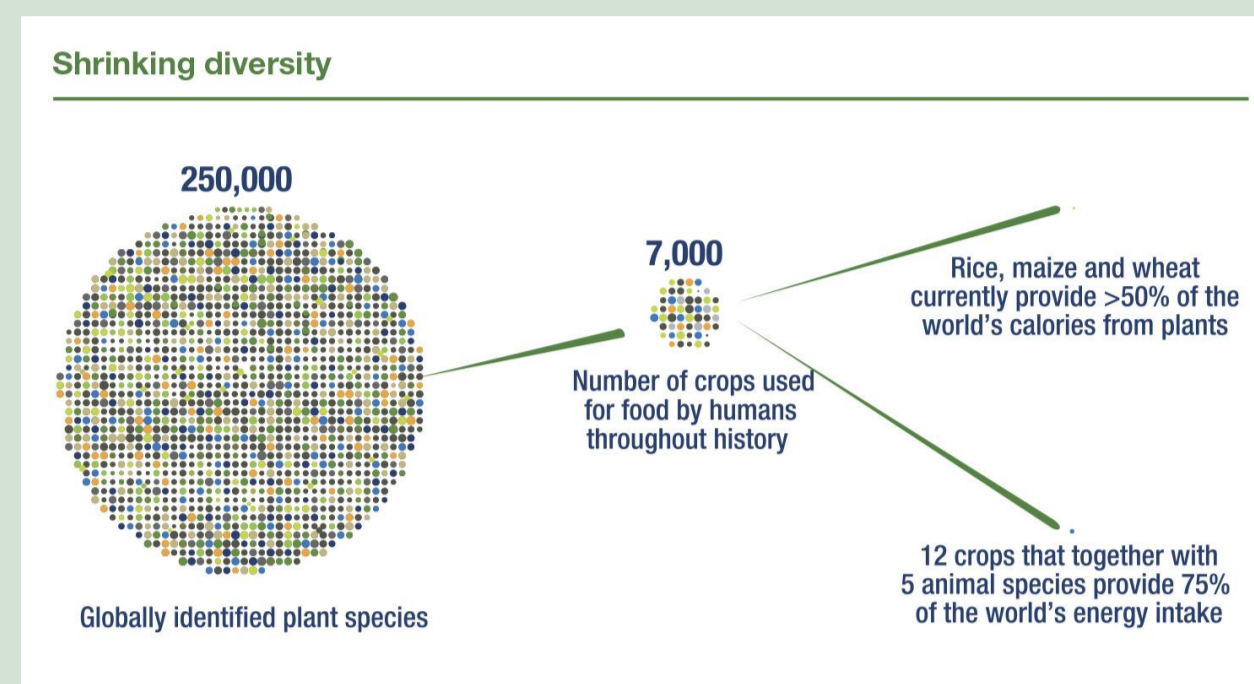


# Holistic Value Chain Approach for Neglected and Underutilized Crop Species

## Neglected and Underutilized Species (NUS)

The bulk of research and development attention has been devoted to a very few crop species in the last century, which has resulted in increasingly homogeneous farming landscapes and diets around the world.

Humans have cultivated and collected 7,000 plant species throughout history but today farmers fields are dominated by just three crops – rice, wheat and maize - which provide more than half of plant-derived calories in human diets.



Many crops that used to be important in traditional cuisines have declined in production and are at risk of being lost as the knowledge on their use is progressively forgotten. These crops are known as neglected and underutilized species, or NUS for short.

The reduction of diversity in global food systems is a grave concern because it corresponds to declining diet diversity and nutrition imbalance, as well as eroding resilience and adaptability of production systems to climate change and uncertainty.

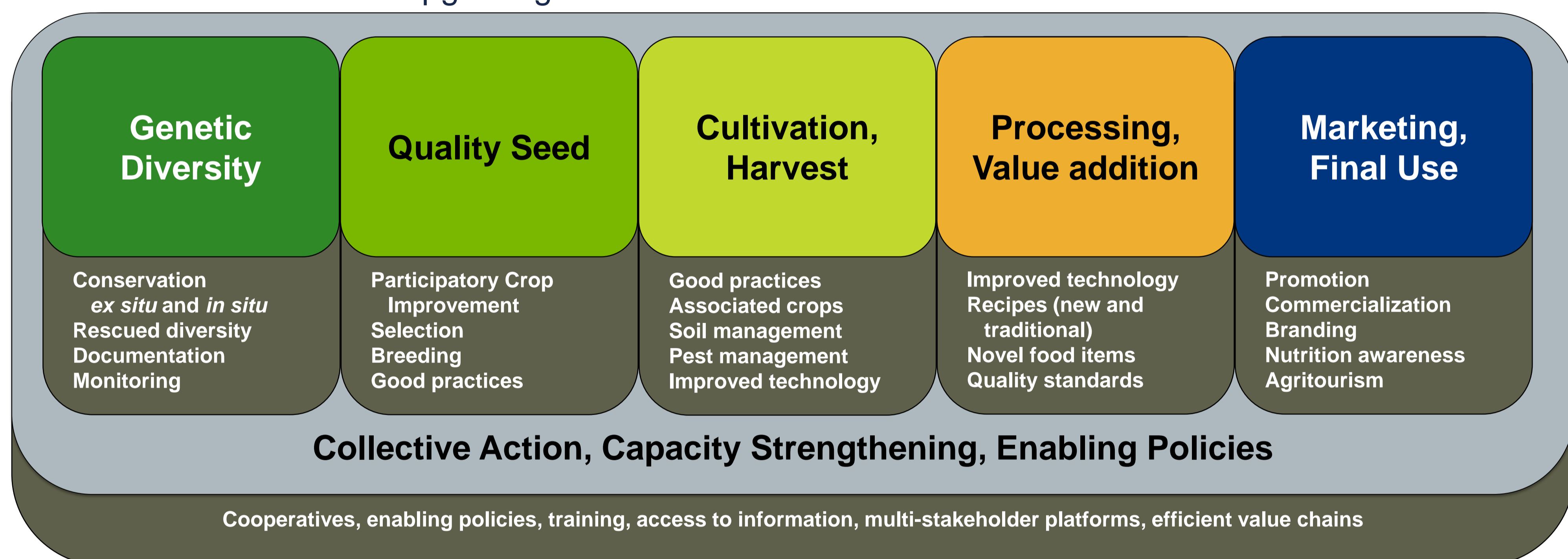
## Realizing the Benefits of NUS

Neglected and underutilized species hold great potential to address critical development challenges (hunger, malnutrition, poverty, sustainability and climate change) because they include crops with the capacity to grow under marginal low-input conditions, important nutritious qualities, and other unique values that can generate income for the rural poor. Their local environmental and cultural specificity means their promotion can contribute to strengthening local identities and empowering marginalized groups, especially women who are often the primary cultivators of these crops.

Despite their potentials, many neglected and underutilized species are not cultivated widely or intensively because they have traits that hinder their cultivation, use, or marketability. Limited seed availability, low yields, laborious processing, and lack of markets are just a few of the constraints that keep these species under the title of “neglected and underutilized”. In many cases these crops also carry a stigma as “food of the poor” that must be overcome in order to increase demand. Typically these crops face multiple bottlenecks at different points in their value chains but these problems are not insurmountable!

Directing research attention to promising neglected and underutilized crops can be instrumental in overcoming their constraints and realizing their potential to address global challenges. Bioversity International and partners have been developing and testing a holistic approach to value chain development of neglected and underutilized species that addresses issues across the inter-related segments of the value chain, bridges the gap between conservation and use, and leverages the nutrition and sustainability benefits of target crops to achieve livelihood and sustainability benefits. This approach has been developed and tested prominently through the decade-long IFAD-NUS project which has worked to promote minor millets in South Asia, as well as Andean grains in South America.

## Value Chain Elements for Upgrading



**Figure 1.** Entry points along the value chain to improve supply and demand for neglected and underutilized species. Action taken to foster collective action, strengthen capacities, and develop an enabling policy environment for all stages of value chain development.

## Promoting Minor Millets in India

Minor millets are the traditional staple crop in many parts of India but they have declined in cultivation and consumption, being replaced by rice and wheat. These crops are high in calcium, iron and dietary fibre and have a more balanced amino acid profile compared to rice and wheat. They also mature quickly and are adapted to a range of marginal conditions where wheat and rice are unsuccessful. Through the IFAD-NUS project and other initiatives, the M.S. Swaminathan Foundation in partnership with Bioversity International and others has promoted minor millet consumption and cultivation in the Kolli Hills, Tamil Nadu and beyond through a holistic value chain approach. Some highlights of this effort, carried over 15 years are as follows:

- **Genetic Diversity:** Community seed banks were established in 17 villages, landraces were collected and stored in the genebank in Chennai, monitoring of millet cultivation was initiated in Peoples' Biodiversity Registers
- **Quality Seed:** From 7,000 genebank accessions, farmers selected 2-3 preferred varieties of finger millet, little millet and foxtail millet. Access to quality seed was increased through community seed banks
- **Cultivation and Harvest:** Intercropping, row planting, weeding and fertilization methods were demonstrated to farmers and trials performed to optimize practices
- **Processing & Value-Addition:** Mechanical micro-mills were introduced to 13 villages to reduce drudgery in processing, novel products and recipes were developed (e.g. biscuits, breads & noodles), women's self-help groups were trained on processing, value addition and marketing, a federation of self-help groups was formed for production & marketing
- **Marketing and Final Use:** Consumer preferences were researched, labels and packaging improved, awareness raised on nutrition value of millets through farmer fairs, tv & radio

As a result of the interventions, yields of millets increased by as much as 77% with a corresponding increase in income of up to 50%. The Kolli Hills Natural Foods Federation is producing 11 value added products that are being sold across Tamil Nadu. In 2014 6.63 tonnes of millet value added products were sold with gross income of Rs. 50,201. Lobbying led to inclusion of millets in the public distribution system, which has provided an unprecedented opportunity for creating more resilient production and food systems in India.

