Agricultural R&D Indicators Factsheet Update | October 2018

GHANA

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Key Trends

- During 2012–2016, agricultural research spending declined by more than one-third, in inflation-adjusted terms. This was the result of reduced government funding to the CSIR institutes.
- On average, Ghana's agricultural researcher numbers rose slowly over time, but numbers at various CSIR institutes fell during 2014– 2016. The distribution of CSIR researchers by qualification level also shifted in response to policy changes that initially required a minimum MSc-degree qualification, but more recently require a minimum PhD qualification.
- Donor funding in support of CSIR institutes—both for operating and program costs and for capital investments—rose significantly during 2014–2016, mostly as a result of the World Bank–funded WAAPP. However, this increase was insufficient to offset the decline in government funding.

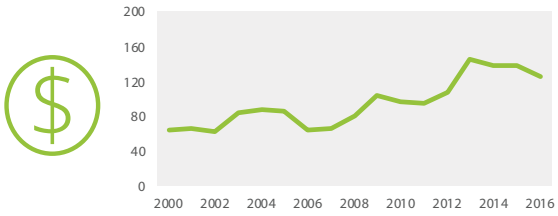
Current Challenges at CSIR

- Donor funding and internally generated revenues from the sale of goods and services are critical to CSIR institutes to meet the gap resulting from the decline in government funding. Nevertheless, this source of funding is insufficient, especially to meet necessary capital investments in infrastructure and equipment.
- Funding is also needed for PhD-level training at the CSIR institutes in light of the recent policy change requiring that all its agricultural researchers hold not just an MSc qualification, but a minimum of a PhD qualification.
- The decline in researcher numbers at several CSIR institutes stems from the government's freeze on the recruitment of new researchers to replace retiring and departing staff. Current agricultural researcher numbers at CSIR are inadequate.

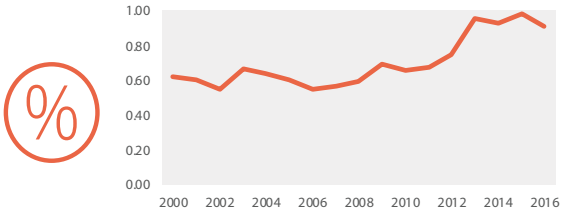
Policy Developments

- The government has proposed the creation of a Science, Technology, and Innovation fund, allocating 1 percent of GDP to Ministry of Environment Science Technology and Innovation. The fund has yet to be implemented, however.
- In late 2017, the government approved limited staff recruitment by both the CSIR institutes and higher education agencies. The concern is whether this will be sufficient to fill key vacancies and enable the ongoing functioning of viable agricultural research programs across the various institutes.
- Overdependence on donor funding to support agricultural research in Ghana is a challenge requiring immediate action by policymakers.

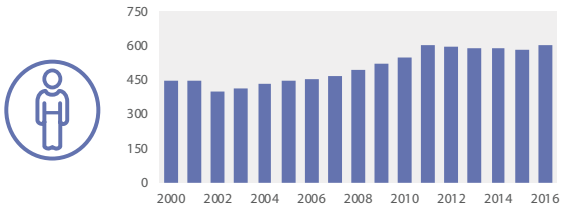
AGRICULTURAL RESEARCH SPENDING



SPENDING INTENSITY



AGRICULTURAL RESEARCHERS

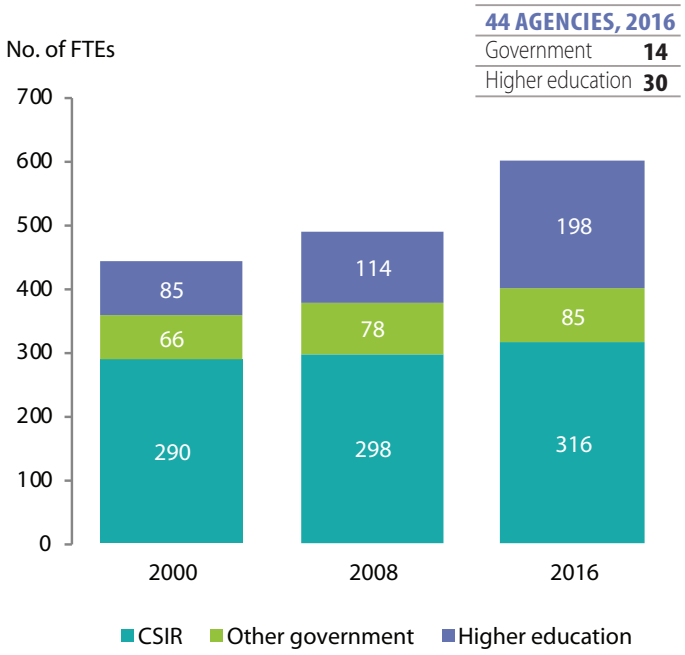


	GHANA	KENYA	NIGERIA (2014)	SOUTH AFRICA (2014)
Million cedis (2011 constant prices)	124.9			
Million PPP dollars (2011 constant prices)	178.6	222.7	433.5	417.4
Agricultural research spending as a share of AgGDP	0.91%	0.48%	0.22%	2.78%
Full-time equivalents	598.9	1157.6	2,975.5	811.3
Share of researchers with MSc and PhD degrees	94%	85%	66%	na

Notes: Data in the table above are for 2016. Research conducted by the private for-profit sector is excluded from this factsheet due to lack of available data. Information on access to further resources, data procedures and methodologies, and acronyms and definitions are provided on Page 4. See **www.asti.cgiar.org/Ghana/directory** for an overview of Ghana's agricultural R&D agencies.

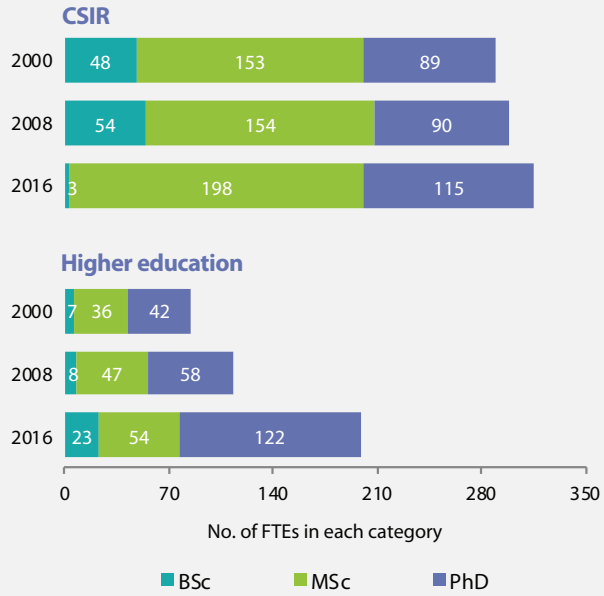
Institutional composition of national agricultural research

The institutional composition of agricultural research shifted during 2000–2016. Strong growth in the higher education sector caused its share of researchers to rise from 19 percent in 2000 to 33 percent in 2016. CSIR's 10 institutes involved in agricultural research accounted for a combined 53 percent of the country's FTE researchers in 2016, down from 66 percent in 2000.



Agricultural researchers by sector and qualification level

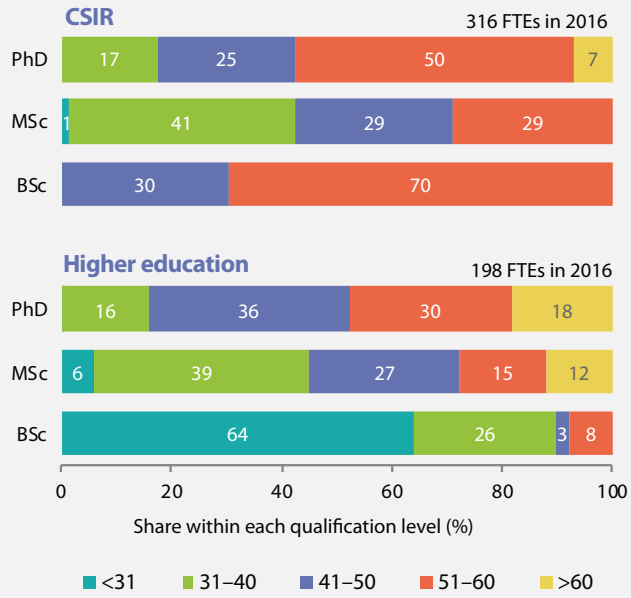
Although the higher education sector employs far fewer researchers (in FTEs) than CSIR, numbers have grown considerably over time, especially at the PhD-degree level. The 2016 shift in shares by qualification at CSIR reflects a change in policy requiring that researchers hold at least an MSc degree (and more recently this policy was modified to require a minimum qualification of a PhD degree).



Notes: As of 2014, BSc-qualified scientists at STEPRI no longer hold official researcher status. The government and higher education agencies also employ a number of BSc- and MSc-qualified technical support staff who do not have official researcher status.

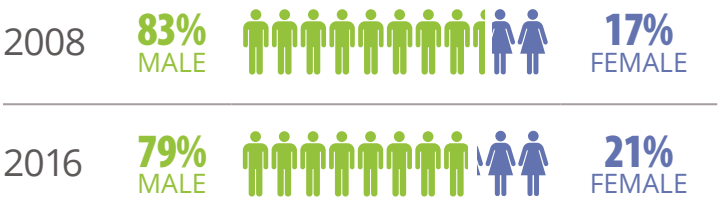
Distribution of agricultural researchers by qualification level and age bracket

As of 2016, 57 percent of the PhD-qualified researchers employed at CSIR were in their 50s and 60s, whereas 48 percent were in their 50s and 60s within the higher education agencies. These shares were slightly lower than comparative levels in 2014.



Agricultural researchers by gender

Overall, the share of female researchers rose from 17 to 21 percent during 2008–2016, and the CSIR institutes employed more women than the other government and higher education agencies. In general, as of 2016, female researchers were comparatively younger and constituted a higher share of MSc-qualified than PhD-qualified researchers.



Share of women within each qualification level, 2016

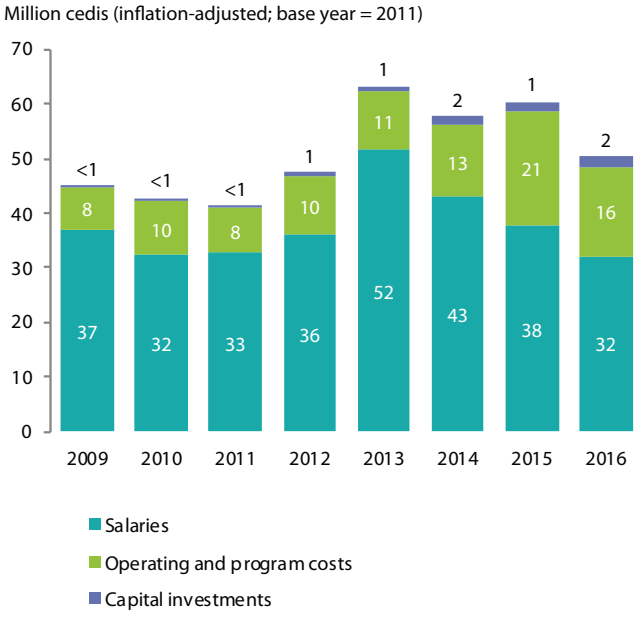
BSc **25%**	MSc **25%**	PhD **16%**

Share of women by age bracket, 2016

< 41 **30%**	41–50 **20%**	> 50 **13%**

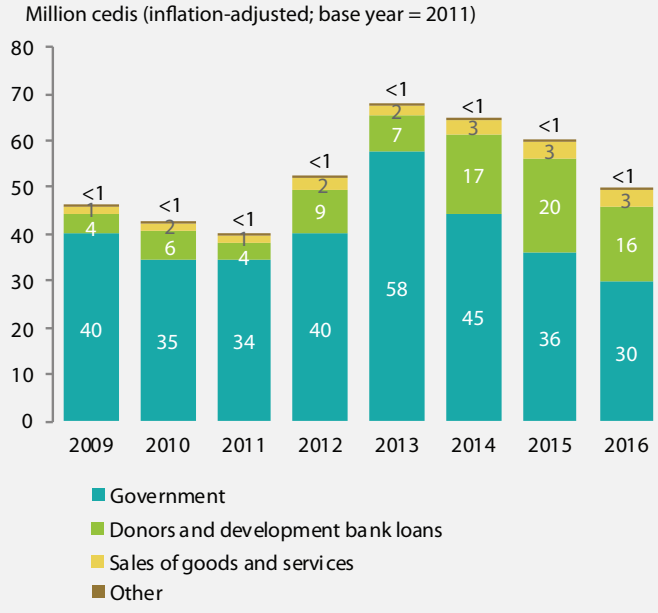
CSIR's spending by cost category

Spending on salary-related expenses declined during 2013–2016 in response to the retirement of researchers. During that same period, average spending on operating and program costs rose over prior years because donor and development bank funding increased.



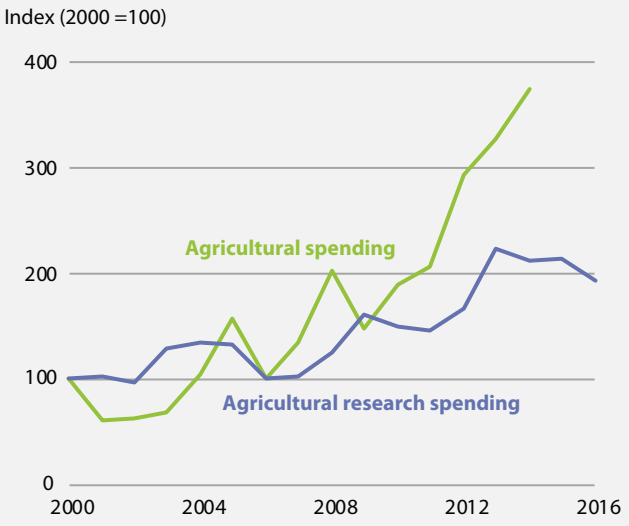
Sources of CSIR's funding

CSIR institutes are primarily funded by the government, although donor contributions rose significantly during 2014–2016 due to the World Bank–funded WAAPP. The institutes depend on the government to cover salary-related costs, and donors and development banks to fund the operating costs and capital investments needed for research activities.



Spending on agriculture and agricultural research

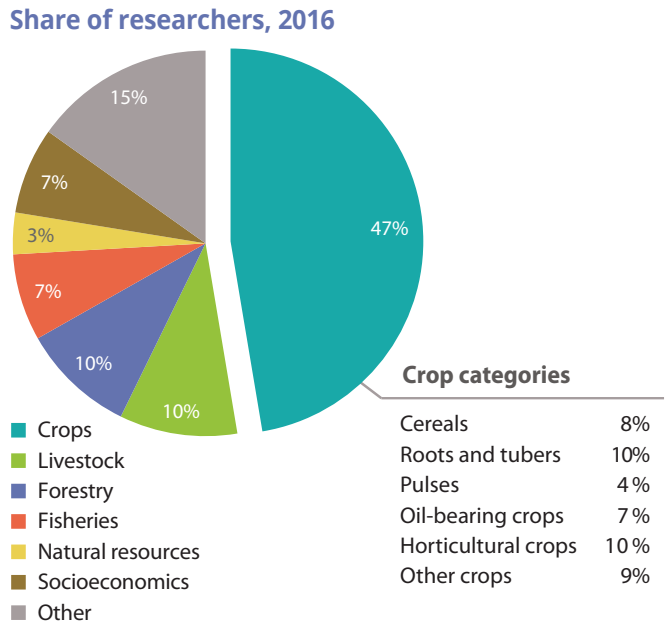
In 2003, as part of the CAADP process, African heads of state committed to allocating 10 percent of their budgets to agriculture, with the goal of achieving 6 percent yearly agricultural growth. Although the Ghanian government increased its agricultural investments from 2008, its investment in agricultural research has not kept pace and declined between 2013 and 2016.



Notes: Data on agricultural spending are from ReSAKSS (Regional Strategic Analysis and Knowledge Support System). 2017. ReSAKSS Map Tool. Accessed February 2017. www.resakss.org/map. Agricultural spending only includes funds derived from national governments; agricultural research spending includes funds derived from governments, donors, development banks, producer organizations, and revenues generated internally by research agencies.

Agricultural researchers by area of focus

In 2016, 47 percent of the country's FTE researchers conducted crop research, whereas 10 percent (each) undertook livestock and forestry research. Major crops under investigation were the cereals maize, cassava, and rice, along with cocoa, vegetables, fruit, beans, and yams.



Resources for Ghana

This factsheet presents recent data on the performance of agricultural research in Ghana, 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 Ghana 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 Ghana and many other countries.

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

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 and international organizations is excluded.
- 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
CAADP	Comprehensive Africa Agriculture Development Programme
CSIR	Council for Scientific and Industrial Research
FTE(s)	full-time equivalent(s)
PPP(s)	purchasing power parity (exchange rates)
R&D	research and experimental development
STEPRI	Science and Technology Policy Research Institute
WAAPP	West Africa Agricultural Productivity Program

About ASTI, IFPRI, and STEPRI

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 **Science and Technology Policy Research Institute (STEPRI)** is one of 13 research agencies under the Council for Scientific and Industrial Research (CSIR). The institute provides key research support in the formulation of the country's socioeconomic development policy, specifically focusing on the promotion of innovation and the creation of an enabling environment for the effective use of science and technology.

ASTI/IFPRI and STEPRI 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 STEPRI.