Food and Agriculture Organization of the United Nations

University of Peradeniya

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POLICY BRIEF

# INDIGENOUS LIVESTOCK AND POULTRY FOR ALLEVIATING UNDER-NUTRITION AMONG WOMEN AND CHILDREN IN RURAL FARM-HOUSEHOLDS OF SRI LANKA

**This policy brief examines the potential of indigenous livestock and poultry for alleviating under-nutrition among rural small-holder farm families who depend on indigenous animals for their food needs, income, manure and draft power. The brief demonstrates the benefits that can be acquired by introducing indigenous animals to small-holder food production systems.**

**At the household level, these low-input systems are mostly managed by women and hence their development helps in empowering rural women by enhancing their livelihoods and family nutrition. At the farm level, inclusion of indigenous animals to the food production systems can make systems more resilient to climate change. At a community level, they help in strengthening social ties and protecting certain cultural values. At national and global level, they bring in benefits through conserving the gene-pool and protecting agro-biodiversity. Despite such benefits, a secular decline of indigenous animals from the farming systems of Sri Lanka is evident. A number of policy and regulatory reforms are suggested to realize the untapped potential of indigenous animals.**

## NUTRITIONAL STATUS OF WOMEN AND CONSUMPTION OF ANIMAL SOURCE FOOD

The nutritional status of women carries important implications on her health as well as the health of her children. Malnutrition among women in child bearing age results in reduced productivity, increased susceptibility to infections, slow recovery from illness, and heightened risk of adverse pregnancy outcomes. Low pre-pregnancy Body Mass Index (BMI) and short stature of women are risk factors for poor birth outcomes and delivery complications.

According to the 2016 Demographic and Health Survey (DHS) (Department of Census and Statistics, 2016), the prevalence of thinness among ever-married women aged 15-49 years in Sri Lanka is 9.1 percent. Only 45.7 percent of women have a healthy BMI, with 45.3 percent either overweight or obese. Being underweight and overweight can impact negatively on an unborn child.

The causal relationship between nutritional status and food consumption patterns is well established. A diet characterized by insufficient intake of calories, protein, vitamins and minerals can lead to multiple forms of malnutrition. According to the 2016 DHS, approximately 62 percent of mothers (aged 15-49 years with a child less than three years of age) consumed meat/fish/shellfish/poultry/egg and 21.6 percent of mothers consumed cheese/yoghurt on the day or day before the interview. Intake of meat/fish/shellfish/poultry/egg and cheese/yoghurt is much lower in the estate sector, at 47.4 percent and 12.6 percent, respectively (Department of Census and Statistics, 2016).

## NUTRITIONAL VALUE OF ANIMAL SOURCE FOOD

Increased consumption of products produced from livestock and poultry is one of the channels to improve food and nutrition security. Adequate nutrition is particularly important during the first 1000 days of life-during pregnancy, lactation and early childhood (Black *et al.,* 2013). The inclusion of even modest amounts of animal source foods in the diet adds much needed nutritional value.

From a nutritional perspective, animal source foods are:

> generally energy-dense and an excellent source of high-quality protein. Proteins found in animal source foods contain a full complement of essential amino acids and mostly resemble the proteins of the human body in their amino acid composition. Furthermore, the presence of heme protein in a meal enhances the absorption of zinc and iron from cereal and other plant-based foods, addressing micronutrient needs (Abbaspour *et al.,* 2014);

> containing micronutrients including iron, zinc, iodine, calcium, and vitamins B12 and A, all essential for growth, development and health of children and adults, particularly women. Calcium is particularly essential for development and maintenance of the bones and teeth and milk and milk products constitute the most important dietary source of calcium. Without the consumption of milk and milk products, it would be difficult for a child to meet their daily requirements from a cereal-based diet (Ross *et al.,* 2011). Whilst many plant-based foods contain these micronutrients, they are often poorly absorbed, thus their bioavailability is low, in comparison to animal source foods.

In addition to the above nutritional values, products of indigenous animal species possess medicinal and therapeutic properties (Rajapakshe *et al.,* 2015). According to traditional beliefs, milk from Sri Lankan indigenous cows is free from the milk protein that triggers cow milk allergy in humans. Furthermore, milk from indigenous cattle has higher consumer demand in cottage milk processing areas, such as in the Southern Province of Sri Lanka. This demand is due to the firm curd structure and the flavor developed by the comparatively high fat content of milk from indigenous cattle. Furthermore, recent studies have found that indigenous chicken meat carries better physicochemical and sensory parameters than meat from commercial broiler chicken (Rajapaksha *et al.,* 2014), whereas indigenous chicken eggs contain high mineral and fat contents (Senarathne *et al.,* 2016).

## THE CONTRIBUTION OF INDIGENOUS LIVESTOCK TO FOOD AND NUTRITION SECURITY

Indigenous livestock and poultry contribute to food and nutrition security at different scales. At a household level, evidence demonstrates that indigenous livestock and poultry keepers consume more animal source foods and they contribute to food and nutrition security at the household level (Hetherington *et al.,* 2017; Murphy & Allen , 2003; Randolph *et al.,* 2007; Smith *et al.,* 2013). As products of indigenous livestock are perishable and thus generally consumed in fresh form and travel through short value chains, the communities which consist of livestock keepers benefit more when compared to urban consumers. The keepers of livestock with a market orientation earn additional income from sales and thus contribute to accessibility of more nutritious food.

It has been noted that poultry and small animals are mostly owned and managed by women. In such cases there will be double dividends; as when a woman earns, they contribute more to decision making at the household and their decisions are more favorable towards improving the nutritional status of children. Income from indigenous livestock is more stable and predictable as these animals are resistant to various pest and diseases and climatic conditions.

## LIVESTOCK AND POULTRY REARING SYSTEMS IN SRI LANKA

The livestock and poultry production systems in Sri Lanka are characterized by three groups of farm animals namely (i) exotic, (ii) mixed, and (iii) indigenous breeds. The exotic and mixed breeds are predominant in large scale commercial farms which are characterized by intensive management systems. The indigenous breeds occupy a significant position in the extensive production systems, including home gardens practiced by small-holder farmers, which is the most predominant system in the country. These are low input systems and most farmers rear more than one species at a time.

Village chicken, village pigs, local types of ruminants including Lankan cattle, white cattle, Lankan buffaloes, Lankan goats and Jaffna local sheep have been recognized as key players in these systems.


Among different species, chicken is the most common avian species reared, especially as a backyard bird in numerous home-gardens which constitute approximately 15 percent of total chicken production (Chandrasiri, 2002). At present, the native cattle in Sri Lanka (Bos indicus var. Ceylonicus) called "Lankan Cattle" or "Batu Haraka" is the locally-adapted cattle in the country, descending from the ancient cattle introductions and possesses a unique genotype. Though exact estimates are not available, indigenous cattle and their crosses occupy 60 percent of the total cattle population in the country and are predominant in these farming systems (Ibrahim *et al.,* 1999). Pigs are mostly found in the west coast of the country. Buffaloes are distributed in lowland areas and highly dense in the central part of the country. Indigenous goat production is practiced as an extensive production system in the country, especially in the dry and intermediate zones as a traditional form of livestock production. Goat farming is especially popular among the rural farming community and thrives under resource poor conditions.

## MULTIPLE DIVIDENDS FROM INDIGENOUS LIVESTOCK AND POULTRY

Given the widespread farming systems that occupy indigenous animals, especially in resource-poor conditions, the indigenous category of livestock and poultry can contribute immensely to the fulfillment of food needs, especially of vulnerable communities (Wijayasena *et al.,* 2014; Chandrasiri, 2002). It should however be noted that their production alone is not sufficient enough to fulfill the growing demand for animal source food in the country. In many instances, 15 to 20 percent productions are fulfilled by products of indigenous animals (Thillini *et al.,* 2016). They are however capable of performing provisioning, supporting and cultural services within variety of farming systems.

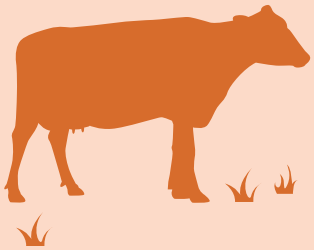
## SEVERAL BENEFITS OF INDIGENOUS LIVESTOCK AND POULTRY INCLUDE:

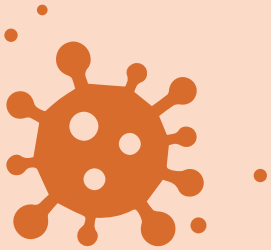
**Income stability and insurance function:** Growing and selling livestock enables rural families to enter the cash economy. In this way, livestock production provides increased income stability without disrupting other food producing activities. The contribution of indigenous cattle to total tangible income ranged from 0 to 90 percent in different regions which includes non-food products such as manure, draft power, hide and skin etc. (Abeykoon *et al.,* 2013).

**Conservation of the gene pool:** Indigenous farm animals possess a very high genetic variability and harbour a wealth of genetic resources.

**Women empowerment:** Women play a key role in decisions about livestock and poultry management and animal source products.

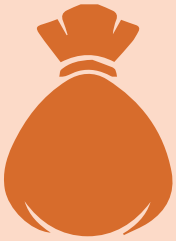
**Climate resilience:** Indigenous animals are adaptable and able to thrive in harsh environments. In particular, the scavenging and broody behavior has enabled them to better suit to the village environment in Sri Lanka. Having indigenous animals in the farming system make efficient utilization of available resources and enhance its interconnectivity to bring climate resilience.





**Disease resilience:** Being adapted to local tropical conditions, many of the indigenous animals are showing resilience to commonly occurring disease conditions. For instance, the Lankan goats are found to be tolerant to internal parasites (Abeykoon *et al.,* 2013).

**Socio-cultural activities:** Indigenous animals are especially associated with certain cultural activities of different social and ethnic groups. Scarifying, exchanging as gifts, giving as dowry and settling as labour costs are some of the occasions where indigenous animals are commonly used by certain social and ethnic groups.



## EROSION OF INDIGENOUS LIVESTOCK AND POULTRY FROM THE FARMING SYSTEMS

An erosion of indigenous livestock and poultry from the farming systems in Sri Lanka has been observed over the years. Several factors have contributed to such changes, including;

**Incentivizing of farming systems with exotic genetic resources:** In Sri Lanka and globally, there is an increasing demand for animal source foods (Speedy, 2003). Low production levels of indigenous livestock and poultry species mean that they are less competitive, in comparison to commercial and cross-breeds. There has been a rapid expansion of commercial livestock and poultry industries in recent years, largely due to the incentives provided by the government through various production, trade and marketing interventions, leaving less attention on indigenous animals. As a result, indigenous animal rearing is a livelihood only by a small majority (Kurukulasuriya *et al.,* 2018).

**Shrinking of grazing lands:** production of Indigenous animals is an extensive system which requires large extents of land. The existing production systems are under threat of land fragmentation and human population expansion, leading to low access of grazing and scavenging grounds, narrowing the feed resource base for indigenous animals. Diminishing availability of common lands is the main problem indicated by the farmers to rear indigenous livestock, especially indigenous cattle.

**Lack of well-developed supply chains:** It has been revealed from consumer surveys that there is a willingness to pay for products of indigenous livestock and poultry. For example, village chicken meat and eggs have more demand than boiler meat and commercial chicken eggs. Village chicken eggs obtain around 30 to 40 percent of premium price compared to commercial eggs and the premium price for village chicken is 50 to 100 percent higher than that of broiler meat. However, the volume of indigenous chicken meat sold is very low in Sri Lanka compared to exotic meat, due to lapses in collecting network and infrastructure facilities in general for marketing indigenous animal products (Weerahewa & Silva, 2010).

**Taboos, Myths and Culture:** Indigenous animal production systems are constrained by religious and social taboos and environmental issues, particularly for village pig production, despite the growing demand for produce. Local government authorities are reluctant to issue new permits to establish piggeries in highly populated areas due to pollution. Moreover, most cattle farmers keep animals for milk and not for meat purposes. Hence, most of them do not want to cull unwanted or unproductive animals from herds fearing that they end up with butchers. This has paved a way for creating a very informal meat industry in the country leaving unhealthy repercussions for the growth of the cattle industry. Absence of a proper system of disposing animals and practice of illegal slaughtering have created favorable situations for exploitation of genetic resources of both indigenous as well as improved commercial breeds.

**Insufficient availability of breeding materials:** The availability of adequate and quality breeding materials hinders sustainability of their production (Silva *et al.,* 2010). The nature of benefits given by farming systems with indigenous animals and the constraints they face indicate a need to conserve indigenous animals using public policies and regulatory reforms.

## RECOMMENDATIONS FOR POLICY AND REGULATORY REFORMS

It is evident that introduction of indigenous livestock and poultry to farm production systems help in enhancing the nutritional status of the women farmers and vulnerable members in their families. Once their place is secured in the farming system, further benefits to the household th rough income generation and stability of income to the community through securing social networks, and globally, through conserving valuable gene pool, can be reaped.

Given the characteristics of indigenous animals and their keepers and the agro-ecological conditions of the locations they live in, commercialization of the systems through scaling up and intensification is not pragmatic. Furthermore, given the low yielding nature of indigenous animals and sizes of herds, the surplus generated is not sizable enough for large scale processing and further value addition. What is needed is to raise awareness of multi-stakeholders on the benefits of introducing indigenous animals to existing farm production systems, building capacity of livestock and poultry keepers on effective management practices, making breeding materials available, and preventing further erosion of the gene pool through sustainable utilization and preservation.


Accordingly, the GEF-INEP-ILRI Asia FAnGR project (Thillini *et al.,* 2016), implemented by the Faculty of Agriculture of the University of Peradeniya proposes several policies and regulations to harness the potential of indigenous livestock and poultry in Sri Lanka. Recommendations to enhance nutritional benefits provided by indigenous animals are as follows:

**1. Raising awareness of the benefits of Indigenous livestock, paying special attention to women and women community organizations.**

**2. Capacity building of keepers of indigenous livestock and poultry.**

- Dissemination of community-based management strategies which facilitate the exchange of experience and knowledge between farmers.
- Introduction of husbandry and breeding techniques compatible with traditional practices and women-friendly technologies.
- Target training and extension programs towards women who constitute the majority of keepers.

**3. Making breeding materials available.**

- Promote selection within indigenous animals for genetic improvement.
- Discourage indiscriminate crossbreeding with exotic animals, and promote planned crossbreeding programmes.
- Establish a programme to provide required breeding materials of indigenous animals for promotional programs in rural areas.
- Use provisions of the Animals Act No. 29 of 1958 to regulate movement and slaughtering of indigenous animals and facilitate slaughter of unproductive animals and take necessary measures to avoid inbreeding of animals.
- Streamline land-use planning; zoning for grazing and agricultural lands.

• Strengthen activities of anti-mortem inspection, slaughtering and postmortem inspection and meat inspection.

• Implement the regulation on percentage of gene levels of exotic breeds based on the agro-ecological regions.

**4. Conservation of the gene-pool.**

• Facilitate the conservation of indigenous Farm Animal Genetic Resources (FAnGR) through the establishment of nucleus farms and animal care centers.

• Use the provisions of existing trade laws efficiently and effectively to regulate exports and imports of indigenous animals.

• Encourage research related to the conservation of indigenous FAnGR together with establishing research farms.

• Identify designated state farms in suitable climatic regions to preserve the indigenous gene-pool.

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