

PERFORMANCE REPORT 2017

TRANSFORMING THE GLOBAL FOOD SYSTEM

SUMMARIZED REPORT









Global funding for agricultural research must be sustained, otherwise more than our food supply could be at risk: employment, peace, gender equality, and efforts to combat climate change would likely also become casualties."

Marco Ferroni

Chair, CGIAR System Management Board





If we can't fix our food system, we will not achieve the SDGs. We want to play a central role in driving a shift of food systems so that they are more sustainable, more productive and benefit populations across the world."

Elwyn Grainger-Jones

Executive Director, CGIAR System Organization

Highlights of 2017

616

'innovations' (significant products or findings from research)

including **348** in a stage available for uptake

1,764

peer-reviewed publications of which **61%** were published in Open Access

112

international and national policies, legal instruments, investments and curricula to which CGIAR research contributed

50,000

publications

1,800

datasets

given searchable Open Access through a new prototype system 'GARDIAN'

1.961

formal partnerships were reported



51% RESEARCH



33% WORK ON SCALING OR DELIVERY OF MATURE INNOVATIONS

348,927

people in CGIAR training courses or events



40% WOMEN

including **1,700** on degree or other long-term courses



30% WOMEN



CGIAR genebanks represent the largest and most widely used collections of crop diversity in the world, with **768,576** accessions, including **25,301** in vitro accessions and **28,063** accessions held as plants or trees in the field. In 2017, **109,339** germplasm samples were provided by CGIAR genebanks to users (including CGIAR breeders). A total of **61,376** samples were distributed outside CGIAR, in **95** countries.

Agricultural research is a smart and critical investment

As world events again demonstrated last year, poverty and hunger have ramifications that are far-reaching and potentially explosive. CGIAR plays a major part in producing the new knowledge and technology that is needed to meet the Sustainable Development Goals (SDGs).

The world's food system is on the wrong trajectory. Most of the world's population eats too little, too much, or the wrong type of food – at an unsustainable cost to the environment, health, and political stability. Achieving the SDGs depends on a food system simultaneously capable of delivering greater volumes of more nutritious food with a lower environmental footprint.

CGIAR is dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources. The challenge is to attract the long-term, predictable funding that facilitates CGIAR research, while at the same time operating more efficiently

and effectively. CGIAR is the world's largest global agricultural innovation network, with 15 Research Centers delivering a portfolio of 15 Research Programs and Platforms. CGIAR brings evidence to policy makers, innovation to partners, and new tools to harness the economic, environmental and nutritional power of agriculture.

READ THE INTRODUCTION: on.cgiar.org/AR2017-PR

READ THE EXECUTIVE SUMMARY: on.cgiar.org/AR2017-ES

CONSULT THE COMPLETE VERSION OF THE 2017 PERFORMANCE REPORT: on.cgiar.org/AR2017

CGIAR INNOVATIONS REPORTED FOR 2017, BY STAGE OF RESEARCH AND TYPE OF INNOVATION

STAGE OF INNOVATION	METHODS AND TOOLS	PRODUCTION SYSTEMS	GENETIC	SOCIAL SCIENCE	BIOPHYSICAL RESEARCH	TOTAL
1-Research/proof of concept	50	13	57	6	8	134
2-Piloting	45	9	6	3	3	66
3-Available for use	68	32	228	11	9	348
4-Taken up by 'next users'	38	10	11	7	2	68
Total	201	64	302	27	22	616

Source: CRP annual reports and evidence presented to support claims. A list of innovations available for use in 2017 is in Annex Table C, and a full database is available: CGIAR Innovations in 2017.























From a good idea to reaching millions:

Learning from CGIAR's work on biofortification

Deficiencies in iron, zinc and vitamin A pose a serious threat to health and economic development. **CGIAR's biofortification programs** tackle this through breeding micronutrients into the staple crops that dominate the diet of the poorest farmers and consumers.

More than 290 new varieties of 12 biofortified crops have been released or are in testing in 60 countries. In 2017, an estimated 10 million households benefited from biofortified crops. Recognizing these achievements, four CGIAR researchers were awarded the World Food Prize in 2016.

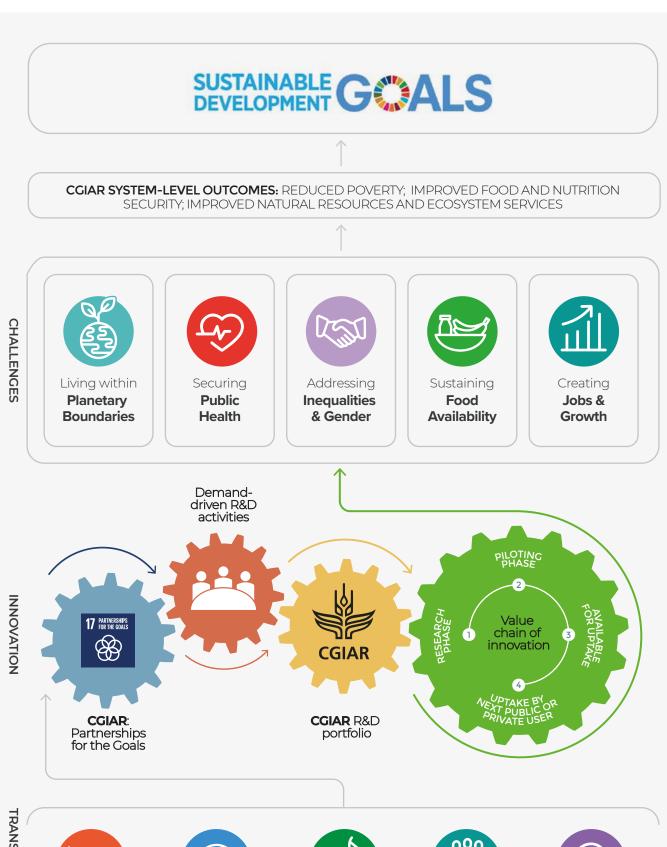
Factors that have led to this success include:

· Risk-taking and perseverance: CGIAR research on biofortification started 25 years ago with a vision of what 'might' work, and is now scaling up to benefit millions of people. Funders who took a risk in supporting this vision have been vindicated.

- Partnerships: across CGIAR Research Centers and hundreds of partners across the world, who undertake crop breeding, research, extension, seed production and other market activities.
- A clear vision of potential pathways to impact, and using research to systematically test the assumptions and links in those pathways.
- Substantial investment in monitoring and evaluation, both to document results and to feed evidence into decision-making.

READ THE FULL STORY: on.cgiar.org/AR2017-CS

Transforming the global food system







Nutrition



Environment



Genetics



Social & Economic



Information



Progress towards Strategy and Results Framework goals

Evidence from 2017

The CGIAR System reports progress against an agreed Strategy and Results Framework (SRF), including aspirational targets that feed into the SDGs.

CGIAR is also making an important contribution to tracking **global** progress against the SRF targets and SDGs. CGIAR researchers are contributing to international tracking of nutrition, water use, adoption of crop varieties and innovations, forest cover and climate change.

It is not possible to simply "monitor" CGIAR impacts – rigorous adoption and impact studies are required, both to confirm benefits and to disentangle the contribution of CGIAR from many other factors.

Moreover, the timeline between starting up an agricultural research area and achieving impact at scale is typically 5-25 years, so most reported impacts relate to past CGIAR research. A steady stream of solid evidence on past impacts should however give confidence that a similar order of results can be achieved from current research.

Continued investment in adoption and impact studies is vital for CGIAR, both to produce credible evidence of impact from past investments, and to learn what factors make for success.

Partnerships are at the core of CGIAR's work. CGIAR Research Programs (CRPs) reported nearly 2,000 formal partnerships in 2017, as well as many informal partners.

Partners included:

- Policy makers in governments and international agencies who make use of CGIAR research findings in policy and investment decisions, as well as helping set the research agenda;
- Research collaborators in a wide range of research and academic institutions in more than 70 countries around the world;
- Public and private sector companies and non-profit institutions who are particularly involved in development and scaling of innovations.

READ THE FULL PROGRESS TOWARDS SRF GOALS: on.cgiar.org/AR2017-PT



SRF ASPIRATIONAL **TARGET 2022**

GLOBAL PROGRESS

CGIAR CONTRIBUTION BASED ON 2017 EVIDENCE

100 million

more farm households adopt improved varieties, breeds, management practices











INSUFFICIENT DATA

Cassava - 3.1 million households in Nigeria

Wheat - 130.000 ha in Kazakhstan

Agroforestry innovations – 69,000 households in Kenya

Improved tilapia fish – 16 countries, 53% of hatcheries in Bangladesh, 40% in the Philippines

Brachiaria hybrid forage grasses – 829,000 ha in 30 countries

Fruit crop diversity - 160,000 households in Central Asia

30 million people (50% women)

assisted to exit poverty











ON TRACK Rice – 8 million people in Africa lifted above poverty line

Drought-resistant maize – 2.1 million people in Nigeria lifted above poverty line and risk of crop failure reduced by 80%

Cassava – 1.8 million people in Nigeria lifted above poverty line

Potato – Present value of benefits of adoption in Yunnan Province, China estimated at around USD 3 billion

Tree domestication – 637,000 people (52% women) improved income in Sulawesi, Indonesia

Rate of yield increase for major food staples rises from

<1% to 1.2–1.5% p.a.











TRENDS UNCLEAR Rice – Improved varieties increased on-farm yields by 0.16-0.71 tons/ha in Sub-Saharan Africa and considerable total factor productivity gains of 25-40%, higher for women than men

Lentils – New varieties increased production in Bangladesh by 27% (52,000 tons/year)

Cassava – New varieties gave average 82% increase in yields in Nigeria

30 million more people (50% women)

meeting minimum dietary energy requirements













TRENDS **UNCLEAR** **Rice** – Improved rice varieties reduced food insecurity in the annual scarcity season by 0.9 million households in Sub-Saharan Africa

Maize – Adoption of improved varieties in Ethiopia improved height for age and weight for age of children under five



SRF ASPIRATIONAL TARGET 2022

GLOBAL PROGRESS

CGIAR CONTRIBUTION BASED ON 2017 EVIDENCE

150 million more people (50% women)

without micronutrient deficiencies











OFF-TRACK

Biofortified crops – 3.2 million households were reached in 2017, bringing the global total to 10 million. This included:

- Vitamin A crops -4.5 million households in 10 countries
- Iron crops 1.7 million households in 8 countries
- Zinc crops 1.6 million households in 6 countries

Aflatoxin control – 100,000 ha in Africa were treated with Aflasafetm in 2017 (aflatoxin has been associated with micronutrient deficiency in children)

10% reduction

women with poor dietary diversity









OFF-TRACK

No new evidence in 2017. Further impact work required.

5% increase

in water and nutrient efficiency











OFF-TRACK

No new evidence in 2017. Further impact work required.

Reduce GHG emissions by 0.2 Gt









OFF-TRACK

Estimated reduction in emissions of up to 1.26 million tons/year due to reduced fires in Indonesia

Retained natural forest in Guinea (14 km²) sequestered about 345,000 tons of carbon

55 million ha

of ecosystem restored







INSUFFICIENT DATA

Improved agroforestry practices adopted on 67,000 ha of degraded land in Kenya and Malawi

Improved water co-management on 186,000 ha of water area in Bangladesh

2.5 million ha

of forest saved from deforestation











TRENDS UNCLEAR No new evidence for 2017 apart from the example reported under "Reduce GHG emissions by 0.2 Gt"

Progress towards research outcomes

CGIAR produced:

616 innovations

An 'innovation' is a significant product or finding from research. **348** of these were 'available for use' (such as a variety released, or a technique ready to scale up).

FEATURED INNOVATION

to information technology tools and climate-smart decisions tailored to their and what to plant, and how much water to use. This was awarded a UNFCCC

on.cgiar.org/AR2017-KI

CGIAR contributed:

to 112 policies and investments

Much of CGIAR's impact comes through the contribution of its research results to policies and investments at national and international level.

For example, CGIAR research informed:

- livelihoods of 120,000 households at the

bank accounts for women.

READ MORE ABOUT CGIAR'S CONTRIBUTION TO POLICIES: on.cgiar.org/AR2017-PI AND THE LIST OF EXAMPLES:

CGIAR trained

348,927 people



40% WOMEN

1.700 on degree

or other long-term courses



30% WOMEN

CGIAR CONTRIBUTIONS TO INTERNATIONAL AND NATIONAL POLICIES. **LEGISLATION AND SIGNIFICANT INVESTMENTS REPORTED IN 2017**

	GLOBAL	REGIONAL	MULTI-COUNTRY	NATIONAL	SUB-NATIONAL	TOTAL
Policy or strategy	13	8	6	37	8	72
Budget or investment			5	18	5	31
Curriculum						5
Legal instrument						
Total	14	12	12	64	13	112



Publications

A new CGIAR prototype system, GARDIAN, gave searchable Open Access to 50,000 publications and 1,800 datasets by the end of 2017.

GET HIGHLIGHTS OF 2017 PUBLICATIONS: on.cgiar.org/AR2017-PH COMPLETE LIST OF PUBLICATIONS: on.cgiar.org/AR2017-PU AND ALTMETRIC HIGHLIGHTS: on.cgiar.org/AR2017-AL

peer-reviewed publications authored/ co-authored by CGIAR researchers

are Open Access

1,208



of all CGIAR publications were tracked via Altmetric 799 of these publications received attention from social media, news media and in policy documents



policy document citations from institutions such as FAO, the World Health Organization, the World Fconomic Forum and the World Bank

mentions in sources such as Newsweek, National Geographic, The Japan Times. The Times of India. Al Jazeera Business Insider El País, The Guardian, The Zimbabwe Star, AllAfrica, and BBC News

12,906

tweets

saves on Mendeley

FEATURED PUBLICATION

Coupling of pollination services and coffee suitability under climate change



Mentioned by:

103 news outlets

12 blogs

195 tweeters

15 Facebook pages

5 Google+ users

2 Redditors

Partnerships

CGIAR Research Programs worked in 1.961 formal external partnerships, 51% for research and 33% for work on delivery/scaling up.

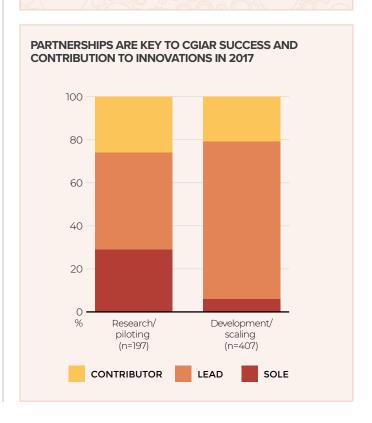
Partnerships with the private sector are often vital to delivering CGIAR innovations. The effective management of intellectual assets and intellectual property rights are an essential part of these partnerships. In 2017, a review was undertaken of the CGIAR Principles on the Management of Intellectual Assets, which seek to achieve a delicate balance between maintaining the founding value of global accessibility of CGIAR research results and proactively achieving targeted impacts through the use of intellectual property rights and licensing. The review concluded that the Principles were appropriate and useful, and made recommendations to strengthen their application, part of which are currently being implemented. In 2017, CGIAR Centers reported a total of three provisional patent applications and two non-provisional patent applications, as well as 23 Limited Exclusivity Agreements and four Restricted Use Agreements with the private sector. These were all determined to further the CGIAR vision and to be consistent with the Principles.

READ MORE ABOUT CGIAR'S MANAGEMENT OF INTELLECTUAL ASSETS: on.cgiar.org/AR2017-IA

FEATURED PARTNERSHIP

In an effort to improve the livelihoods of nearly 6 million cocoa farmers across Africa, Asia and Latin America who produce 90% of cocoa worldwide, the Global Network on Cacao Genetic Resources Conservation and Use (CacaoNet), coordinated by CGIAR, brings together actors from public and private sectors to facilitate cocoa breeding and many other activities, including the International Cocoa Awards.

READ MORE ABOUT CGIAR PARTNERSHIPS: on.cgiar.org/AR2017-EP





Working together to **boost performance**

CGIAR has restructured its research portfolio to maximize value and enhance partnership collaboration.

Three Platforms which work across CGIAR were created (or strengthened) in 2017:

- The Genebank Platform supports the core activities of the CGIAR genebanks to conserve and make available the 35 crop and tree collections under its management, and improve standards.
- The Platform for Big Data in Agriculture (launched May 2017) aims to mobilize CGIAR data to accelerate research and spur new data-driven innovations, build data collaboration internally and externally, and foster leadership in digital agriculture. It also supports and promotes Open Data.
- · The Excellence in Breeding Platform (launched August 2017) aims to modernize breeding programs, drawing from innovations in the public and private sectors to increase the effectiveness and efficiency of breeding.

Pooling investments

Pooled investments from contributors to the CGIAR Trust Fund ('Window 1-2') are also key to CGIAR performance and were used for a wide variety of 'value-added' work in 2017. Examples include start-up investment on emerging research topics; supporting integration of gender; capacity development of national partners; and financing international policy engagement to leverage research results. Improved tracking systems for W1-2 funding are being explored.

READ MORE ABOUT POOLED INVESTMENTS IN CGIAR'S SHARED RESEARCH AGENDA: on.cgiar.org/AR2017-FW

New CGIAR reporting system

Some key components of a new reporting system were also approved in 2017, including a set of Common Results Reporting Indicators. The ground was laid for further systems development in 2018, taking in the recommendations from an evaluation of Results-Based Management (RBM), which concluded that there was a lack of a shared vision across the System on RBM and that serious investment was needed in this area. 2017 also saw greatly increased use of Management Information Systems, and these are expected to be adopted by all CGIAR Programs and Platforms in 2018, increasing efficiency in System-wide reporting as well as program management.

Collaboration across CGIAR

Collaboration across CGIAR has significantly increased since the development of the new research portfolio, adding value and improving learning across the System.

READ MORE ABOUT COLLABORATIONS ACROSS CGIAR: on.cgiar.org/AR2017-IC

NUMBER OF REPORTED CROSS-CGIAR COLLABORATIONS IN 2017

Agri-food systems CRPs	FISH	FISI	Н										
	FTA	0	FTA										
	LIVESTOCK	0	0	LIVI	STO	CK							
	MAIZE	1	1	1	MA	IZE							
	RICE	3	1	1	2	RIC	Œ						
	RTB	1	1	0	1	2	RTE						
	WHEAT	1	1	1	3	1	1	WI	WHEAT				
Integrating CRPs	A4NH	2	0	2	2	3	2	2	2 AN4H				
	CCAFS	2	3	8	7	14	1	6	2	2 CCAFS			
	PIM	2	8	4	8	4	9	4	2	9 PIM			
	WLE	1	2	2	1	1	2	1	1	5	2	WLE	
Integrated research platform (PIM)	Gender research	1	1	1	1	1	1	1	1	1	1	1	
	Genebank	0	1	1	1	1	3	1	0	0	0	0	
Platforms	Excellence in Breeding	1	1	1	4	2	1	1	0	0	0	0	
	Big Data	1	0	0	2	1	2	1	1	0	1	1	

SOURCE: CRP ANNUAL REPORTS FOR 2017.

Learning and improving

CGIAR Research Programs depend on integrated monitoring, evaluation, learning, and impact assessment to test their assumptions, learn, and improve their work.

2017 saw CGIAR's System-wide advisory bodies, the Independent Science and Partnership Council (ISPC) and its Standing Panel on Impact Assessment (SPIA); the Independent Evaluation Arrangement (IEA); and the Internal Audit Unit (IAU), providing guidance and assurance on the status and performance of CGIAR's research agenda, the quality of the work and its impact.

A key advance in 2017 was the adoption of a System Risk Management Framework and associated Guidelines. Building on expertise from the CGIAR IAU, Center management and Internal Audit teams, the System adopted five risk families and indicators to reflect best international practice on taking an informed risk-based approach to delivery.

Other highlights included:

- An independent foresight assessment and international workshop on global trends affecting agri-food systems (ISPC)
- A proposed System-wide Quality of Research for Development framework (ISPC)

- A new database of varietal release and adoption estimates for 11 CGIAR mandate crops in 15 countries in Asia, and advances in methodology based on DNA testing (ISPC-SPIA)
- Publication of a set of influential impact studies, including some that provided key evidence of CGIAR impacts and others that challenged conventional wisdom (ISPC-SPIA)
- System-wide evaluations and reviews, including on gender, RBM, intellectual assets, capacity development and partnerships (IEA)
- A cross-CGIAR workshop on Theories of Change in CGIAR research (IEA)
- Capacity building to strengthen internal controls across CGIAR
 Centers, including: publication of Good Practice Notes and
 self-assessment tools, and a review of CGIAR Centers' commor
 financial health indicators, contributing to overall efforts to
 strengthen Center financial stability (IAU)

READ MORE ON SYSTEM-WIDE ADVISORY BODIES: on.cgiar.org/AR2017-OA

MAIN FINDINGS OF THE 2017 ISPC FORESIGHT ASSESSMENT EXERCISE

The world is facing a "perfect storm" of global threats and challenges that agri-food R4D can help resolve, including rising urbanization and migration; a changing structure of rural populations; changing diets and food systems; disruptive innovations in technology and not least climate change. In the context of rapidly growing private sector involvement in research worldwide, CGIAR can play an important role in supporting public goods.





Gender

In 2017, CGIAR took several steps forward in mainstreaming gender across all its Programs and bringing high-quality gender research into its portfolio.

READ MORE ABOUT CGIAR'S WORK ON GENDER: on.cgiar.org/AR2017-IG

Youth and other equity issues

Work on youth issues surged across CGIAR in 2017, with several multi-country studies, meetings and literature reviews on rural youth and employment issues.

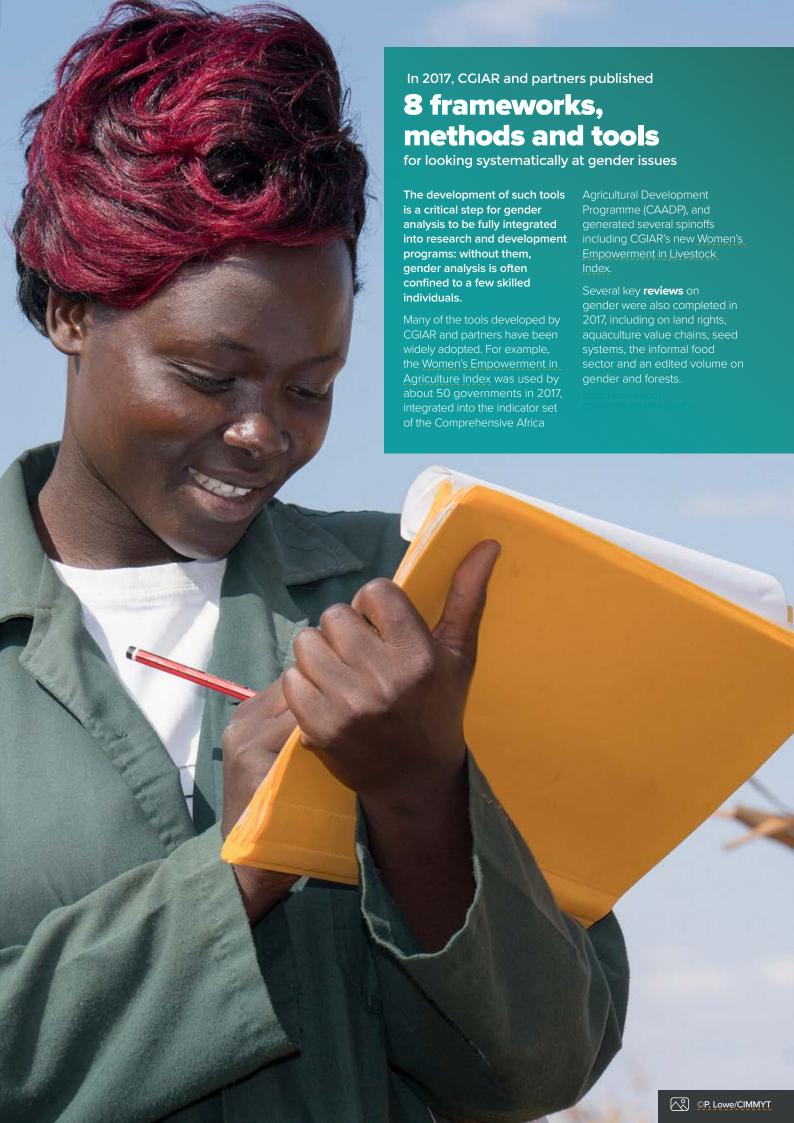
READ MORE ABOUT CGIAR'S WORK ON YOUTH AND OTHER EQUITY ISSUES: on.cgiar.org/AR2017-YE

FEATURED WORKING GROUP

The CGIAR Gender and Breeding Initiative brings together breeders and social scientists to develop a strategy for gender-responsive breeding and supporting methods, tools, and practices. What is particularly promising about this initiative is its systematic approach to involving breeders of crops, livestock and fish, and meeting their detailed technical needs.



A paper by a CGIAR researcher, Alessandra Galiè, on links between women's empowerment and crop seed improvement in pre-war Syria, won an Elsevier Atlas award in 2017 as "a research paper with outstanding potential for impacting people's lives".

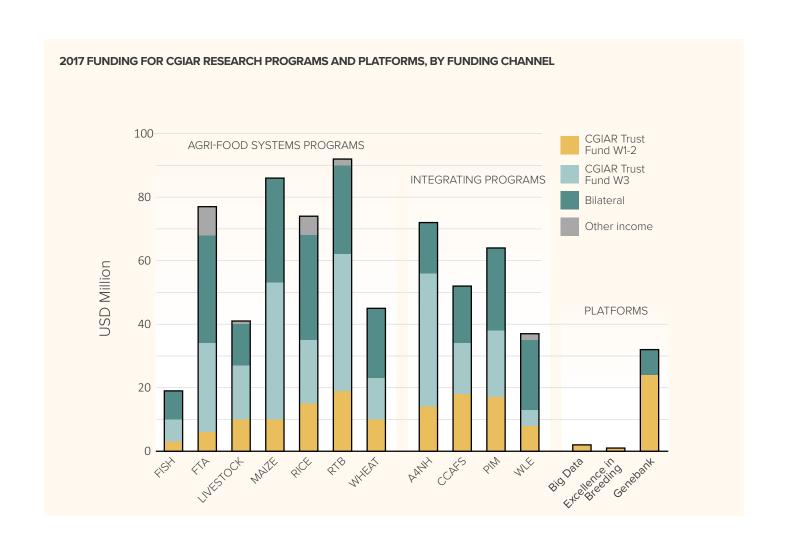


Finance

CGIAR recognized income of USD 849 million in 2017, of which 56% was channeled through the CGIAR Trust Fund. 19% of the total was pooled funding (CGIAR Trust Fund Windows 1 and 2), that plays a vital role in core activities such as integrating gender across the Programs and responding to unforeseen challenges such as a new crop disease. Of total funding, 85% was used for research and 15% for general and administrative costs.

READ MORE ABOUT FUNDING AND FINANCE: on.cgiar.org/AR2017-FH ACCESS THE FULL FINANCE REPORT: on.cgiar.org/AR2017-FR





Our Centers across the world





Africa Rice Center (AfricaRice) www.africarice.org



 Center for International Forestry Research (CIFOR) www.cifor.org



International Center for Agricultural Research in the Dry Areas (ICARDA)

www.icarda.org



International Institute of Tropical Agriculture (IITA) www.iita.org



International Water Management Institute (IWMI) www.iwmi.org



 Bioversity International www.bioversityinternational.org



International Maize and Wheat Improvement Center (CIMMYT) www.cimmyt.org



International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) www.icrisat.org



 International Livestock Research Institute (ILRI) www.ilri.org



World Agroforestry Centre (ICRAF) www.worldagroforestry.org



International Center for Tropical Agriculture (CIAT) www.ciat.cgiar.org



International Potato Center (CIP) www.cipotato.org



International Food Policy Research Institute (IFPRI) www.ifpri.org



International Rice Research Institute (IRRI) www.irri.org



WorldFish www.worldfishcenter.org

CGIAR Trust Fund^{*} contributors

CGIAR greatly appreciates the contributions made by all funding partners, without which none of our work would be possible, including funding partners who provide invaluable support to CGIAR Research Programs through targeted projects and bilateral investments in CGIAR Research Centers. Consult the full list of CGIAR Trust Fund Contributors and Bilateral Contributors.



























































* Recognizing contributions to the CGIAR Trust Fund from March 2017.

 \sim Cover page photo credits:

Peatlands fire, Indonesia. Photo by A. Erlangga/ CIFOR.

Female empowerment discussion, Kenya. Photo by C. Schubert/ CCAFS.

Genebank plant samples, Colombia. Photo by N. Palmer/ CIAT.

Research on migration, Nepal. Photo by M. Edliadi/ CIFOR.



CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources and ecosystem services. Its research is carried out by 15 CGIAR Centers in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations and the private sector.



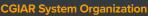












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