

# MOZAMBIQUE

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## KEY INDICATORS, 2004–2011

Total Public Agricultural Research Spending	2004		2008		2011
Mozambican meticaís (million constant 2005 prices)	191.0		197.9		226.1
PPP dollars (million constant 2005 prices)	17.5	↑	18.1	↑	20.7
<b>Overall Growth</b>			<b>4%</b>		<b>14%</b>
Total Number of Public Agricultural Researchers					
Full-time equivalents (FTEs)	166.0	↑	256.9	↑	313.6
<b>Overall Growth</b>			<b>55%</b>		<b>22%</b>
Agricultural Research Intensity					
Spending as a share of agricultural GDP	0.55%		0.40%		0.36%
FTE researchers per 100,000 farmers	2.15		3.08		3.54

Note: Acronyms, definitions, and an overview of agricultural R&D agencies are available on page 4.

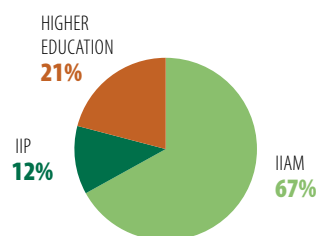
- Public spending on agricultural R&D increased by 14 percent from 2008 to 2011, primarily driven by the increased cost of salaries and capital investments.
- The total number of agricultural researchers continued to grow during 2008–2011, although the new recruits were predominantly younger BSc-qualified researchers in need of experience, mentoring, and postgraduate education.
- Agricultural R&D in Mozambique continued to be highly dependent on donor funding, which fluctuated significantly year to year.

## FINANCIAL RESOURCES, 2011

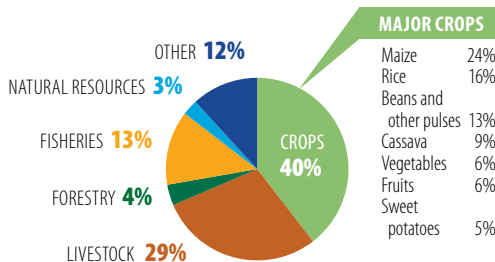
Spending Allocation	
Salaries	50%
Operating and program costs	31%
Capital investments	19%
Funding Sources	
Government	60%
Donors	40%

Note: Shares are based on data for the two government agencies, IIAM and IIP, only.

## INSTITUTIONAL PROFILE, 2011



## RESEARCH FOCUS, 2011



MAJOR CROPS	
Maize	24%
Rice	16%
Beans and other pulses	13%
Cassava	9%
Vegetables	6%
Fruits	6%
Sweet potatoes	5%

Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 20 percent of total crop researchers focused on a wide variety of other crops.

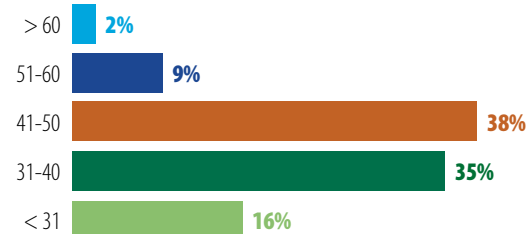
## RESEARCHER PROFILE, 2011



### Number by qualification (FTEs)



### Share by age group (years)



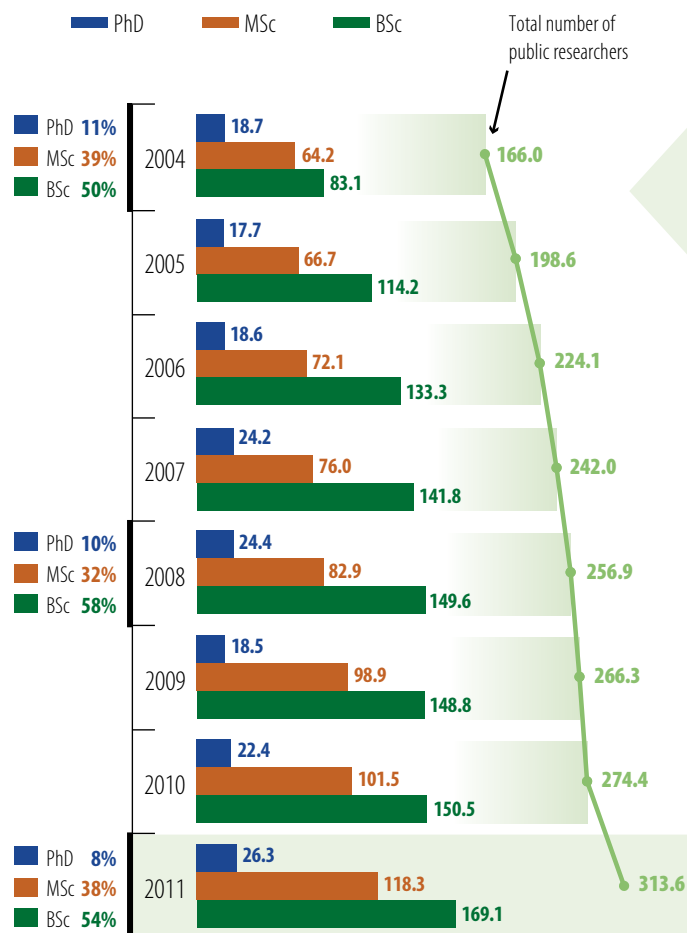
## CHALLENGE

- ▶ Mozambique's agricultural research agencies employ few researchers with PhD degrees. A lack of national PhD and MSc training programs constrains educational development, forcing staff to seek advanced degrees abroad—a challenge only compounded by language barriers. While staff qualifications have improved in recent years, many of the newly recruited younger researchers only hold BSc degrees and need further training.

## POLICY OPTIONS

- ▶ Strengthening human resource capacity is an immediate priority. Agencies need to establish mechanisms to support staff in pursuing higher degrees, such as those offered by the Master Card Foundation and the Borlaug Higher Education for Agricultural Research and Development Program. Only one researcher from IIAM was awarded a PhD scholarship in 2012 despite there being more available through Michigan State University funded by USAID. Low English proficiency acted as a barrier, indicating the importance of language training.

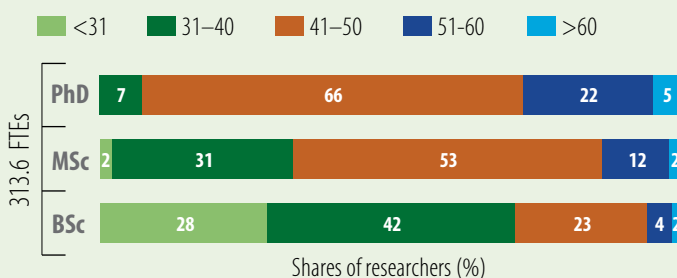
Total number of researchers by qualification level, 2004–2011 (FTEs)



While the number of researchers holding PhD degrees increased by 40 percent during 2004–2011, those qualified to the MSc- and BSc- degree level doubled. As a result, by 2011, the share of PhD-qualified researchers was only 8 percent, compared with 38 percent with MSc degrees and 54 percent with BSc degrees.

In 2011, half of Mozambique's researchers were under 40 years of age. Three-quarters of researchers holding PhD degrees and 86 percent of those holding MSc degrees were under 50 years old.

Distribution of researchers by age bracket, 2011



## CROSS-COUNTRY COMPARISONS OF KEY INDICATORS

	Total number of researchers, 2011 (FTEs)	Growth in number of researchers, 2008–2011	Share of PhD researchers, 2011 (FTEs)
<b>Mozambique</b>	<b>313.6</b>	<b>22%</b>	<b>8%</b>
Malawi	162.3	41%	20%
Tanzania	814.8	18%	20%
Botswana	123.8	26%	20%

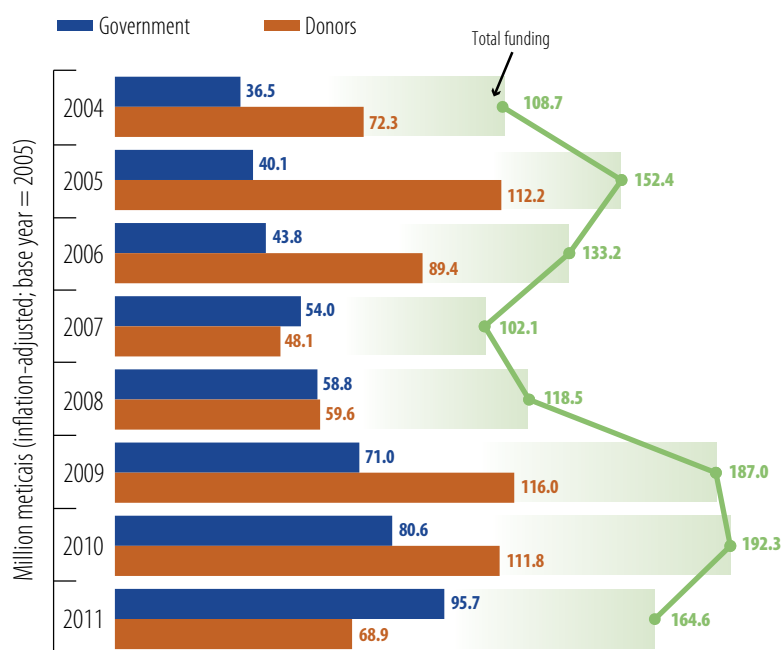
## CHALLENGE

- ▶ While Mozambique has made progress in rebuilding its agricultural sector, underinvestment and funding volatility in agricultural R&D continue to be constraints. Despite overall spending growth, the country still invests a very low share of its agricultural GDP in agricultural research—indicated by a research intensity ratio of only 0.36 in 2011, well-below the recommended 1 percent target set by NEPAD and the United Nations.

## OBSERVATION

- ▶ The government has identified a number of agricultural targets and priorities through recent policies (see Box). Nevertheless, this commitment can only be translated into improved agricultural productivity and food security with consistent and sustainable funding of agricultural research.

IIAM's funding sources, 2004-2011



Government funding to IIAM doubled between 2004 and 2011. However, the government only funds IIAM's research staff salaries; the costs of actually running research programs and building and maintaining infrastructure require external funding, which is generally erratic and short-term. Donor funding as a share of total funding fluctuated from 62 percent in 2004 to 40 percent in 2011. Funding volatility negatively affects the planning, budgeting, timing, and efficiency of research endeavors, and often causes prior progress to be eroded.

### ▶ RECENT POLICY DEVELOPMENTS

Recent policy developments in Mozambique have potential implications for agricultural research. The 2010 launch of PIAIT strengthened collaboration and partnerships between IIAM and international agencies like Embrapa, the International Fertilizer Development Center, Michigan State University, and a number of CGIAR centers. Over time, it is hoped that this collaboration will be expanded to other national research and academic organizations, extension agencies, and producers.

IIAM was established in 2004 as a result of agricultural research reform. Its first strategic plan, approved in 2011, aims to increase the institute's efficiency and effectiveness in generating knowledge and innovative solutions for sustainably developing agriculture while managing the natural resource base. At the regional levels, the plan aligns with declarations by the African Union and the SADC subregion, as well as CAADP.

IIAM is leading a new center of excellence for rice-based cropping systems as part of the APPSA program, funded by a World Bank loan. The Mozambique component has a US\$30 million budget for the 2013–2017 period.

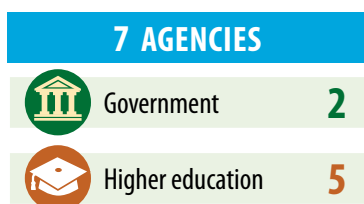
These new policies, strategies, and initiatives are an excellent step toward strengthening Mozambique's national research and technological innovation system. Securing sustainable financial investment, particularly for human resource training, will be vital.

## CROSS-COUNTRY COMPARISONS OF KEY INDICATORS *continued*

	Total spending, 2011 (million 2005 PPP dollars)	Overall spending growth, 2008–2011	Spending as a share of AgGDP, 2011
<b>Mozambique</b>	<b>20.7</b>	<b>14%</b>	<b>0.36%</b>
Malawi	34.3	110%	1.03%
Tanzania	81.4	5%	0.54%
Botswana	17.5	-27%	2.44%

## OVERVIEW OF MOZAMBIQUE'S AGRICULTURAL RESEARCH AGENCIES

Seven agencies conduct agricultural R&D in Mozambique. The main agency, IIAM (employing 210 FTEs in 2011), accounts for two-thirds of the country's total number of agricultural researchers (in FTEs) and holds a broad mandate focusing on crops, livestock, forestry, and natural resources. IIAM comprises four technical directorates and four Agricultural Research Zonal Centers in the South, Central, Northwest, and Northeast regions of the country. The other government agency, IIP (employing 38 FTEs in 2011) focuses on marine and inland fisheries research. Five higher education agencies also conduct agricultural research, including three faculties at Eduardo Mondlane University—the Faculty of Agronomy and Forestry Engineering (21 FTEs in 2011), Faculty of Veterinary Science (14 FTEs in 2011), and School of Marine and Coastal Sciences (3 FTEs in 2011)—together with the Polytechnic University of Manica (16 FTEs in 2011) and Polytechnic University of Gaza (13 FTEs in 2011). Research conducted by the nonprofit and private-for-profit sectors in Mozambique is minimal.



 For a complete list of the agencies included in ASTI's dataset for Mozambique, visit [www.asti.cgiar.org/mozambique](http://www.asti.cgiar.org/mozambique).

## 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.
- ▶ **Public agricultural research** includes research conducted by government agencies, higher education agencies, and nonprofit institutions.
- ▶ 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 2005 local currencies and **2005 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, due to **decimal rounding**, the percentages presented can sum to more than 100.



For more information on ASTI's data procedures and methodology, visit [www.asti.cgiar.org/methodology](http://www.asti.cgiar.org/methodology); for more information on agricultural R&D in Mozambique, visit [www.asti.cgiar.org/mozambique](http://www.asti.cgiar.org/mozambique).

## ACRONYMS USED IN THIS FACTSHEET

<b>APPSA</b>	Agricultural Productivity Program for Southern Africa
<b>CAADP</b>	Comprehensive Africa Agriculture Development Programme
<b>CCARDESA</b>	Centre for Coordination of Agricultural Research and Development in Southern Africa
<b>Embrapa</b>	Brazilian Agricultural Research Corporation
<b>FTE(s)</b>	Full-time equivalent (researchers)
<b>IFAD</b>	International Fund for Agricultural Development
<b>IIAM</b>	Agricultural Research Institute of Mozambique
<b>IIP</b>	Fisheries Research Institute
<b>NEPAD</b>	New Partnership for Africa's Development
<b>PIAIT</b>	Platform for Agricultural Research and Innovation Technology
<b>PPP(s)</b>	Purchasing power parity (exchange rates)
<b>R&amp;D</b>	Research and development
<b>SADC</b>	Southern African Development Community
<b>USAID</b>	United States Agency for International Development

## ABOUT ASTI, IFPRI, AND IIAM

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 led 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 **Agricultural Research Institute of Mozambique (IIAM)** is Mozambique's principal agricultural research agency; the institute falls under the Ministry of Agriculture and focuses on crop, livestock, forestry, and natural resources research.

ASTI/IFPRI and IIAM gratefully acknowledge participating agricultural R&D agencies for their contributions to the data collection and preparation of this country factsheet. ASTI also thanks the Bill and Melinda Gates Foundation for its 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 IIAM.