

ETHIOPIA

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Key Trends

- ▶ Strong government support combined with a World Bank loan associated with EAAPP and contributions from various donors prompted agricultural research spending to increase by about 60 percent during 2011–2016 (in inflation adjusted terms). Despite these increases, however, as of 2016 the country still only invested 0.29 percent of its AgGDP in agricultural research.
- ▶ Ethiopia's pool of agricultural researchers continued to expand substantially, reaching more than 3,000 FTEs in 2016. This growth occurred evenly across EIAR, the RARIs, and the higher education agencies.
- ▶ Ethiopia has one of the fastest-growing, yet youngest and least-qualified pools of agricultural researchers in Africa. As of 2016, more than half the country's agricultural researchers held only BSc degrees, and 37 percent were under 31 years old.

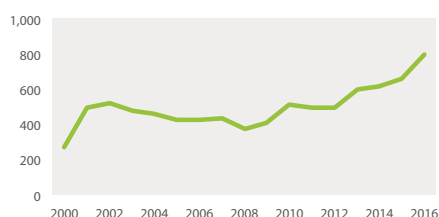
Current Challenges

- ▶ Ethiopia has made solid progress in building its agricultural research system in recent years, and this will drive agricultural productivity gains over time. Nevertheless, it is important to note that the country's agricultural productivity and research investment levels are still very low in comparison with similar African countries.
- ▶ While growth in Ethiopia's overall agricultural researcher numbers is extremely positive, many of the researchers employed at EIAR and the RARIs are only trained to the BSc level and hence are in need of strong leadership, mentorship, and—ultimately—further training. In addition, turnover among the country's MSc- and PhD-qualified agricultural researchers has been high.

Policy Developments

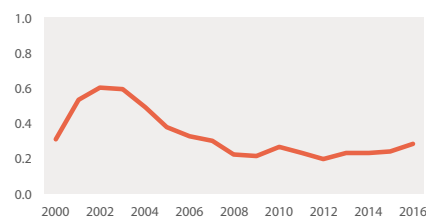
- ▶ To strengthen the coordination of its fragmented agricultural research system, Ethiopia developed a NARS reform strategy and established the Ethiopian Agricultural Research Council. The Council prepared a roadmap for developing the country's NARS, including detailed analyses of current and future challenges and findings that the facilities were inadequate to meet the country's research needs.
- ▶ Donors initially contributed funding to enable retired PhD-qualified researchers to be employed under contract at EIAR to train and mentor newly recruited BSc-qualified researchers. More recently, increased government funding has enabled the continuation of this practice.
- ▶ The Council submitted a capacity building program for agricultural research with an estimated budget of US\$280 million, and received a positive response from the government.

AGRICULTURAL RESEARCH SPENDING



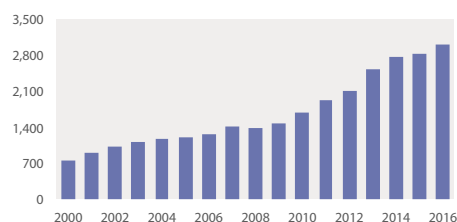
	ETHIOPIA	KENYA	TANZANIA	UGANDA
Million birr (2011 constant prices)	797.6			
Million PPP dollars (2011 constant prices)	162.1	222.7	68.5	99.4

SPENDING INTENSITY



Agricultural research spending as a share of AgGDP	0.29%	0.48%	0.17%	0.62%
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AGRICULTURAL RESEARCHERS



Full-time equivalents	3,024.6	1,157.6	785.0	558.7
Share of researchers with MSc and PhD degrees	47%	85%	77%	81%

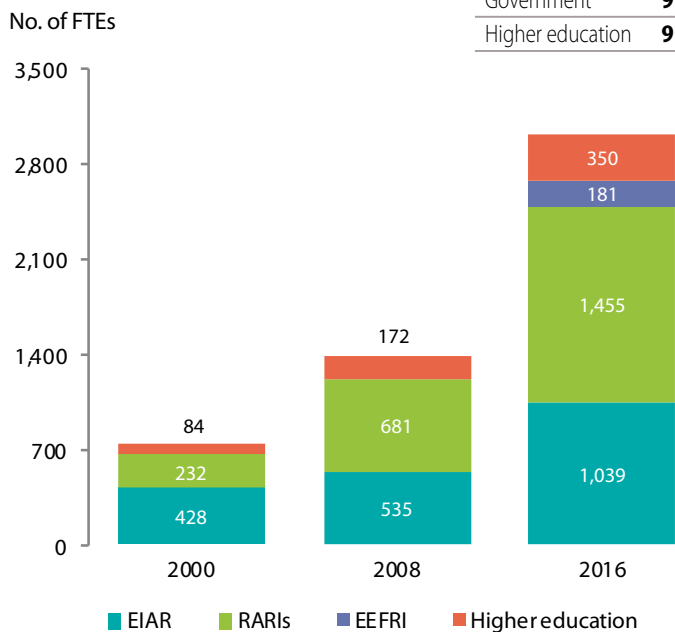
Institutional composition of agricultural research

Agricultural researcher numbers grew rapidly at EIAR, the RARIs, and the higher education agencies during 2000–2016, but growth was strongest at the RARIs. As of 2016, EIAR and the RARIs accounted for 34 and 48 percent, respectively, of Ethiopia's total number of agricultural researchers.

18 AGENCIES, 2016

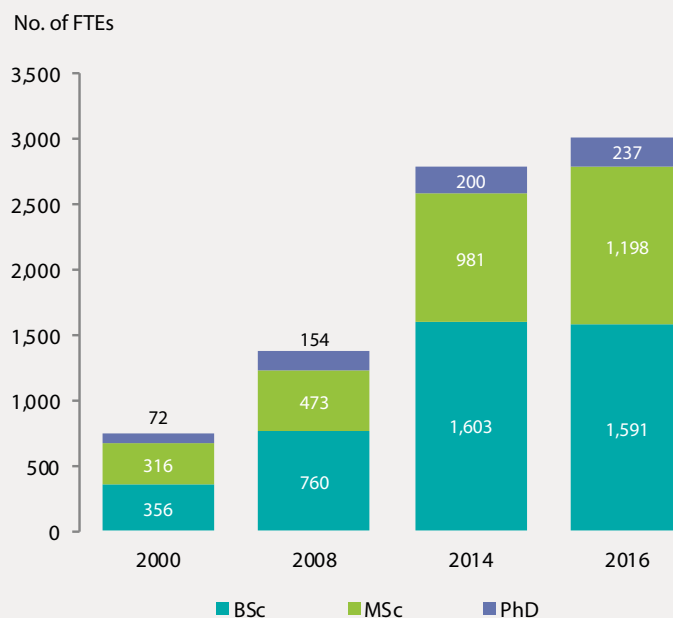
Government **9**

Higher education **9**



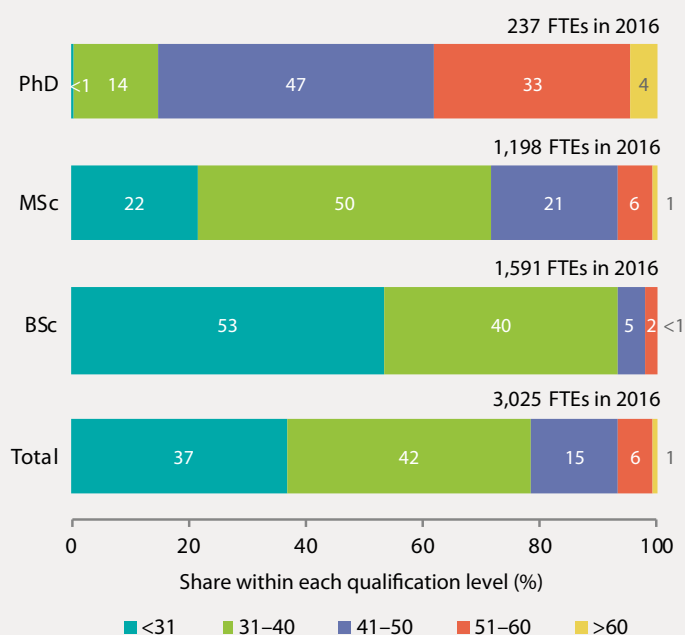
Agricultural researchers by qualification level

Rapid growth in Ethiopia's agricultural researcher numbers to 2014 was predominantly driven by a large influx of researchers with BSc degrees. Thereafter, the number of BSc-qualified researchers remained fairly constant, at around 1,600, while the number of MSc- and PhD-qualified researchers continued to rise.



Agricultural researchers by age bracket

Ethiopia's pool of agricultural researchers is among Africa's youngest. As of 2016, more than one-third of researchers were under 31 years old, and the majority held only BSc degrees. In contrast, nearly 40 percent of PhD-qualified researchers were over 50 years old. Overall, the age distribution has shifted somewhat over time, with fewer researchers remaining in their 20s.



Agricultural researchers by gender

Ethiopia's share of female researchers is considerably lower than comparable shares in other East African countries, and it only increased marginally during 2011–2016. In general, female researchers were relatively younger and less well-qualified than their male colleagues.



Share of women within each qualification level, 2016

Qualification Level	Share of Women
BSc	10%
MSc	11%
PhD	8%

Share of women by age bracket, 2016

Age Bracket	Share of Women
< 41	12%
41–50	7%
> 50	4%

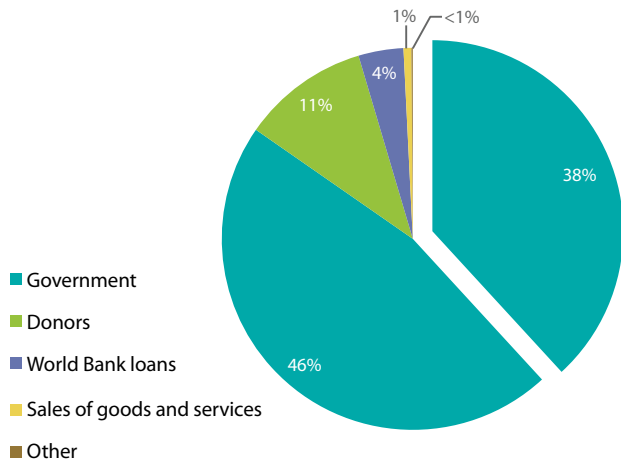
Comparison of EIAR and RARIs' spending and funding

The vast majority of EIAR's and the RARIs' funding was derived from the national government during 2009–2016, although the institutes also received substantial contributions from donors and through a World Bank loan to support EAAPP activities at EIAR.

2009–2016 average shares

Operating costs and capital investments 61%

Salaries 39%

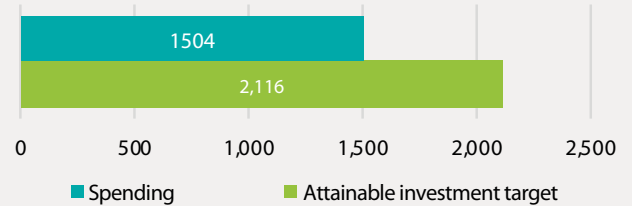


Investment needed to close the intensity gap

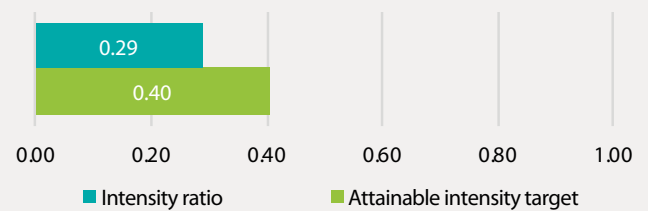
Analyses indicate that no country with economic conditions similar to Ethiopia has reached the 1 percent target set by the United Nations and African Union, but a lower investment target of 0.40 percent would be attainable. To have met this lower target in 2016, Ethiopia would need to have invested 2,116 million birr, or an additional 576 million (both in current prices).

Actual and attainable spending, 2016

Million birr (current prices)



Ratio (%)

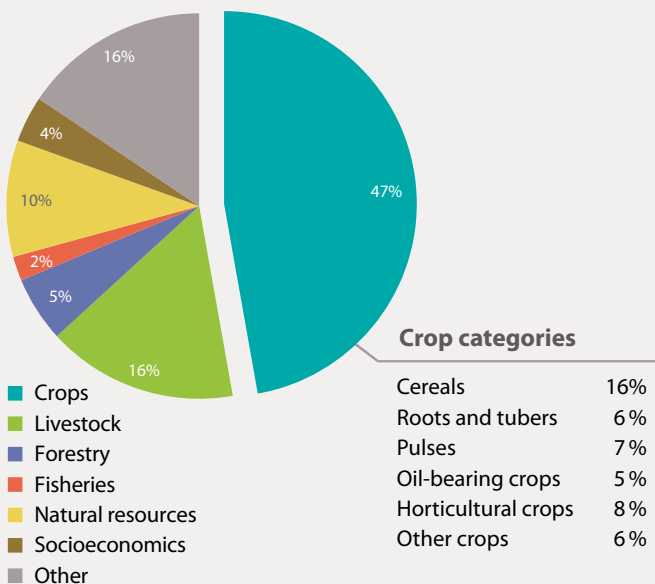


Notes: Traditionally, agricultural research intensity ratios compare investment and AgGDP levels to determine whether countries may be underinvesting. ASTI's Intensity Index incorporates additional factors that account for the size and nature of a nation's economy; hence, facilitating more accurate cross-country comparisons. For more information, see <https://astinews.ifpri.info/2017/07/01/a-new-look-at-research-investment-goals-for-ssa/>.

Agricultural researchers by area of focus

In 2016, 47 percent of the country's FTE researchers conducted crop research, whereas 16 percent undertook livestock research. Major crops under investigation included the cereals wheat, maize, and sorghum, along with fruits, vegetables, potatoes, beans, and coffee.

Share of researchers, 2016



Crop categories

Cereals	16%
Roots and tubers	6%
Pulses	7%
Oil-bearing crops	5%
Horticultural crops	8%
Other crops	6%

EIAR and RARIs' recently released crop varieties

During 2012–2016, EIAR and the RARIs released 145 and 78 new varieties, respectively. For EIAR, this included various cereal crops, beans, flowers, vegetables, and other varieties, and for the RARIs it included cereal crops, beans, and other varieties.

Crop	Number of varieties, 2012–2016		
	EIAR	RARIs	Total
Vegetables	16	9	25
Wheat	14	10	24
Beans	10	9	19
Flowers	14	0	14
Barley	7	6	13
Maize	12	1	13
Sorghum	11	2	13
Millet	4	7	11
Other	57	34	91
Total	145	78	223

Note: "Other" includes crops with less than 10 varieties released during the five-year period.

Resources for Ethiopia

This factsheet presents recent data on the performance of agricultural research in Ethiopia, primarily focusing on key financial, human resource, institutional, and output indicators, while also highlighting relevant trends, challenges, and institutional changes. Additional resources are available at www.asti.cgiar.org and include:



ASTI's **interactive country page** for Ethiopia features national agricultural research investment and capacity data, a data exploration and download tool, as well as access to a variety of country publications.



ASTI's **benchmarking tool** allows key agricultural research indicators to be ranked and compared across African countries.



ASTI's **data download tool** provides access to more in-depth ASTI datasets and graphs for Ethiopia and many other countries.



ASTI's **agency directory** provides a view of agencies that conduct agricultural research in Ethiopia, along with their locations and key agency-level indicators.

ETHIOPIA

Key trends

Strong government support combined with a vibrant private sector associated with INRPI and contributions from various donors promoted agricultural research spending to increase by almost 60 percent during 2011–2016 (in inflation-adjusted terms). Despite these increases, however, as of 2016 the country still only received 0.23 percent of its GDP on agricultural research.

IFPRI's year of agricultural researchers continued to expand substantially, reaching over the 3,000 FTE in 2016. This growth occurred evenly across IARs, the ASTI, and the higher education agencies.

Ethiopia has one of the fastest-growing, yet youngest and least-equipped pools of agricultural researchers in Africa. As of 2016, more than half the country's agricultural researchers held only BA degrees and 27 percent were under 31 years old.

Current challenges

Ethiopia has made solid progress in building its agricultural research system in recent years, and the well-documented productivity gains over time, however, it is important to note that the country's agricultural productivity and research investment levels are still very low in comparison with several African countries.

While growth in Ethiopia's overall agricultural researcher numbers is certainly positive, many of the researchers employed at IARs and the INRPI are only trained to the BA level and hence are in need of strong scientific, mentoring, and multidisciplinary further training. In addition, however, among the country's BA- and PhD-qualified agricultural researchers has been high in recent years.

Policy developments

To strengthen the coordination of its fragmented agricultural research system, Ethiopia developed a NARS reform strategy and established the Ethiopian Agricultural Research Council. The Council prepared a roadmap for developing the country's NARS, including detailed analyses of current and future challenges, and findings that further steps are inadequate to meet the country's research needs.

Donors initially contributed funding to enable retired PhD-qualified researchers to be employed under contract at IARs to train and mentor newly recruited BA-level researchers. More recently, increased government funding has enabled the continuation of this practice.

The Council implemented a capacity building program for agricultural research with an increased budget of US\$20 million, and received a positive response from the government.

ASTI Data Procedures and Methodologies

- ▶ The **data underlying this factsheet** were predominantly derived through primary surveys, although some data were drawn from secondary sources or were estimated.
- ▶ Agricultural research includes research conducted by the government, higher education, and nonprofit sectors; research conducted by the private for-profit sector is excluded due to lack of available data.
- ▶ ASTI bases its calculations of human resource and financial data on **full-time equivalent (FTE) researchers**, which take into account the proportion of time staff actually spend on research compared with other activities.
- ▶ ASTI presents its financial data in 2011 local currencies and **2011 purchasing power parity (PPP) dollars**. PPPs reflect the relative purchasing power of currencies more effectively than do standard exchange rates because they compare prices of a broader range of local—as opposed to internationally traded—goods and services.
- ▶ ASTI estimates the **higher education sector's research expenditures** because it is not possible to isolate them from the sector's other expenditures.
- ▶ Note that **decimal rounding** can cause totals to be one point higher or lower than the sum of their parts.



For more information on ASTI's data procedures and methodology, visit www.asti.cgiar.org/methodology.

Acronyms

- AgGDP agricultural gross domestic product
- EAAPP Eastern Africa Agricultural Productivity Project
- EEFRI Ethiopian Environment and Forest Research Institute
- EIAR Ethiopian Institute of Agricultural Research
- FTE(s) full-time equivalent(s)
- NARS national agricultural research system
- PPP(s) purchasing power parity (exchange rates)
- R&D research and experimental development
- RARIs regional agricultural research institutes

About ASTI, IFPRI, and EIAR

Working through collaborative alliances with numerous national and regional R&D agencies and international institutions, **Agricultural Science and Technology Indicators (ASTI)** is a comprehensive and trusted source of information on agricultural R&D systems across the developing world. ASTI is facilitated by the **International Food Policy Research Institute (IFPRI)**, which—as a CGIAR member—provides evidence-based policy solutions to sustainably end hunger and malnutrition and reduce poverty. The **Ethiopian Institute for Agricultural Research (EIAR)**, Ethiopia's principal agricultural research agency, falls under the Ministry of Agriculture. EIAR's broad research mandate encompasses crops, livestock, fisheries, and natural resources.

ASTI/IFPRI and EIAR gratefully acknowledge participating agricultural R&D agencies for their contributions to the data collection and preparation of this factsheet. ASTI also acknowledges the Bill & Melinda Gates Foundation and CGIAR Research Program on Policies, Institutions, and Markets for their generous support of ASTI's work in Africa south of the Sahara. This factsheet has been prepared as an ASTI output and has not been peer reviewed; any opinions are those of the authors and do not necessarily reflect the policies or opinions of IFPRI or EIAR.

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