

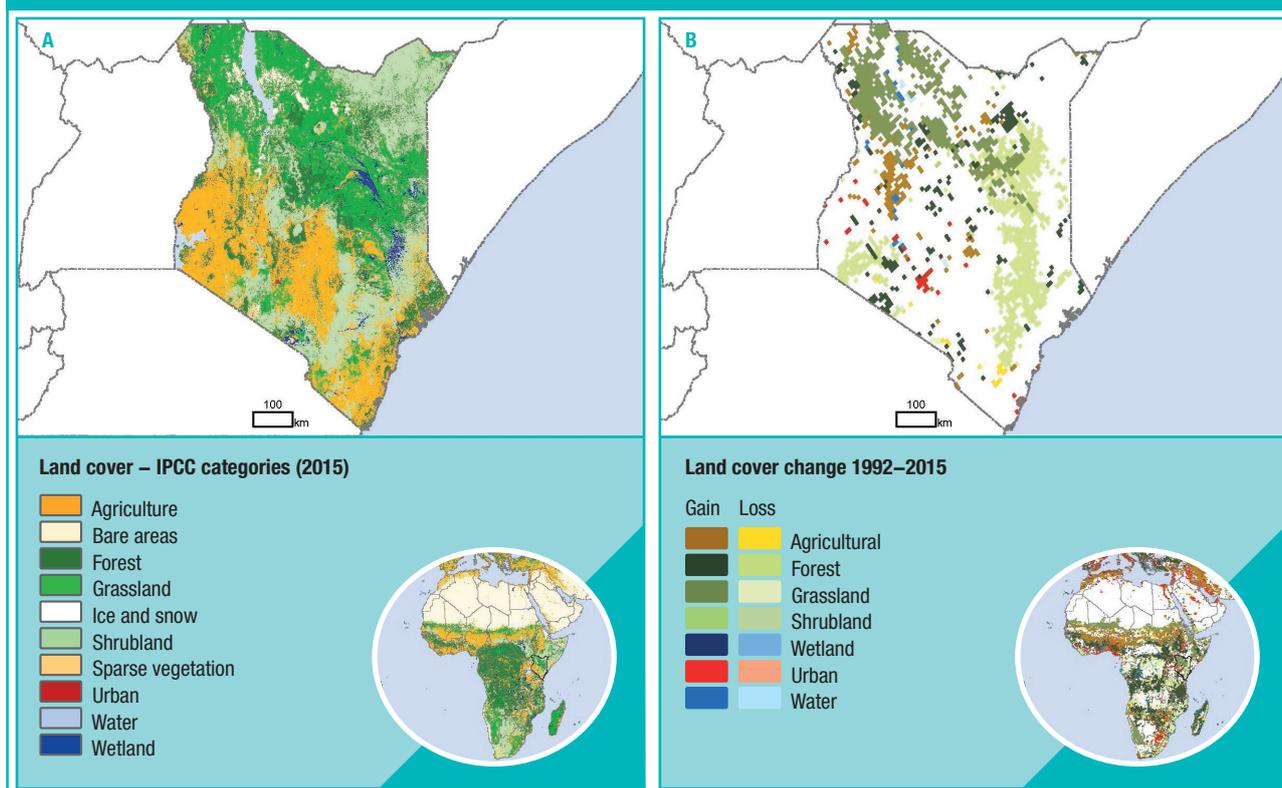
# Kenya – Country profile

# Context

- Agriculture is the backbone of the Kenyan economy, occupying about 49% of the total land area (Figure 1A) and providing 58% of employment. In 2017, agriculture contributed to approximately 35% of national gross domestic product.<sup>i</sup> The sector accounts for about 65% of export earnings.<sup>ii</sup> Kenya is a leading producer of tea, coffee and horticultural products. The arid lands of northern Kenya support pastoralism.
- *Ex situ* and *in situ* conservation initiatives are widespread in Kenya and include seedbanking, field genebanks, cryopreservation and livestock conservation farms.<sup>iii</sup> Approximately 51,000 plant accessions are stored in national genebanks.

- About 36% of young Kenyan children (6–23 months) consume a minimum diet diversity. Among adults, the mortality rate attributable to inadequate diets is 225 per 100,000 population.<sup>iv</sup>
- Population growth, deforestation, grassland and agricultural expansion (Figure 1B) with poor farming methods have led to habitat loss and serious land degradation, putting high pressure on agricultural potential.<sup>v</sup> The IUCN Red List estimates that in 2015 around 463 species across taxa were threatened in the country due to various reasons, including those directly or indirectly related to agriculture.<sup>vi</sup>

FIGURE 1 – Major land use (A) and changes in major land use (B)



Source: Adapted from: A) European Space Agency, 2017;<sup>vii</sup> B) Nowosad, et al., 2019.<sup>viii</sup>

# Agrobiodiversity Index results

- Kenya scores medium for the present **status** of agrobiodiversity (Figure 2A). Agrobiodiversity in genetic resource management for future use adds most strongly to the status score. It is followed by agrobiodiversity in markets and consumption for healthy diets, and agrobiodiversity in production systems for sustainable agriculture. This trend indicates the high potential for unlocking further use of genetic resources in sustainable production and consumption.
- **Progress** score: the cumulative score for commitment and actions is medium-low (Figure 2B). On the one hand, the commitments, expressed in policies, to enhance the management of

agrobiodiversity across the three pillars are relatively high and above average. On the other hand, actions to implement these commitments are lagging behind. The progress score indicates the presence of an enabling environment to improve the sustainable use and conservation of agrobiodiversity, especially in the commitment to promote healthy diets and actions in incorporating agrobiodiversity in production systems for climate-resilient agriculture.

- Compared to the 10-country average, Kenya scores just below average for the status score and above average for the progress score. The country's increasing focus on health and nutritious food can trigger public demand that may help unlock the potential of agrobiodiversity along the value chain, from genetic resource management to production and consumption.

FIGURE 2 – Overview of Agrobiodiversity Index scores for Kenya

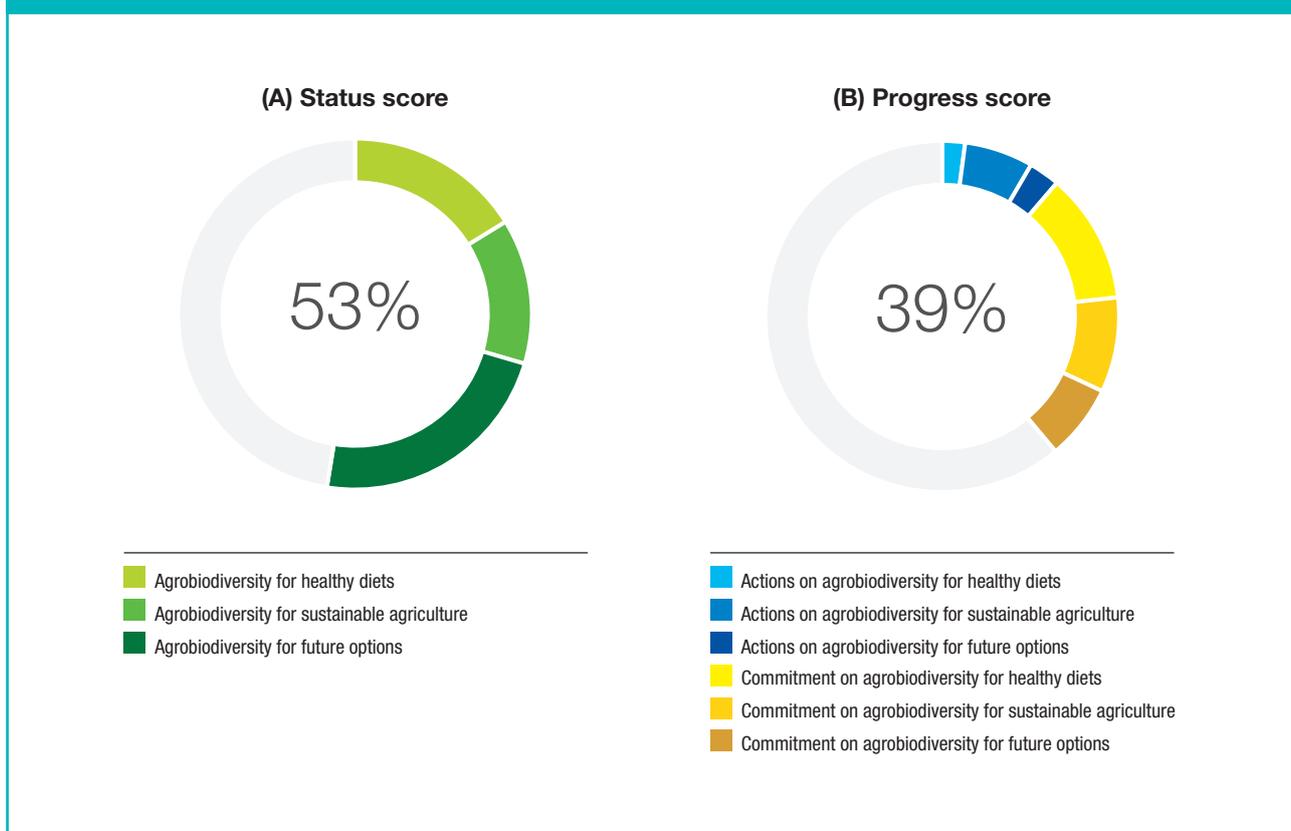


TABLE 1 – Overview of the agrobiodiversity indicator scores per pillar for Kenya

		Pillar 1	Pillar 2	Pillar 3
		Agrobiodiversity in markets and consumption for healthy diets	Agrobiodiversity in production for sustainable agriculture	Agrobiodiversity in genetic resource management for future options
<b>Commitment</b>	Level of commitment to enhancing consumption and markets of agrobiodiversity for healthy diets	72		
	Level of commitment to enhancing production and maintenance of agrobiodiversity for sustainable agriculture		52	
	Level of commitment to enhancing genetic resource management of agrobiodiversity for current and future use options			42
<b>Actions</b>	Consumption and market management practices supporting agrobiodiversity	13		
	Production practices favouring agrobiodiversity		28	
	Production diversity-based practices		47	
	Genetic resource management practices supporting agrobiodiversity			17
<b>Status</b>	Species diversity	83	32	91
	Varietal diversity			94
	Functional diversity	20		
	Underutilized/local species	43		22
	Soil biodiversity		39	
	Pollinator biodiversity			
	Landscape complexity		50	

Note: All scores are scaled from 0–100. The colour scheme was changed on 1 August 2019 to reflect more accurately the scores

## Leading practices

- **Commitment to sustainable use of agrobiodiversity:** Across policies, Kenya expresses specific commitments to sustainably use agrobiodiversity. For example, Kenya's Climate Smart Agriculture Strategy has the long-term goal to promote the adoption of climate-smart technologies, including agrobiodiversity and climate-smart crops, through state facilitation and funding, private investments and extension services. Kenya's Vision 2030 and the National Nutrition Action Plan aim to increase affordability of a diversity of foods and promote diverse, healthy diets as a means to prevent, manage and control malnutrition and diet-related noncommunicable diseases. Kenya's Agriculture (Farm Forestry) Rules of 2009 require at least 10% tree cover on all farms.
- **Biodiversity for food and nutrition:** Kenya is home to a vast array of traditional and neglected native foods, both wild and cultivated, which have high nutritional value but are threatened by environmental pressures or lack of use. Kenya is one of the four countries leading the UN Environment's Biodiversity for Food and Nutrition Project, which has increased awareness of the importance of conservation of food diversity by building national capacity to generate nutrition data for underutilized species (primarily plants). The project collects information on the sociocultural and market value of species, supports smallholder farmers in the production of biodiverse foods and links them to schoolmeal programmes.<sup>ix</sup>
- **Tree and landscape management:** Approximately 50% of Kenya's agricultural land contains more than 10% of natural vegetation, and 13% includes agroforestry. Those practices are spreading across the country,<sup>x</sup> partly incentivized by Kenya's Farm Forestry Rules and related investments.
- **Healthy diets:** While efforts are made to promote healthy diets and make available information on biodiverse foods, disability adjusted life years attributable to inadequate diets are still high at 4971.4 per 100,000 population. Despite a large variety of vegetables and fruits available, their presence in diets is still below recommended levels.<sup>xii</sup> Putting in place food-based dietary guidelines that take into account the country's rich agrobiodiversity, and further strengthening local markets and consumer demand for these fresh foods can help fill this gap.
- **In situ conservation:** Rich biodiversity is found in Kenya. Commitment and actions towards conservation can be improved to reduce the risk of agrobiodiversity loss. About 70% of national resources budgeted for biodiversity conservation are reported to be allocated to areas outside protected areas.<sup>xiii</sup> The country is, therefore, encouraged to develop and implement policies to support conservation and sustainable use of agrobiodiversity, especially in agricultural production.

## Notable findings

- **Maintenance and use of indigenous knowledge:** The National Museums of Kenya document indigenous knowledge on agrobiodiversity through various research activities and contribute and apply this information in other research and development programmes.
- **Crop–livestock integration:** About 82% of Kenya's agricultural land integrates crop and livestock production. Such integrated systems can contribute to more closed and efficient nutrient cycles, soil fertility, and diversified and resilient production systems.
- **Commitment from the highest level:** A presidential ban is in place on overexploited resources, including indigenous trees, and is controlled by agencies like the Kenya Forest Service and Kenya Wildlife Service. Recently protected species included in the presidential ban are African sandalwood and aloe, among others.<sup>xiv</sup>

## Areas for improvement

- **Sustainable production practices:** Some practices that negatively impact wild biodiversity associated with provision of ecosystem services including wild foods are major, including overgrazing, overuse of fertilizers and pesticides, uncontrolled forest clearing, and inappropriate water management.<sup>xi</sup>

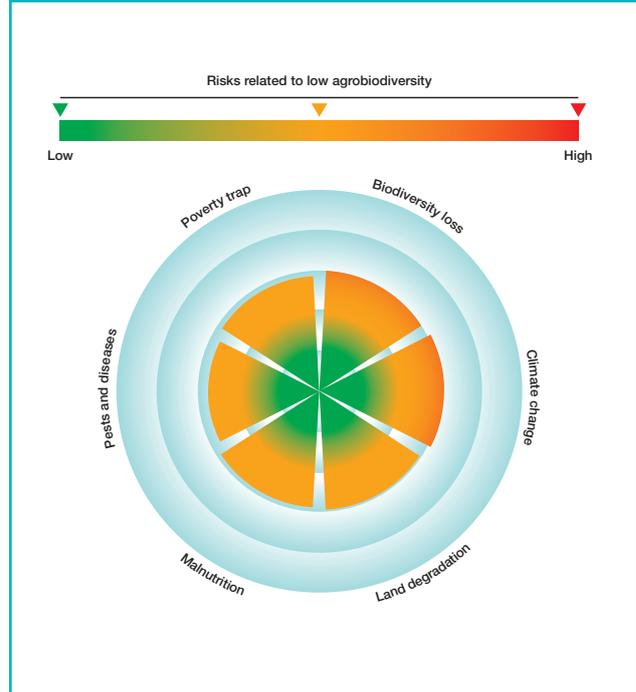
# Risk assessment

Low agrobiodiversity patterns in Kenya add to multiple risks, particularly climate change losses, land degradation, and biodiversity loss (Figure 3). This is explained by the relatively low scores for agrobiodiversity in production, species diversity and soil biodiversity, and the limited scale of management practices that are considered to favour agrobiodiversity, such as sustainable soil management practices, integrated pest management and avoided overgrazing.

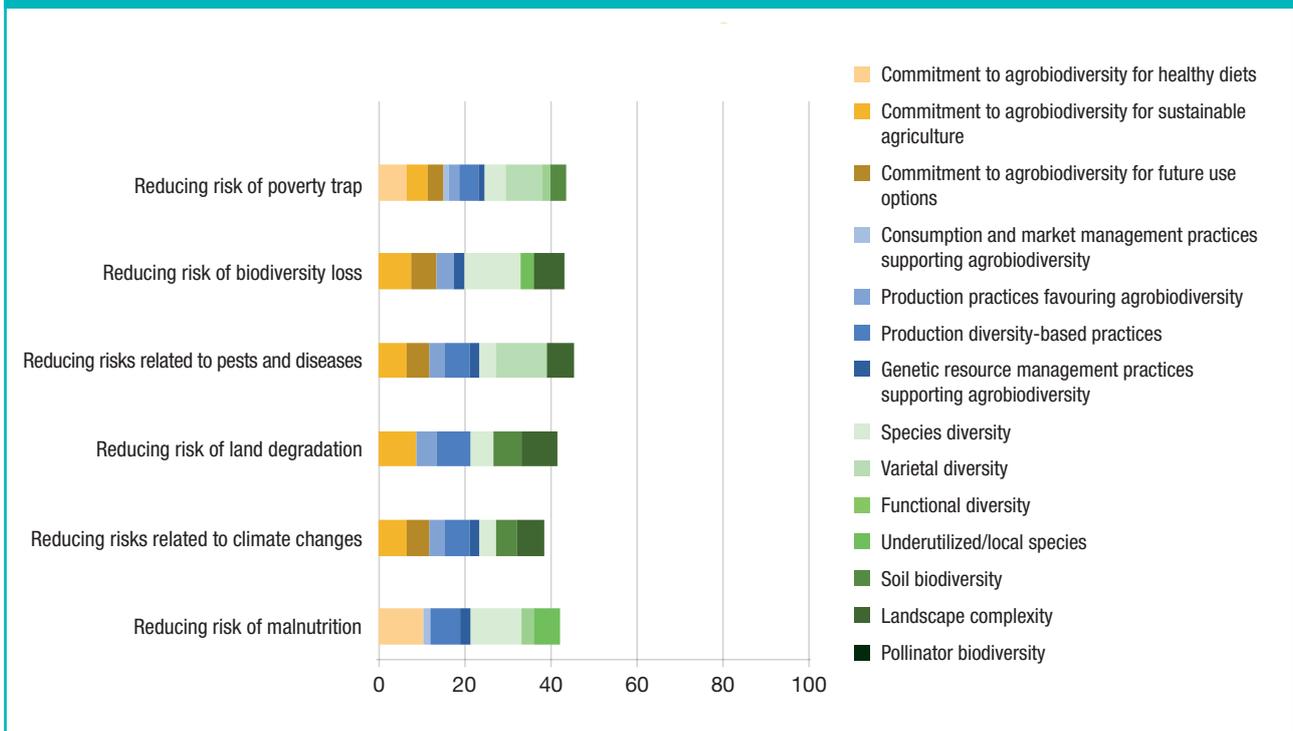
# Resilience building

Reversing the risk assessment, the existing agrobiodiversity and related actions and commitments help build resilience to various risks (Figure 4). Current management of agrobiodiversity particularly helps to reduce poverty risks (e.g. through diversification efforts in markets), and pests and diseases (e.g. through management of disease-resistant varieties in genebanks and seedbanks).

**FIGURE 3 – Increased risks related to low agrobiodiversity levels in Kenya**



**FIGURE 4 – Contributions of Agrobiodiversity Index indicators to resilience building in Kenya**



Note: All scores are scaled to a maximum of 100. Colours indicate relative scores of individual agrobiodiversity indicators that contribute to building resilience for that specific risk area. No data available for pollinator biodiversity.

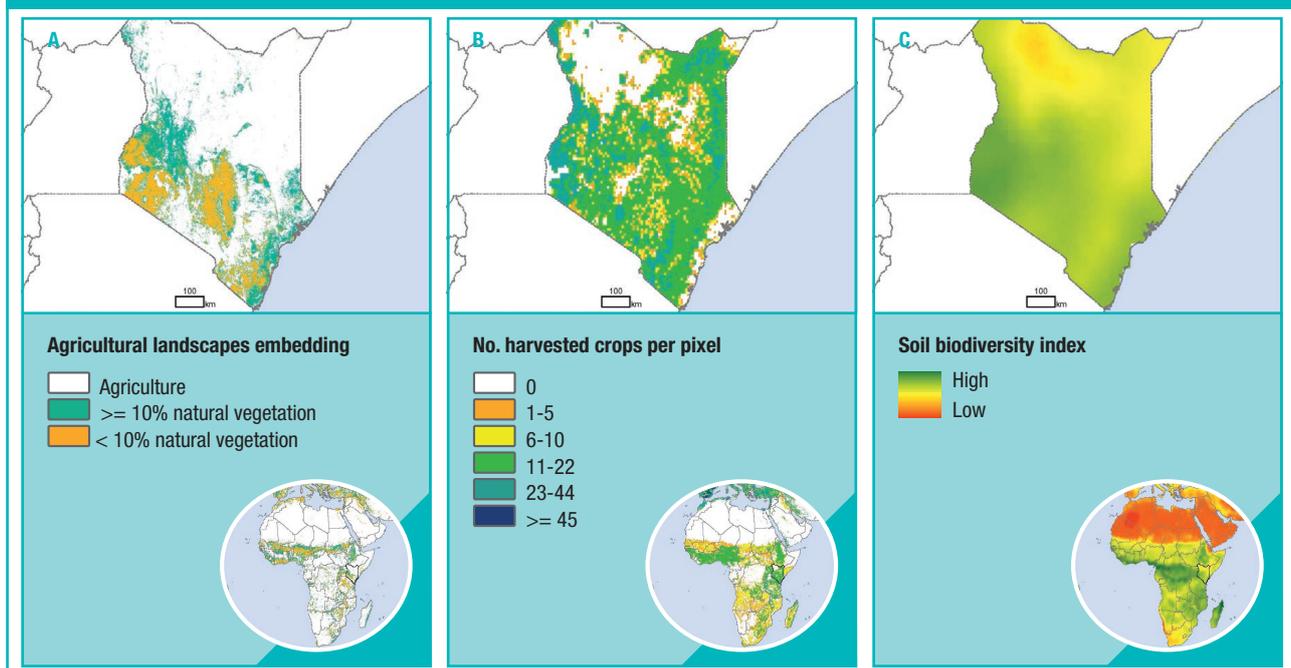
# Indicator trends

## Spatial trends

In Kenya, 50% of agricultural land contains a minimum of 10% of natural or semi-natural vegetation, particularly on the coast and in the Rift valley (Figure 5A). This suggests that agriculture is moderately intertwined

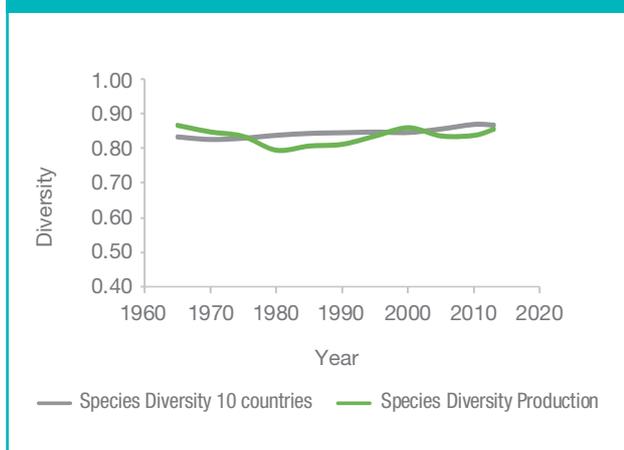
with the surrounding environment. Improving the management of the relationship between agriculture and natural vegetation is critical for agricultural and environmental sustainability. Relatively diversified production systems, with 11 to 22 crop species harvested per (10x10km) land unit, are widespread in the country. Higher production diversity patterns are located in the western part of Kenya (Figure 5B). The soil biodiversity index (Figure 5C) is medium-high across the country, with lower potential in the arid and semi-arid regions. Soil biodiversity helps build resilience to shocks and long-term ecosystem sustainability.

**FIGURE 5 – Spatial trends in agrobiodiversity indicators for sustainable agriculture, including A) agricultural land with >10% natural or semi-natural vegetation; B) number of harvested crops per pixel, and C) soil biodiversity index**



Source: Adapted from: A) European Space Agency, 2017; B) Monfreda et al., 2008;<sup>xv</sup> C) European Soil Data Center, 2016.<sup>xvi</sup>

**FIGURE 6 – Temporal trends in species diversity in production in Kenya (Shannon diversity index)**



Source: FAO, 2019<sup>xvii</sup>

## Temporal trends

In Kenya, species diversity in production fluctuates around the 10-country average. A slight decrease in species diversity was observed from 1965 to 1980. This decrease may be due to the fact that in 1970 agriculture began to deteriorate due to drought and declining government support for agriculture and rural development. During the 1980s, yields of the main food crops (cereals, pulses, roots and tubers) started recovering and species diversity also increased again.

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