in civil rights like voting, for Singer and others, all sentient animals are equal when it comes to their basic desire to avoid pain and suffering. To quote from Singer (1975, 8),

If a being suffers there can be no moral justification for refusing to take that suffering into consideration. No matter what the nature of the being, the principle of equality requires that its suffering be counted equally with the like suffering—insofar as rough comparisons can be made—of any other being. ... Nearly all the external signs that lead us to infer pain in other humans can be seen in other species, especially the species most closely related to us—the species of mammals and birds. ... The nervous systems of animals evolved as our own did, and in fact the evolutionary history of human beings and other animals, especially

mammals, did not diverge until the central features of our nervous systems were already in existence.

While there are strong and well-established arguments to be made for reducing animal suffering and death by shifting toward a more plant-based diet, these arguments are usually addressed to consumers in the global north who have access to a diverse array of foodstuffs. It is primarily for this reason that Morris and Kirwan (2006) have described veganism as a largely consumer-oriented movement, and as such, it is often regarded as separate from the sustainable agriculture movement and, more broadly, completely missing from scholarship focused on agricultural development in the global south. To be sure, some advocates of sustainable agriculture have sought to reduce their meat consumption without eliminating it entirely (Bourette 2009; Pollan 2006), and some vegans support organic and local food production, but generally a focus on vegan agriculture has remained separate from much of the mainstream agriculture literature, especially among scholars focused on the global south.

Opponents of plant-based diets level many critiques against the idea of promoting vegan diets, the most common of which is that meat is a necessity in the human diet. By contrast, supporters of plant-based diets argue that vegan diets offer a comprehensive solution that can help to alleviate the practical and ethical challenges associated with meat production, many of which are raised in this volume. Moreover, according to the World Health Organization, the Food and Agriculture Organization of the United Nations, American Dietetic Association, American Heart Association, USDA Dietary Guidelines, American Diabetes Association, Academy of Nutrition and Dietetics, Mayo Clinic, Cleveland Clinic, and Harvard Medical School, vegan diets provide all of the nutrients that are essential for human nutrition and are appropriate for all stages of the life course, including pregnancy. As interest in plant-based diets has grown, so has the quality and quantity of vegetarian and vegan specialty products in many grocery stores and restaurants.

Advocates for plant-based diets are also often accused of elitism and ignoring broader political-economic structures. Scholars have argued, for example, that processed “fake meat” products are expensive, less healthy, support large agrifood corporations, and ironically reify the cultural legitimacy of meat by attempting to mimic it (Morris and Kirwan 2006). Similarly, it has been pointed out that this growth of consumers choosing to

be vegetarian has occurred in the context of menu pluralism situated in “affluent, consumer-oriented economy which can draw on a variety of food items, freed by the channels of international trade from the narrow limits of locality, climate and season” (Beardsworth and Keil 1992, 289–290).

Perhaps the most serious charge leveled at veganism is that it is simply not a viable solution for innumerable rural communities across the world, where many peasants and pastoralists literally depend on hunting, fishing, and animal husbandry for their basic survival. This state of affairs appears to put humans’ ethical obligations toward animals into direct conflict with competing obligations to food security and cultural rights. It is for this reason that animal rights have largely received limited concern or attention from the development community (Kelly 2016). Indeed, to the extent that animal issues have been prioritized by development professionals, it has largely been out of concern for biodiversity and wildlife tourism as opposed to the rights and dignity of individual animals.

Due to the troubled legacies of colonialism and imperialism, these exchanges take place on an unequal playing field, and many communities in the global south have limited economic choices. Jimmy Smith (Smith 2016 n.p.), the director general for the International Livestock Research Institute (ILRI), has asserted:

A lot of meat and milk that would remain unproductive in a vegan context is produced on these marginal rangelands. For example, 60 percent of Sub-Saharan Africa is covered by drylands where raising livestock is the main, and often the only, land use option available. ... Above all, livestock are essential to many of the world’s poorest people and can’t simply be cast aside. In low- and middle-income economies, where livestock account for 40–60 percent of agricultural GDP, farm animals provide livelihoods for almost 1 billion people, many of whom are women. Cows, goats, sheep, pigs and poultry are scarce assets for these people, bringing in regular household income, and can be sold in emergencies to pay for school or medical fees. For those who would otherwise have to subsist largely on cheap grains and tubers—risking malnutrition and stunted children—livestock can provide energy-dense, micronutrient-rich food. Animal-source foods are especially important for pregnant women, babies in their first 1,000 days of life, and young children.

Proponents of animal rights and veganism oftentimes dismiss such arguments as strawmen, namely, by asserting that their awareness and advocacy campaigns are only focused on Western consumers—and *not* on people who depend upon animal products for the subsistence purposes. All too often,

the end result of these conversations is that both sides simply talk past each other and then disengage. The question thus remains as to what type of reasonable ethical obligations people have toward animals in communities that are striving toward economic development and greater participation in the global community. We argue that the lack of a serious mutual engagement between both sides on the topic of animal rights and humans' ethical obligations toward animals has resulted in an intellectual vacuum with respect to global meat production and consumption.

### **The Rwandan Context**

In order to situate these abstract concerns and principles in practical context, we chose to focus on the case of Rwanda, a small sub-Saharan African nation that is currently engaging in a process of agricultural intensification while simultaneously investing in a knowledge economy. Rwanda is a country that has a longstanding cultural pride in raising livestock. During the Rwandan civil war (1990–1994), cattle were scarce and meat consumption was low, but over the past several decades livestock production has emerged as a key sector in Rwanda's economic portfolio, specifically the poultry sector (MINAGRI 2012).

Despite its many social and economic achievements in the years following the 1994 genocide, Rwanda remains one of the world's poorest countries. It is stricken by widespread childhood malnutrition, and animal protein can provide many of the diversified nutrients that are currently lacking in the diets of many rural Rwandans. In recent years, Rwanda's government has sought to capitalize on the increasing regional demand for meat products across Eastern Africa by intensifying and industrializing livestock production (Mbuza et al. 2017; Thornton 2010). While many of Rwanda's agricultural, demographic, and economic challenges are widespread across the global south, the combination of Rwanda's small geographic size, growing population, and transitioning economy makes it an exemplary case study from which to study the ethics of animal agriculture in the developing world.

Studying the Rwandan livestock industry from the standpoint of development ethics further contextualizes this volume's broader investigation of food sovereignty, governance, and social and environmental justice. While the Rwandan government's push to privatize and sustainably intensify its

poultry sector could potentially improve the quality and diversity of people's diets, transitioning away from traditional modes of production could also serve to consolidate ownership and jeopardize local food sovereignty. Moreover, there is no guarantee that conventionally sourced poultry products will be available, accessible, or affordable to those who need them the most. These government initiatives could also exacerbate ongoing competition over Rwanda's limited and marginal lands, both with respect to ownership as well as usage. There are also no guarantees that the treatment of animals will improve with sustainable intensification, and if this program is successful, it will by definition result in more animals being raised and killed.

In what follows, we situate the Rwandan experience in the socioeconomic, ecological, and historical context of development. Rwanda is similar to other sub-Saharan African countries in that its pathway to development is occurring amid sweeping changes: rapid population growth, urbanization, global environmental crises, and a nutrition transition. Next, we discuss how Rwanda has prioritized the poultry industry as a pathway toward food security and economic growth. We then consider the ethical questions that this type of investment raises with respect to humanity's ethical obligations toward animals. We conclude the chapter by reflecting on the past, current, and future potential of non-livestock-oriented approaches to Rwandan food security and community-economic development. Our overarching purpose with this chapter is to problematize the assumption that intensifying livestock production is the only viable future for the citizens of Rwanda and the global south more broadly.

### **The Broader Context of Livestock-Oriented Development Strategies in Rwanda**

The demand for meat and other animal-source proteins is surging across the global south, a phenomenon that Weis (2015) describes as the "meatification" of the global diet. Indeed, economic and cultural globalization is paving the way for people in the global south to increase both the total demand for food products and the *composition* of this demand. Here, more and more consumers around the globe are shifting away from traditional starches toward resource-intensive animal products, crop cereals, oils, fresh fruit, vegetables, and convenient processed foods (Bett 2012; OECD/FAO

2016; Thornton 2010). In a meta-analysis of 393 different studies on meat consumption and income elasticity, Gallet (2010) found that larger incomes resulted in particularly higher levels of spending on beef and fish (with less spending on lamb, pork, and poultry).

Smil (2001) breaks these global dietary trends down into two distinctive stages. In the first stage, which is the “expansion” effect, the primary change is that of increased energy supplies, and extra calories come from cheaper foodstuffs of vegetable origin. The second stage is the “substitution” effect, which is caused by a shift in the consumption of foodstuffs with no major change in overall energy supplies. Here, regions will shift from diets primarily comprised of carbohydrate-rich staples to vegetable oils, animal proteins, and sugar. Currently, a majority of sub-Saharan Africa is experiencing the substitution effect, and this is due to affluent consumers’ cultural preferences for higher caloric products like meat (Smil 2001). This phenomenon further magnifies the impact of international development programs and initiatives that promote livestock production and animal-protein consumption.

A key driver of the increasing demand for meat commodities is rapid population growth, accelerated urbanization, and increasing per capita income in countries in the global south, and this is particularly evident in sub-Saharan Africa (OECD/FAO 2016). Drawing on cross-national data from the United Nations, the FAO, and the World Bank, York and Gossard (2004) found that countries with highly urbanized populations consume more meat than countries with less urbanized populations, countries in temperate regions consume more meat than nations in arctic and tropical regions, countries with more land area likewise consume more meat, and economic development increases both meat consumption and fish consumption (where Western countries consume meat and Asian nations consume more fish). The nutrition transition may well progress at a greater speed in regions like sub-Saharan Africa, where the consequences of dietary change could also be more impactful as compared with other regions (Popkin 2002). Southern and Western Africa have the largest economies in the sub-Saharan Africa region, and their per capita caloric intake is higher than that of Central and Eastern Africa (OECD/FAO 2016). In Eastern Africa, the per capita caloric intake is projected to expand to almost 7.5 percent (162 kcal/day/person) by 2025 (OECD/FAO 2016).

In many ways, the nutritional transition has been both a blessing and a curse. On the one hand, the consumption of more meat products can benefit impoverished people in the global south who suffer from nutritional problems like anemia, stunting, and wasting. Meat is a valuable source of high-quality proteins, fats, and minerals, like iron, zinc, and all B-vitamins (other than folic acid) that at times aren't attained at adequate levels with traditional diets. On the other hand, in many sub-Saharan Africa countries like South Africa, Ghana, Kenya, or Nigeria, integration into globalized markets has also resulted in increased rates of noncommunicable diseases of "over-nutrition" like diabetes and obesity. Satisfying increasing and changing demands for animal food products while also sustaining the natural resource base (soil, water, air, and biodiversity) is another major challenge facing global agricultural producers (Alexandratos and Bruinsma 2012).

Increasing meat demand is pressuring agricultural producers to modernize and industrialize, and East African countries like Rwanda are currently implementing policies intended to expand and enhance livestock productivity. Many of these policies are being taken on and implemented by various Western-based development organizations like the International Livestock Research Institute (ILRI) and Heifer International. These organizations' activities demonstrate that the expansion of global meat production and consumption is not a "natural and inevitable outcome of development" as per local traditions and cultural preferences; rather, it involves active campaigns of continued Western intervention in the global south (Hansen 2018, 57).

For livestock-oriented development programs, meat, milk, and egg production is the core pillar of food security, financial development, and social stability in the global south. These organizations thus implement livestock programming and research focused on sustainability and environmental health, economic profitability, and socioeconomic equity. ILRI, for example, is committed to food security, market participation, and poverty reduction through the efficient, safe, and sustainable use of livestock. Per its namesake, ILRI concentrates its efforts on agricultural productivity and policy research, which they argue "is helping farmers exploit the potential of their animals to turn the nutrient cycling on their farms faster and more efficiently" (ILRI 2018, 1).

Another large livestock development program is Heifer International. Heifer International's core mission is more applied, and involves gifting

livestock to needy families. Recipient families are then obligated to share their knowledge, skills, and animals' offspring with others (Dierolf et al. 2002). Through this practice, Heifer International uses livestock production as a method for capacity building, resilience, community-based planning, food security, and poverty alleviation. Indeed, livestock can provide a household with vital micronutrients while allowing for individuals to participate in local markets by selling goods and products.

Of particular interest to us is the lack of attention and priority these livestock programs give to animal welfare and thinking about human obligations toward animals more generally. We are not alone in expressing this concern. GiveWell (2018, 1), a nonprofit charity evaluator, has raised flags regarding the issues of livestock health and potential underproduction, and verification of recipients' knowledge and commitment regarding animal welfare, among other issues. It may well be that simple cash transfers are a more effective way to eradicate poverty than making livestock donations (see GiveDirectly 2018). In the following section, we consider the social and ethical implications of encouraging the expansion of livestock production in the global south by examining the case of Rwanda in greater detail.

### **Rwanda: A Case Study in Livestock Intensification**

Rwanda is a mountainous landlocked country located in East Africa with the highest population density in Sub-Saharan Africa. Agriculture contributes 81 percent of the country's total GDP, with most of the economy based on subsistence local farming. Despite its many successes over the past several decades, in many ways, the country is still striving to recover from the social and economic trauma of the 1994 genocide. An estimated 40 percent of Rwanda's total population lives below the poverty line (CIA 2016), and this segment of the country is almost entirely dependent on agriculture as a primary source of income and livelihood stability.

Rwanda is also changing rapidly, and all the global challenges that we identified in the previous section (population increase, rising per capita income, urbanization, agricultural intensification, climate change, etc.) are present and occurring. There is intense economic and political competition for what limited land is available, and this competition also increases prices for food-feed crops (Rosegrant et al. 2009). These dynamics are taking place at a much slower pace in other East African countries like Kenya and

Tanzania, both of which already have an established regional and international market, a large number of consumers purchasing high-value products (e.g., meat), and extensive urbanization.

Despite Rwanda's fertile ecosystem, food production often does not keep pace with population growth, and Rwanda currently depends on neighboring countries for animal protein and other food sources (CIA 2016). With minimal land available for grazing, the potential options for expanding the livestock industry are limited. Moreover, while land productivity has increased with both crop and livestock intensification, Rwanda's use of marginal plots and traditional pastoral lands for agriculture has resulted in high rates of soil degradation, erosion, and deforestation (Van Hoyweghen 1999). The poultry industry's minimal land requirements make it a priority for investment by the government (Mbuza et al. 2017).

The United Nations and the International Monetary Fund have identified livestock development as the key pillar of their poverty reduction strategy in Rwanda. The Rwandan government shares this outlook and developed policies and strategies in 2012 to enhance the nation's livestock industry—particularly with respect to the poultry sector (Mbuza et al. 2017). Not only does poultry have a lower price, feed requirement, and climate footprint per kg produced as compared to beef and pork, but the poultry industry as a whole has also been more successful in adopting cost-lowering technologies. Rwanda's agricultural policies have accordingly been drafted with the intention of diversifying its meat industry through the poultry sector, increasing meat production, modernizing the livestock industry's infrastructure, and improving access to domestic and foreign markets. English, McSharry, and Ggombe (2016, 28) agree: "Livestock products (including hides and skins, dairy products, meat and live animals) are among the top emerging non-traditional exports in Rwanda. ... Development of this sub-sector has large potential to improve household incomes since 65 percent of households in Rwanda are engaged in rearing some type of livestock."

The Rwandan Ministry of Agriculture and Animal Resources (MINAGRI) is thus encouraging and funding Rwandans to expand and intensify the poultry sector of Rwanda's agriculture in order to compete with regional markets and expand the accessibility of animal products (MINAGRI 2012). In a 2012 report, MINAGRI stated that its vision for Rwanda was centered on the following objectives: (1) ensuring meat security for Rwandans, (2) using the livestock sector to combat malnutrition and poverty, (3) developing

Rwandan livestock competitiveness in Africa, (4) promoting the development of a strong and sustainable meat industry, and (5) developing foreign exchanges. The intensification strategy is already well underway, as the commercial/industrial poultry industry is growing seven times faster than smallholder livestock systems (MINAGRI 2012).

A key element of the Rwandan strategy to industrialize and commercialize its livestock production has been a comprehensive program of privatization and liberalization (CAADP 2013). By the same token, Rwanda's agricultural development strategy, investments, and policies have essentially disregarded the village farmers who make up the majority of farmers in the poultry sector. The role and value of smallholder farming systems continues to be neglected, overlooked, and extended little political significance or scientific prestige (Booth and Golooba-Mutebi 2014; Guèye 2000). Moreover, while livestock intensification features prominently in the Rwandan government's development strategy, the nation's political leadership is also seeking to diversify and modernize Rwanda's overall economy. According to the Rwanda Development Board (2018), while agriculture is projected to grow from 5.8 percent to 8.5 percent by 2018, the number of people earning a living primarily by agriculture is expected to decline from 34 percent to 25 percent. Among those who remain in the agricultural sector, there will be fewer farmers and more employment in agro-processing. Exports are expected to increase on average from 19.2 percent to 28 percent per annum; and imports are expected to remain at an average rate of 17 percent growth. The Rwandan government has sought to accelerate the transition away from low-income subsistence agriculture, and its objective over the past decade has been to evolve into a middle-income, knowledge-intensive, service-sector-oriented economy by the year 2020 (MINAGRI 2012).

### **Rwandan Agriculture in Transition: Implications for Animals**

The intensification of Rwanda's livestock sector raises important questions regarding ethical obligations to animals. When it comes to animal welfare in sub-Saharan Africa, many of the policies and laws that are in place largely concern wildlife (e.g. poaching, ivory hunting, and capture) as opposed to domesticated livestock. Masiga and Munyua (2005, 579) argue that "there is an urgent need for African countries to develop, implement, and enforce transport and pre-slaughter handling procedures and to improve handling

facilities.” Further they argue that “African countries need to develop and implement policies and legal frameworks that address animal welfare issues and, at the same time, encourage compliance through community education and awareness about animal welfare” (ibid). On the one hand, Botswana, Lesotho, Malawi, Namibia, Seychelles, South Africa, Tanzania, Zambia, and Zimbabwe currently have animal protection or animal health acts, while South Africa and Zimbabwe have animal welfare codes of practice, although a World Organization for Animal Health (OIE) report argues that with the exception of Tanzania, most countries’ existing policies are outdated (Devereux 2014; OIE 2011). Rwanda, on the other hand, has not yet developed any form of animal welfare codes, acts, policies, or laws.

The lack of animal welfare standards and laws for Rwandan livestock is emblematic of the overall structure of this country’s agricultural sector. Despite the rapid growth of the industrial livestock model, Rwanda continues to be dominated by smallholder farms, which are largely disconnected from extension services and training. Most Rwandan farmers either sell live birds and eggs directly to consumers at local markets or to village collectors who act as wholesale distributors (MINAGI 2012). The processing of the poultry meat occurs mostly on the farm level, where it is then distributed directly to retail outlets, or at the household level after live birds are bought in markets. Within the current system of primarily household slaughter and processing, there are no guidelines or regulations associated with animal welfare and handling and there is no training or education system in place to communicate better animal handling. In other words, with no developed/professional entities or companies in processing, packaging, or preservation there are no animal welfare guidelines or methods in Rwanda. This also means there are no training procedures or modern facilities to promote adherence to worker safety, biosecurity, or animal welfare protocols.

The key question to consider is whether or not Rwanda can sustainably intensify its livestock sector—while still addressing global concerns about the ethical treatment of animals—by adopting international animal welfare practices and protocols. For Busch (2008), modernization and the transition from subsistence to market-oriented agricultural production invariably revolves around the question of *standards*, and international expectations for appropriate animal welfare practices is no exception (Ransom 2007). Standardization essentially involves farmers being told by

processors and retailers that they need to conform to the latter's standards of production in order to bring their products into the global market. Optimists believe that this can ensure that animal welfare can be standardized and thus improved.

The basis upon which standards are set and determined arguably is a matter of politics and economic power as much as science. Appealing to animal welfare science as the ultimate arbiter of appropriate production standards glosses over the processes by which scientific findings are socially constructed, as this construction is always the result of political struggle between competing interest groups and ideological paradigms (Lassen, Sandøe, and Forkman 2006). As observed by Lassen, Sandøe, and Forkman (2006, 223), "It is now widely recognized that assessments of animal welfare are based on a number of assumptions which are of an ethical nature." The authors continue, "It matters a great deal how animal welfare is defined—whether it is defined in terms of animal function, of the balance of enjoyment of pleasure and suffering or pain, of preference satisfaction, or of natural living" (ibid). For example, "the U.S. government uses health indicators (e.g., presence of illness) to measure animal well-being, whereas the EU government relies upon health, productivity, physiology, and ethology" (Ransom 2007, 34). Another significant debate in the field of animal welfare measurement and assessment concerns whether or not welfare is measured in terms of the average experience of all animals or in terms of those animals that are worst off.<sup>1</sup> Assessments based upon the average experience are biased toward commercial interests (Lassen, Sandøe, and Forkman 2006), as production is organized around management and productivity in the aggregate and not the lives of individual animals. Tolerating a certain level of incorrect practices or outcomes thus results in what Perrow (1984) refers to as "normal accidents." For example, the introduction to part III of this volume notes that up to a thousand sheep of a shipment dying while in transport from Australia to the Middle East is considered a "normal" industry standard.

Standards have been increasingly relied upon in an effort to answer international criticisms of meat production and consumption as concerns are raised about environmental sustainability, animal cruelty, food safety, and social justice. These concerns are particularly acute with respect to the poultry industry. Due to chickens' small size, the mass production of chicken meat and eggs to meet consumer demand requires near-astronomical numbers of animals. It also bears worthy of mention that no

standard of production can definitely address the philosophical questions regarding the killing of animals for food in the first instance.

One of the authors of this chapter personally witnessed the animal welfare challenges facing the Rwandan commercial livestock industry. In collaborating with a local Rwandan feed mill on a development initiative, she observed first-hand the project planning and implementation. The focus of this development project was to improve the socioeconomic status of nonfarmer rural residents by training them to raise broiler chickens. This particular project is one of many in Rwanda dedicated to improving social, monetary, and educational capital for people in rural areas. Through their participation in the program, prospective farmers received a loan to fund establishment of their coop and materials for brooding, feeders, and drinkers. As a bystander to the project, the author saw how the contours of the initiative were directly shaped by the funders: a private-public partnership between a U.S. four-year public university and a U.S. international aid development agency and a local Rwandan feed mill. The funders' goals dictated how the farmers were trained, selected, and compensated. While the donors, contributors, and program managers certainly were doing what they thought was best for the farmers, there was no clear institutional process dedicated to integrating farmers' perspectives or concerns. Moreover, while the training reviewed proper poultry management, poultry nutrition, and disease control, there was little to no focus on animal welfare issues like bird handling or stocking density. This personal anecdote serves to highlight many of the concerns this chapter raises regarding ethical obligations toward animals, namely, whether or not sustainable intensification can deliver on its promise of a higher standard of living for people and animals alike.

The moral controversy surrounding the treatment of animals in countries in the global south is only exacerbated by the strains and tensions that come with the bitter and painful legacy of cultural and economic imperialism. In practical terms, we would argue that the key question is *not* whether Western values should be *forcibly* imposed on countries in the global south. All people have a basic human right to autonomy and self-determination, and history shows that imposing external values by force almost inevitably creates far more problems than it ever solves. Rather, the key question for us to consider is what the basic terms of international engagement and investment in agricultural development should be based upon. If we reject cultural relativism as a justification for any and all local

traditions and cultural preferences (e.g., denying girls access to education because they are less valued within a community), and we accept the argument that people have ethical obligations toward animals, it follows in turn that appealing to cultural relativism and local tradition is not a viable justification for any and all forms of animal treatment. As such, we would argue that a firm commitment to the moral standing and inherent dignity of animals should be reflected in the policy and practices of international development organizations.

### **Is There an Alternative? Non-Livestock-Oriented Approaches to Rwandan Food Security and Community-Economic Development**

In contrast to countries like Rwanda, the logistical challenges faced in the global north with respect to adopting healthy plant-based diets are quite minimal. Most consumers in the global north have readily available access to a wide variety of vegetables, fruits, whole grains, nuts, seeds, and legumes that can meet all of their nutritional needs. Consumers in the global north are also gaining increasing access to vegetarian and vegan offerings that are ready to “heat and eat.” In sub-Saharan Africa countries like Rwanda, plant-based diets are already being consumed, but these diets are largely comprised of starchy vegetables (e.g., sweet potatoes and cassava) and beans. It is cheaper for a household to purchase or grow traditional and local starchy plants, legumes, and pulses than meat products. When consumed on a regular basis, there is not much nutritional or flavorful variety in these crops, and this is where much of the desire to consume meat stems from. Animal-source protein products provide both rural and urban communities in sub-Saharan Africa with enhanced dietary variety that appeals to people’s cultural taste buds and increases the availability of nutrients that are not always received in the traditional starch diet. Increase in demand is one reason among many as to why the Rwandan government has positioned itself to become more intensified agriculturally through livestock.

Is it possible for non-livestock-oriented investments to effectively address Rwanda’s need for food security and community-economic development and to satisfy consumers’ palates? The traditional diet of Rwandans is starch plant-based, and fortifying staple starches can benefit diets without incorporating animal protein products. Food fortification is an innovation of food science and technology that has been used diligently

within the past century among countries in both the global north and south to help address nutrient deficiencies. The process of food fortification involves increasing the content of a micronutrient in food in order to improve the nutritional quality of the food supply and provide public health benefits (WHO 2015). Traditionally, agricultural scientists have sought to fortify foods that are already dietary staples in nutrient-deficient countries, and the fortification itself primarily has encompassed nutrients like iron, niacin, and vitamins A, D, and B. The fortification of staple foods with essential vitamins and minerals is a highly cost-effective solution to introduce diverse nutrients into the diet, especially in rural areas, where improving dietary quality through food variety is not always practical or feasible (Andersson et al. 2017; WHO 2015). Moreover, by increasing the diversity of their diets and micronutrient intake, rural villagers can increase their disposable income by being more productive in work while spending less money on medical treatments (Demment, Young, and Sensenig 2003). Rwanda has experienced particular success with the adoption and dissemination of “iron beans,” a conventionally bred variety of iron-biofortified beans. Mulambu et al. (2017) found the following:

Six years after release and thirteen years after initial research activities began, it is estimated that more than 800,000 Rwandan farm households are growing and consuming iron beans, which contain significantly higher amounts of iron than their conventional counterparts. ... An efficacy study showed that women between the ages of 18 and 27 who consumed biofortified beans exhibited increases in hemoglobin and total body iron levels. ... Strong support from the Government of Rwanda to improve nutrition and health has led to rapid integration of biofortification into its agriculture and health programs, complementing existing supplementation efforts.

With respect to community-economic development, Rwanda has already taken great strides towards diversifying its agricultural output and its economy as a whole beyond the livestock sector. Coffee and tea are among Rwanda’s top exports, second only to tourism. They also “involve the most people in Rwanda, and probably the greatest number of poor people” (English, McSharry, and Ggombe 2016, 26). With respect to cropping and horticulture, Booth and Golooba-Mutebi (2014, s180) state:

There is much room for improvement in the production of staple root crops, bananas and grains, [and] commercial horticulture is also promising as a contribution to this effort. ... Rwanda’s climate and topography are well suited to

production of a range of fruits, vegetables and flowers. A broad band of cool and humid terrain in the west is suited to European-style fruits and vegetables, including beans, peas, cauliflower, mushrooms, citrus fruit and strawberries. The warm and humid central-south is ideal for tropical fruits such as banana, passion fruit and pineapple. The warm and dry north-east is suited to groundnut, sunflower and pulses.

Such a diverse array of potential agricultural products offers the possibility of a more varied diet, both for nutritional needs and for consumer palates.

Other valuable investments in local food security could be made in smallholder agroecological cropping. Isaacs et al. (2016, 491) observe that “in Rwanda, farmers’ traditional farming systems based on intercropping and varietal mixtures are designed to meet a variety of livelihood objectives and withstand risks associated with fluctuation in market and agro-climatic conditions.” The authors note, however, that mixed farming systems have been disappearing since 2008 when the Rwandan government mandated intensification strategies. From their own research, the authors found that improved intercropping systems tend to outperform the government-mandated system of alternating sole-cropped bean and maize season by season. This leads Isaacs et al. (2016, 491) to conclude that while Rwanda’s agricultural intensification strategy “aims to improve rural livelihoods through agricultural modernization, it fails to acknowledge the multiple and currently non-replaceable benefits that diverse cropping systems provide, particularly food security and risk management.”

While agricultural growth and productivity provided a needed boost to Rwanda’s post-1994 poverty reduction efforts, the emergence of the Rwandan service industry “became a leading sector in growth for much of the last two decades” (Ggombe and Newfarmer 2017, 10), and continued investment in this sector is essential to its regional economic competitiveness (Ggombe and Newfarmer 2017). As noted by English, McSharry, and Ggombe (2016, 24), the tourism sector “is relatively labour intensive and requires a wide range of skills. Many of the jobs are low skill, but typically better paid than agriculture, thereby contributing directly to poverty reduction.” Information and communication technology (ICT) is another rapidly ascending industry in Rwanda, and Rwandan “technological innovation could stimulate and sustain economic diversity and trade creation” (Murenzi and Hughes 2006, 258). One intriguing pathway toward further expansion in the Rwandan ICT sector is tech/innovation hubs, which are

“organizations that support entrepreneurs as they develop and launch their ventures” (Obeysekare, Mehta, and Maitland 2017, 1). In listening to Rwandan tech entrepreneurs who participated in these hubs, Obeysekare and colleagues (2017, 1) found that “such communities can promote creating new humanitarian technologies that solve local problems,” namely, through cultivating innovation ecosystems, creating new businesses and ideas, providing needed infrastructure, facilitating community and networking, and giving local entrepreneurs a sense of status, prestige, and success.

Rwanda has already begun to transition away from farming as its economic mainstay, and has achieved rapid growth in ICT, but it still has a long way to go before it can attain middle-income status and compete in the global market for ICT and other professional services (English, McSharry, and Ggombe 2016). Further investments in tourism, agro-processing, infrastructure, electrification, financial services, transportation, telecommunications (especially mobile services and broadband), urban services, public-private partnerships, technical and vocational education, and higher education offer particular promise (English, McSharry, and Ggombe 2016; Ggombe and Newfarmer 2017; Murenzi and Hughes, 2006).

## Discussion

Sustainable global development requires all-inclusive thinking about conservation, human responsibility, environmental justice, and related challenges that transcends specific issues, interests, and causes (Ziser and Sze 2007). Countries in the global north must therefore be reflective on their moral obligations with respect to the legacy of Western colonialism and imperialism, environmental and climate justice, food sovereignty and cultural sovereignty, and ethical obligations toward animals. The moral question that served as the inspiration for this chapter—namely, whether or not the international development community should emphasize livestock versus alternative approaches to agriculture development—still remains.

Our goal with this chapter was not to answer this question definitely for readers, but rather to help broaden the conversation and provide resources through which students, scholars, practitioners, and other professionals can engage in a more informed exploration of this topic. While there is no silver bullet solution for the constantly evolving questions of humans’ obligations toward animals, and Rwanda is no exception, a

loose-knit consensus may be coalescing around a shared desire for expanding and democratizing access to education, public health care, fortified foods, and agricultural knowledge and technology. Investing in girls' education and public health care programs, particularly voluntary family planning initiatives, can help to mitigate population growth, improve food security, reduce malnutrition, and increase lifetime wages (PRB 2010). Expanding community knowledge about sustainable agricultural practices—including traditional and indigenous methods of farming—can also provide people with more options and agency over their livelihoods. Lastly, technology transparency is a means by which the global north can share technology that is adaptable and useful for all farmers. Many small-holder farmers in sub-Saharan Africa nations lack access to training, technical knowledge, new cultivars, and other technologies that could help them to improve their farming operations. Exposure to technological training for sub-Saharan Africa farmers can help to mitigate the social and environmental injustices that are faced by both people and animals.

To be sure, many of the agricultural techniques and practices that are currently circulating across the globe, like confined animal feeding operations and genetically modified crops, are controversial. These disagreements are unlikely to be resolved in the immediate future, but accepting and disseminating the intensification of livestock production (and all the negative consequences that come from this intensification) without considering and then investing in viable alternatives seems highly problematic. What governments, companies, agricultural scientists, development organizations, and farmers can do, however, is to recognize and take seriously the fact that all species strive to avoid pain and suffering. Indeed, recognizing the inherent moral worth of human and nonhuman animals is not mutually exclusive. This recognition is but a launching point for ever more inclusive, creative, innovative, and dynamic approaches to equitable and sustainable food systems.

## Notes

1. For an alternative conception of animal welfare, which is based upon individual care, see Buller and Morris 2003.