



Ethiopia – Country profile

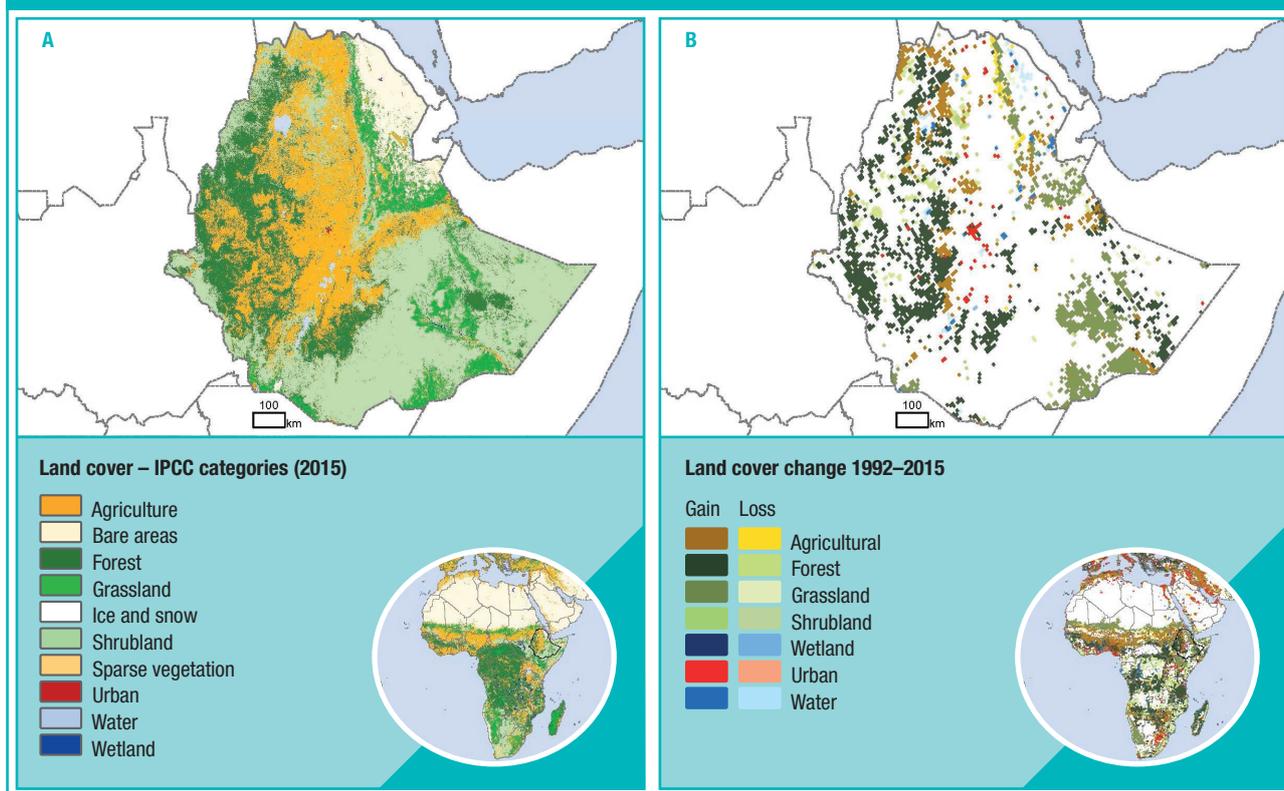
Context

- Agriculture is the mainstay of the Ethiopian economy, employing about 83% of the population. This sector contributes about 45% to gross domestic product, 90% to total export earnings and 70% of raw materials to the agro-industrial sector. About 36% of total land area is used for agriculture (Figure 1A).ⁱ
- Ethiopia is one of the eight world Vavilov centres of origin of cultivated plants, with high genetic diversity for at least 38 domesticated species, including multiple grains (e.g. teff, wheat, barley), legumes (e.g. cowpea), coffee and others (e.g. sesame, okra). Ethiopia’s wild coffee genetic resources contribute to breeding programmes, for example for disease resistance, caffeine content and increased yields. The economic value of these

wild genetic resources for the world coffee industry is estimated to be in the range US\$0.5 million to US\$1.5 million a year.ⁱⁱ

- In Ethiopia, over 75,000 accessions of plants have been conserved *ex situ*, in cold storage and in field genebanks.ⁱⁱⁱ Ranches have also been established in different parts of the country for conservation and sustainable use of Begait, Borena and Horro cattle breeds.
- Only 12% of young Ethiopian children (6–23 months) consume a minimum diet diversity.^{iv} Among adults, the mortality rate attributable to inadequate diets is 216 per 100,000 people.^v
- Significant risks to the conservation and use of biodiversity for food and agriculture in the country include habitat conversion (Figure 1B), unsustainable use of natural resources, invasive species, climate change, pests and diseases, replacement of local varieties and breeds, and pollution.^{vi}

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



Source: Adapted from: European Space Agency, 2017;^{vii} B) Nowosad, et al., 2019.^{viii}

Agrobiodiversity Index results

- Ethiopia has a middle-range score for the current **status** of agrobiodiversity (Figure 2A). Agrobiodiversity in genetic resource management for future options adds most strongly to the status score, followed by agrobiodiversity in production systems for sustainable agriculture, and agrobiodiversity in markets and consumption for healthy diets. This trend indicates that genetic resources are highly available and can be further unlocked for sustainable use in production and consumption.
- The **progress score** combining commitment and actions is medium-low (Figure 2B). Specific strategies and targets to use the available agrobiodiversity are mostly missing in the sources analyzed. On the positive side, the country shows a great ambition to diversify diets as part of its National Nutrition Programme 2016–2020 and Nutrition Sensitive Agriculture Strategy 2016.
- Compared to the 10-country average, Ethiopia scores just below average for status and above average for progress. Its increasing focus on and commitment to the role of agrobiodiversity for nutrition can trigger demand that helps 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 Ethiopia

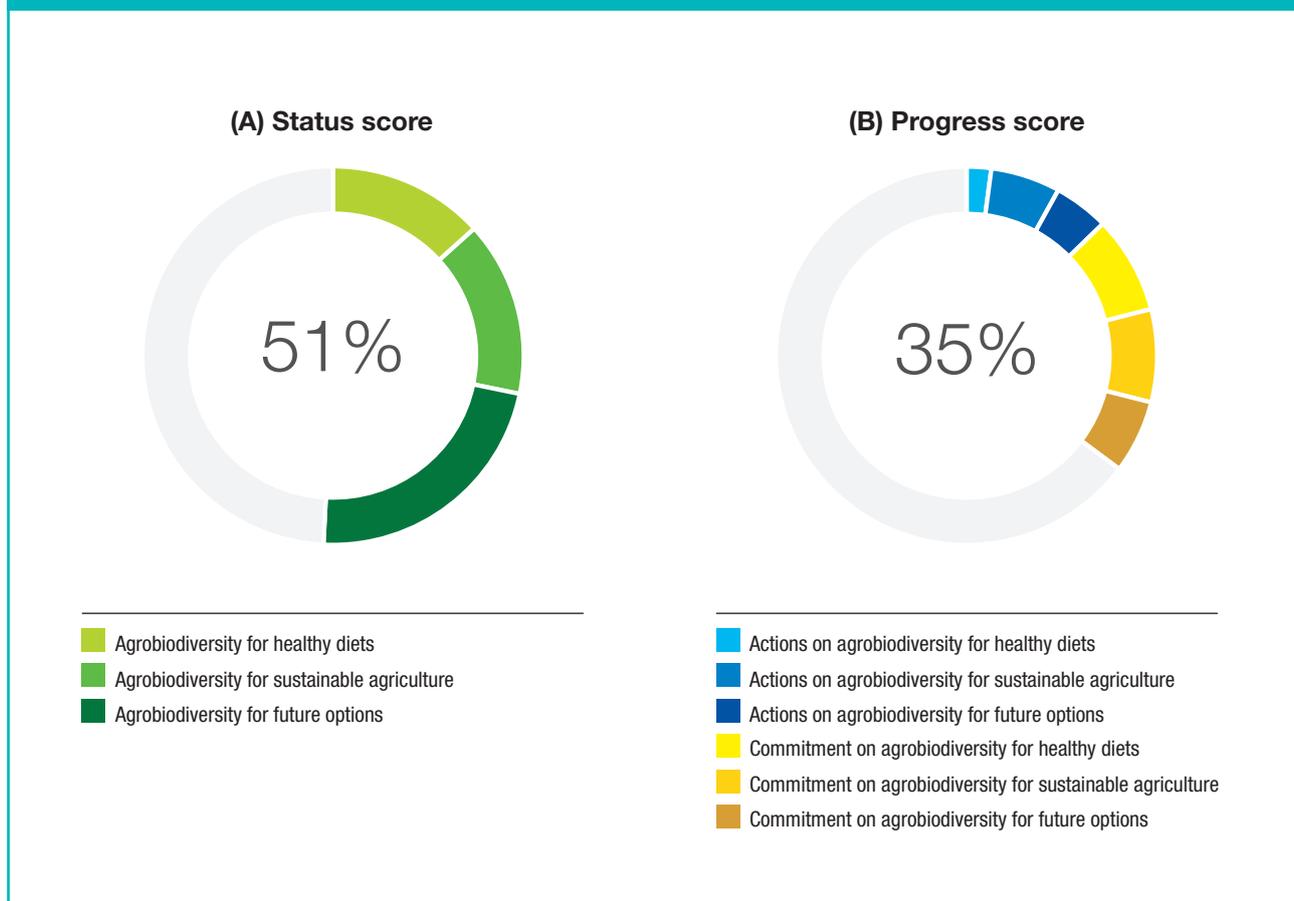


TABLE 1 – Overview of the Agrobiodiversity Indicator scores per pillar for Ethiopia

		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
Commitment	Level of commitment to enhancing consumption and markets of agrobiodiversity for healthy diets	50		
	Level of commitment to enhancing production and maintenance of agrobiodiversity for sustainable agriculture		48	
	Level of commitment to enhancing genetic resource management of agrobiodiversity for current and future use options			38
Actions	Consumption and market management practices supporting agrobiodiversity	13		
	Production practices favouring agrobiodiversity		31	
	Production diversity-based practices		40	
	Genetic resource management practices supporting agrobiodiversity			28
Status	Species diversity	74	28	87
	Varietal diversity			95
	Functional diversity	22		
	Underutilized/local species	24		21
	Soil biodiversity		39	
	Pollinator biodiversity			
	Landscape complexity		68	

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 promoting agrobiodiversity for food security and nutrition:** Ethiopia shows a strong commitment to improving diet quality and nutrition, as declared in the Seqota declaration, National Nutrition Programme 2016–2020 and Nutrition Sensitive Agriculture Strategy 2016. The government has committed to ending hunger and malnutrition by 2030 by: ensuring food access, affordability, diversity and nutritional quality at household level in both rural and urban communities; safeguarding domestic agricultural production as the main source of such diets; and improving human health, which has positive effects on agricultural productivity in labour-intensive smallholder farming systems. The government aims to bridge the gaps in nutrition through programmes that not only focus on high-value crops but promote diversified and nutritionally rich crops, for instance using indigenous varieties.
- **Landscape-based initiatives:** Ethiopia's Sustainable Land Management project is a national programme that implements landscape-based initiatives to protect biodiversity for food and agriculture through watershed management, infrastructure building and land certification, among others. The project has made a substantial contribution to improving natural resource management in rural areas, through community-driven planning and implementation of 45 participatory Watershed Management Plans, which integrated soil and water conservation measures in communal hillsides and individual farmland.
- **International reporting on agrobiodiversity:** Ethiopia systematically reports on 84% of indicators to the World Information and Early Warning System (WIEWS) on Plant Genetic Resources for Food and Agriculture, and contributed an in-depth country profile to the FAO *State of the World's Biodiversity for Food and Agriculture 2019*.
- **Ex situ conservation:** In Ethiopia, over 75,000 samples of plants have been conserved under *ex situ* conditions. Twelve field genebanks and six community seedbanks have been established to conserve coffee, medicinal plants and forest species. *In situ* conservation is also on the rise: 13 *in situ* conservation sites for plants have been established and 8 additional sites are under establishment to conserve enset (a unique Ethiopian banana), durum wheat, teff, coffee, medicinal plants and forest plant species.

Areas for improvement

- **Diversity in markets and consumption for healthy diets:** Diet diversity in Ethiopia is low. Only 24% of calories for human consumption come from non-staples and consumption of vegetables, fruits, nuts and animal-based products is below the recommended values. While chronic undernutrition has declined, it remains high, affecting almost 38% of children under five in 2016.^{ix} National programmes, such as the National Nutrition Programme 2016–2020 and Nutrition Sensitive Agriculture Strategy 2016 include priorities to increase biodiversity in food and agriculture. Improving market functioning for local fresh products, stakeholder involvement, capacity building and addressing gender aspects will be crucial to make these plans effective.^{x, xi}
- **Sustainable production practices:** Percentages of agricultural land with practices that support agrobiodiversity are low. For example, only 11% of agricultural land includes agroforestry. Inadequate water management, overgrazing, uncontrolled forest clearing and overharvesting are some of the unsustainable practices in place, which have negative impacts on biodiversity and/or wild foods.^{xii}
- **Conservation of useful wild plants:** Only 3% of useful wild plants are adequately conserved *ex situ* and 39% *in situ*.^{xiii} Integration of these plants in existing strong genetic resource management systems is encouraged.

Notable findings

- **Sustainable production practices:** About 68% of Ethiopia's agricultural land integrates crop and livestock production. Such integrated systems can contribute to more efficient nutrient cycles, soil fertility, agricultural diversification and resilience to climatic and economic shocks. In addition, 67% of agricultural land includes more than 10% of natural or semi-natural vegetation, suggesting that agriculture is well integrated with the surrounding ecosystem.
- **Linking genetic resources, markets and nutrition:** Ethiopia is recognized worldwide as a centre of agrobiodiversity, and it is one of the fastest growing countries in terms of population and economy, which increases the risk of losing biodiversity. However, Ethiopia has the basic structures in place (genebanks, sustainable land management and strong commitment on nutrition) to safeguard and sustainably use its agrobiodiversity for innovation, adaption, and improving nutrition, while transitioning economically and demographically.

Risk assessment

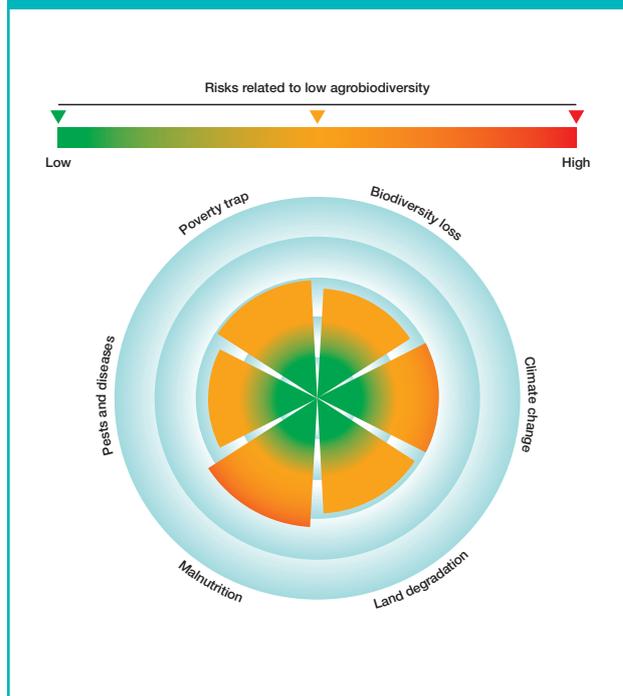
Multiple risks related to low agrobiodiversity are high (Figure 3). The risk of malnutrition stands out. This is mainly explained by the large proportion of dietary calories coming from staples (76%), the limited species diversity in supply, and the absence of national food-based dietary guidelines (which are under development).

The risk of agricultural losses due to climate change is partly explained by low species diversity in production in vast areas, as well as medium-weak commitments to managing and using agrobiodiversity in agriculture as a climate change adaptation option.

Resilience building

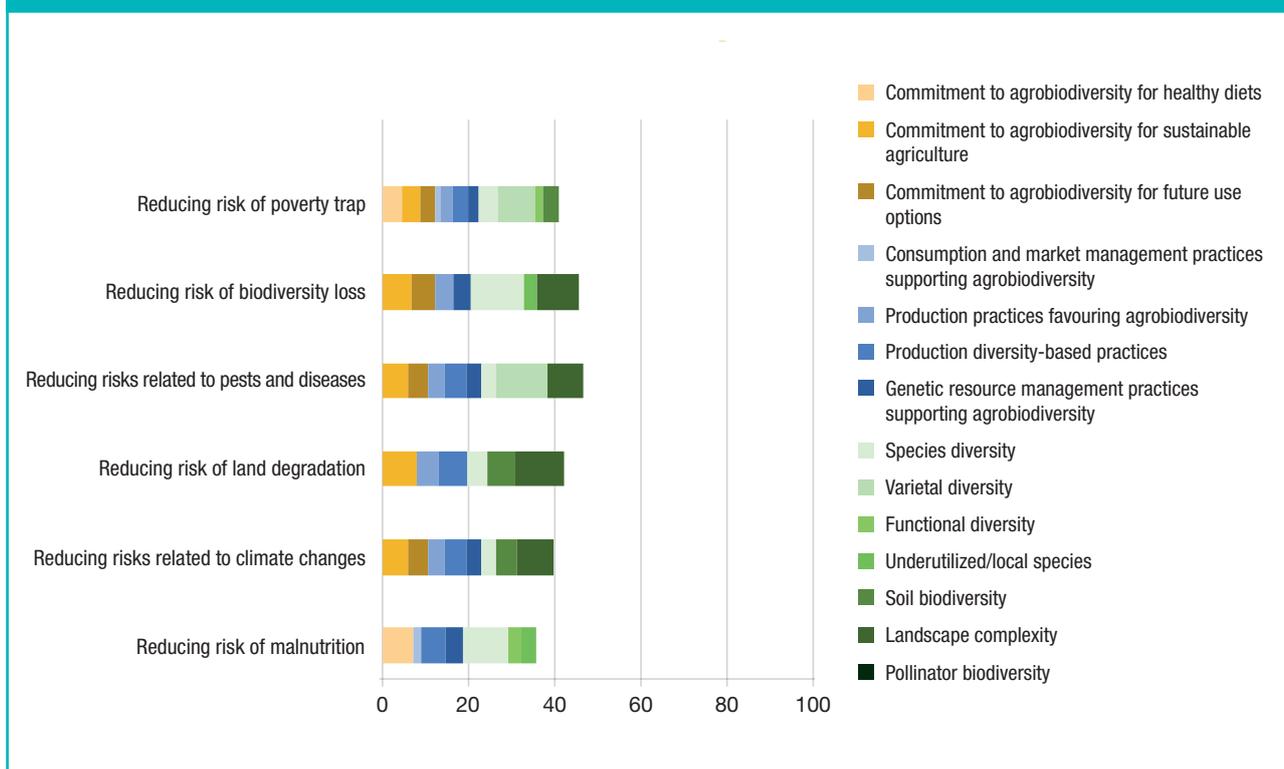
Reversing the risk assessment, the existing agrobiodiversity and related actions and commitments help build resilience to various risks (Figure 4). Current agrobiodiversity management in Ethiopia contributes

FIGURE 3 – Increased risks related to low agrobiodiversity levels in Ethiopia



most significantly to managing risks related to pest and diseases, through the use and conservation of varietal diversity.

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



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.

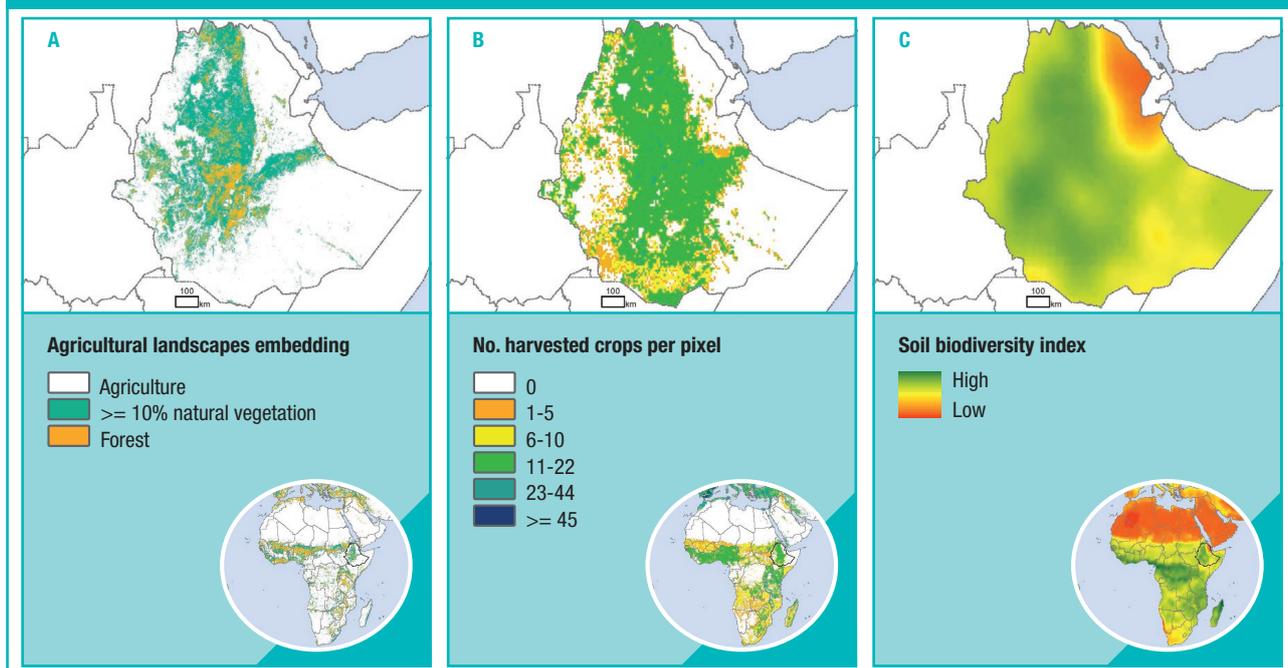
Indicator trends

Spatial trends

In Ethiopia, 67% of agricultural land contains a minimum of 10% of natural or semi-natural vegetation (Figure 5A), suggesting that agriculture is intertwined with natural vegetation. Continued

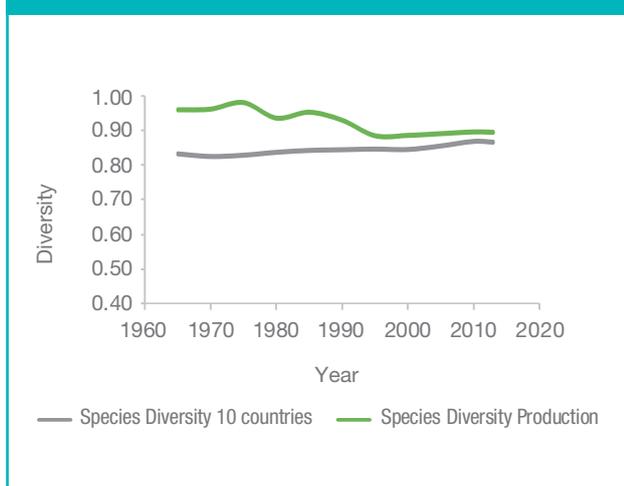
management of the relationship between agriculture and natural vegetation is critical for agricultural and environmental sustainability. The country is very heterogeneous, with 10 ecosystems, 18 major and 49 minor agroecological zones. The number of crop species harvested per land unit strongly varies across the country, with more diversified production systems being concentrated in the highlands (Figure 5B). This contributes to more resilience to climate and pest and disease shocks. Soil biodiversity potential (Figure 5C) is high in the main agricultural areas, suggesting high potential for diversified systems and land restoration.

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;^{xiv} C) European Soil Data Center, 2016.^{xv}

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



Source: FAO, 2019^{xvi}

Temporal trends

While remaining relatively high and above the 10-country average, species diversity in agricultural production has been declining from 1960 onwards, particularly between 1975 and 1995 (Figure 6). Species diversity then stagnated in the 2000s and has very slowly increased again more recently.

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