



BIODIVERSITY
FOR FOOD AND
NUTRITION

Harvesting the Benefits of Local Foods: from Healthy Diets to Sustainable Growth

The integration of **nutrient-rich indigenous foods** into **balanced diets** offers a cost-effective, long-term and sustainable alternative to quick-fix nutrition interventions, as well as significant **healthcare savings**. Investments in nutrition interventions are estimated to provide returns as high as 18 times the cost of implementation. Furthermore, building the capacity of **smallholder farmers** to produce these foods and linking them to local markets can lead to direct improvements in productivity, boosting national **economic growth** and **social development**.

Key Messages

- 1 **Food biodiversity** contributes to **healthy diets** and provides a wide range of nutritious options to choose from that meet diverse cultural and taste preferences.
- 2 **Value chain** development and **capacity building** of chain actors is essential to increase production of nutrient-rich indigenous foods and successfully link farmers to markets.
- 3 Nutrient-rich indigenous food can be easily incorporated into current farming systems, improving **environmental sustainability** and **farmer resilience** against global shocks.
- 4 **Local market outlets** can help enhance awareness of healthy foods, rediscover culinary traditions and become a healthy alternative to low nutrient fast food chains.
- 5 The appreciation and use of indigenous foods helps maintain **cultural heritage** and **national identity**.

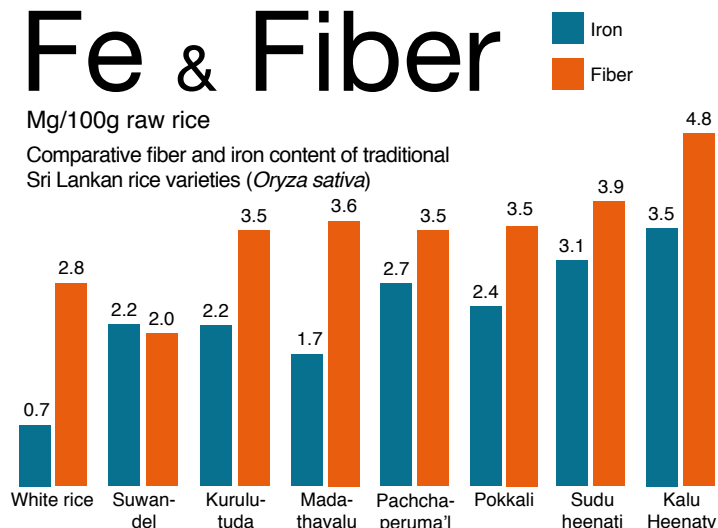
Actions for Policymakers

- 1 Support food biodiversity **conservation** and **promote diversification** of food and agricultural systems at the local and national level.
- 2 Invest in value chain development for new biodiversity products to enhance local **agriculture** around biodiversity and improve farmers' **livelihoods**.
- 3 Develop sectoral **policies** that integrate biodiversity for food and nutrition objectives and culturally-sensitive nutrition education.
- 4 Support the establishment of **local market outlets** popularizing the use and consumption of traditional plants and animal species throughout the country.
- 5 Create **awareness campaigns** regarding the benefits of indigenous vegetables and other nutrient-rich indigenous foods.

Fe & Fiber

Mg/100g raw rice

Comparative fiber and iron content of traditional Sri Lankan rice varieties (*Oryza sativa*)



Sources: BFN Sri Lanka; Indian Food Composition Tables 2017 (Longvah et al.)



Credit: BFN/S.Landerz

Sri Lankan rice varieties (*Oryza sativa*) showcased at the Traditional Food Fair 2014.

The Potential for Food Biodiversity in Sri Lanka

Sri Lanka is one of the world's 34 **biodiversity hot-spots** and home to a wide variety of edible species¹ including wild plants, local animal breeds, food crops and varieties. For thousands of years, Sri Lankan farmers have maintained a rich variety of biodiversity in their fields but urbanization and generational changes in food preferences and lifestyles have led to changes in food production and eating habits².

Although the health and living standards of Sri Lankans have improved in recent years, malnutrition continues to be a serious problem, with current diets failing to deliver sufficient nutrients at critical stages in youth development. Today, **one-third of Sri Lankan children are malnourished**, with 35% Vitamin A and Iron deficiency in children under five^{3,4}, while the 58% rate of anaemia in new-borns⁵ also reflects high deficiencies in adult women. Ironically **these nutrients are available** in high quantities in many local foods⁶.

Nutrient-rich indigenous species are a largely untapped resource for establishing long-term food security, and require greater technical, political and financial support as well as incentives for farmers to conserve plant genetic diversity and raise awareness of the importance of these species⁶. For example, **local rice varieties** are generally higher in vitamins and minerals, and could substantially improve intake of nutrients, such as iron, if consumed instead of common white rice. **Traditional green leafy vegetables** are also a rich source of iron and vitamin A (see graphs above).

Research shows that including biodiversity in food systems and diets can help **solve national diet-related nutrition and health issues** by providing ready access to the diversity of nutrients needed for healthy growth and living⁷. Diet quality is strongly linked to the number of species grown on farm⁷ and the availability of food species in the wild⁸, particularly for rural poor with low purchasing capacity². Therefore, it is critical that research and development make better use of this diversity in diets to ensure that Sri Lankan children and adolescents develop to their full physical and mental potential⁹.

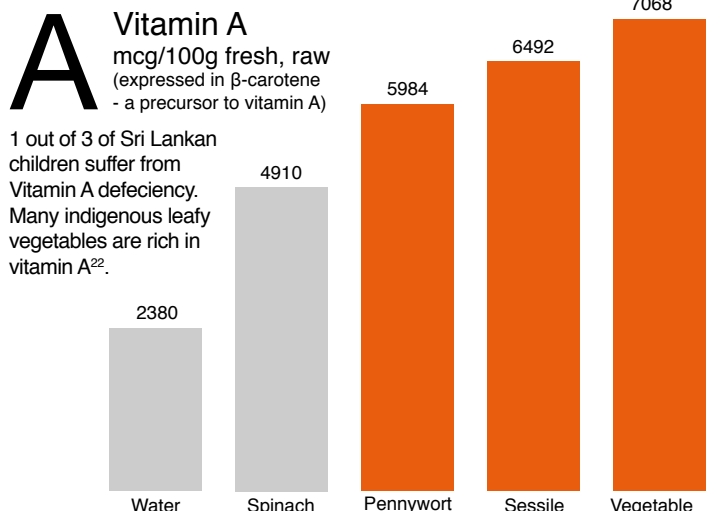
The Multiple Benefits of Food Biodiversity

In addition to improving diet quality, promoting the production of food diversity, raising awareness of its importance and linking farmers to markets for these foods can **generate reasonable incomes, support rural development and protect the environment**¹.

Indigenous biodiversity can help the 750,000 Sri Lankans affected by **climate change** each year, especially the many smallholder farmers who practice traditional rain-fed agriculture¹⁰. Indigenous species can boost **farm resilience** because they are well adapted to local soil, climate and other environmental conditions¹¹. In addition, many local species require fewer inputs and are available year-round, particularly in months of greater food shortage¹².

Precious knowledge of agrobiodiversity-friendly **traditional practices** such as the chena, owita and Kandyan home gardens systems already exists in Sri Lanka^{13,14,15,16} and further research of these agricultural systems is needed for better integration of nutrient-rich indigenous species. This could generate important short, medium and long-term benefits for Sri Lanka's population and its sustainable economic growth while achieving multiple SDG and CBD targets^{7,17,18,19} (see diagram to the right).

*The GEF Mainstreaming Biodiversity for Conservation and Sustainable Use for Improved Human Nutrition and Wellbeing Initiative (BFN) is led by Brazil, Kenya, Sri Lanka and Turkey and coordinated by Bioversity International, with implementation support from UN Environment and the Food and Agriculture Organization of the UN. Additional support for the project is provided by the CGIAR Research Program on Agriculture for Nutrition and Health. The project contributes to the Convention on Biological Diversity's Cross-cutting Initiative on Biodiversity for Food and Nutrition.



Sources: BFN Sri Lanka; Food Composition Table for Bangladesh (Uni. of Dhaka, 2013)

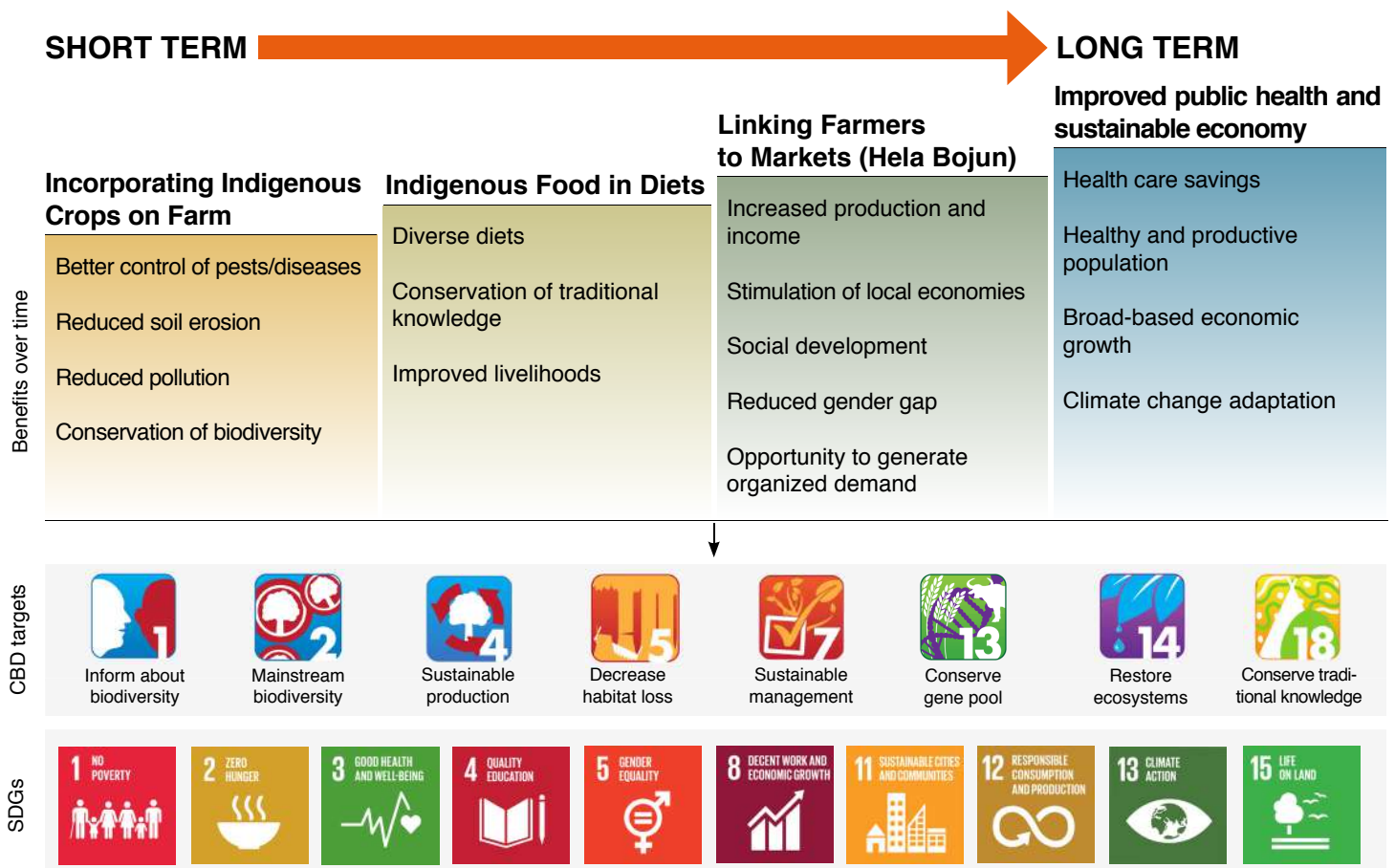


Credit: Wikimedia/Forest & Kim Starr; Credit: Bioversity International/R. Vernooy
Vegetable hummingbird tree (*Sesbania grandiflora*) and a farmer displaying a selection of green leafy vegetables.

Uncovering the Value of Traditional Crops

Current information on the nutritional composition of traditional Sri Lankan foods is limited, and any data that exists is at risk of becoming outdated due to advancements in the accuracy and precision of testing methods. Therefore, in collaboration with the Department of Agriculture of the Ministry of Agriculture and Peradeniya and Wayamba universities, the BFN Project* prioritized **28 traditional edible plant species and 58 varieties** according to their perceived nutritional value, cultural importance and associated traditional knowledge or medicinal properties. The subsequent food composition data includes traditional rice, cereals, pulses, root and tuber crops, vegetables,

leafy vegetables and fruits, and is now available on a dedicated **national database**Y soon to be linked with the international **FAO/INFOODS database**²⁰. This evidence also contributed to Sri Lanka's updated **National Biodiversity Strategy and Action Plan (NBSAP)**²¹, which works towards national targets such as 2. *Promote and mainstream underutilized, lesser-known or neglected food crops, livestock and food fishes, which provide nutrition*. The continued integration of biodiversity research with national policies helps establish long-term support for **biodiversity as a link between agriculture and health**, thus ensuring conservation and sustainable use.



The World Health Organization recommends at least 400 g of fruits and vegetables per day. All fruits and vegetables contain valuable vitamins and minerals thus eating a diverse selection contributes to a balanced and healthy diet.¹⁵

Raising Awareness

Communities can be **empowered** through wider recognition and use of local biodiversity. In order to train communities on the production and sale of local roots and tubers, **school gardens** and **demonstration plots** were established in the area of Aranayaka, Kegalle District. The initiative, in collaboration with the Community Development Centre, embraces 18 villages and directly benefits more than **2,000** individuals. Additional projects include **home gardens** for school children in Gampola in collaboration with the Department of Agriculture, and a **women self-employment program** popularizing nutritious herbal food and beverages held by the Department of Ayurveda.



Credit: Bioversity International/D. Hunter

Cooking competition using indigenous species during Colombo Food Festival, 2017.

Hela Bojun - True Sri Lankan Taste

Market outlets can boost **local economies**, **public awareness**, and **consumer health** by selling traditional crops and serving freshly-prepared meals from locally grown species. Under the brand name “Hela Bojun - True Sri Lankan taste”, 17 outlets have been selling healthy food at competitive prices. The popular businesses are operated by women trained by the Women Farmers Extension Program of the Department of Agriculture, who have been empowered to **earn a living** (\$600-800/month) while conserving and protecting biodiversity. Some outlets provide additional marketing opportunities by selling and processing target crops and derived products (such as specialty flours and snacks), while a Hela Bojun **recipe book** provides the nutrient profiles of 36 local dishes. Scaling up the project and integrating market outlets in all corners of Sri Lanka can revive local food culture while contributing to the country's Gross Domestic Product (GDP)²³.

Local Crops, Novel Products

In addition to featuring at eateries that promote traditional cuisine, indigenous flavours can reshape **novel food product development**. For example, collaboration with the National Food Promotion Board under the Ministry of Agriculture, is supporting the production and commercialization of beverages that balance traditional and modern techniques to process underutilized varieties of ceylon olive (veralu), mango (amba), and soursoup (katuannoda) under the brand ‘Sun Mack’²⁴. Their increased market prominence promotes unique biodiversity while matching the fast-paced changes in food preferences and consumption habits²⁵. Subsequent small- and medium-sized **enterprises** can increase **sustainable local livelihoods**, with proper support.

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