

AN UPDATE  
ON THE

# CGIAR

FOR DONORS



*Enhancing  
Food Security  
Through  
Agricultural  
Research*

## 2010 WAS AN EXTRAORDINARY YEAR IN THE HISTORY OF THE CGIAR.

Following donors' approval of reform measures at the CGIAR's Business Meeting in December 2009, the newly formed CGIAR Fund Council – chaired by Inger Andersen, Vice President for Sustainable Development in the World Bank – made a series of landmark decisions over the course of the year. It approved the documents for legal establishment of the Fund and appointed the Chair (Kenneth Cassman, Heuemann Professor of Agronomy at the University of Nebraska) and members of the new Independent Science and Partnership Council (ISPC). Most significantly, the Fund Council approved two CGIAR Research Programs, which address fundamental challenges for agriculture in this century – raising the productivity of staple foods and coping with the impacts of climate change on agriculture and food security.

The new CGIAR Consortium of International Agricultural Research Centers had already appointed Carlos Pérez del Castillo as its Board Chair in late 2009. He has a long and distinguished record of national and international public service, with emphasis on international economic issues. The full Board was rapidly assembled and by September 2010 had appointed the Consortium's first Chief Executive Officer, Lloyd Le Page. He previously led the Sustainable Agriculture and Development division of Pioneer Hi-Bred, a Du Pont business, focusing primarily on the improvement of agricultural value chains with small farmers in Africa and Asia. In January 2011, Jonathan Wadsworth, a senior adviser to the UK government, was chosen to serve as Executive Secretary of the Fund Council and Head of the Fund Office.

In addition, the Consortium Board chose Montpellier, France, as the location for the Consortium office at the invitation of the French Government. It also reviewed and refined the Strategy and Results Framework (which will be considered by the Funders

Forum in April 2011) and assessed the process for creating and refining major new research programs within this framework.

In sum, ambitious reforms are advancing rapidly, with the aim of heightening the CGIAR's relevance and impact through harmonized funding for programs that confront key global research challenges.

### RECENT EVIDENCE ON RESEARCH IMPACTS

*The CGIAR's record of delivering major positive impact is strong, providing a firm basis for building the new CGIAR Research Programs, which are the centerpiece of the reforms.* This message is reinforced by a 2010 review article in the journal *Food Policy*, which provides an overview of hard evidence published in the last decade on CGIAR research impacts. The article was authored by agricultural economics professor Mitch Renkow of North Carolina State University in the USA in collaboration with Derek Byerlee, a former adviser in the World Bank's Agriculture and Rural Development Department. Co-author of the World Development Report 2008: Agriculture for Development, Byerlee serves as Chair of the Standing Panel on Impact Assessment of the ISPC.

Addressing concerns that an expanded mission and slower funding growth in the 1990s may have eroded the CGIAR's effectiveness, the authors conclude that the impacts of its crop improvement research "continue to be very large, generating profound benefits to poor people both within and outside the agricultural sector." The study also cites "substantial

evidence . . . that other research areas within the CGIAR have had large beneficial impacts."

Following are highlights of the study's principal findings:

- **The overall benefits of the CGIAR's contribution to crop improvement have been "extraordinarily large,"** — estimated in 2008 at US\$2.5, \$10.8 and \$0.8 billion in average annual benefits, respectively, for the three main cereals, wheat, rice and maize. To a large extent, these benefits — resulting from the work of the Africa Rice Center, CIAT, CIMMYT, ICARDA, IITA and IRRI — have come from lower food prices, which favor poor consumers in particular, since they spend about half of their income on staple foods.
- **Benefits from crop improvement are increasingly emerging in sub-Saharan Africa.** For example, according to a 2008 study, improved bean varieties developed by CIAT with networks of national partners are now planted by 5.3 million rural households on about half of the total bean area in Eastern, Central and Southern Africa. Offering a 30-50 percent yield advantage and resistance to multiple diseases, the new varieties increase and stabilize production of a highly nutritious food. While strengthening household food and nutrition security, improved production also provides surplus grain for women (who are the main bean growers) to sell in local markets.
- **New maize varieties resulting largely from research at CIMMYT and IITA have spread to roughly 60 percent of the total area sown to this crop in**

**West and Central Africa** — helping move 740,000 people out of poverty annually in recent years, according to a 2009 estimate.

- **Seven case studies published in 2007** (documenting research at CIAT, CIFOR, CIMMYT, ICARDA, the World Agroforestry Center, IWMI and the WorldFish Center) indicate that **natural resource management research is giving highly positive returns on investment.** The practice of no-tillage, for example, which is spreading rapidly in the rice-wheat systems of South Asia's Indo-Gangetic Plain, has been shown to reduce farmers' production costs (for labor, machinery and fuel) by 10 percent and to raise crop productivity by the same amount, chiefly through improved soil fertility resulting from crop residues left on the soil surface. These gains have generated economic benefits on the order of \$165 million from 1990 to the present, compared to an investment of about \$3.5 million.
- **The impacts of CGIAR policy research are substantial.** IFPRI research on the liberalization of rice prices in Vietnam during the mid-1990s, for example, led to the relaxation of rice export quotas and of internal restrictions on trade, generating benefits worth \$45-91 million. ILRI research and advocacy aimed at decriminalizing the marketing of milk by small-scale vendors in Kenya boosted sales and consumption, creating benefits for producers and consumers with an estimated value of \$44-283 million.

Each of these examples of significant impact represent many years of investment and hard

work. For example, development of a single new rice variety through conventional breeding can take 8-10 years.

## STRATEGIC APPROACH

*The CGIAR is rapidly developing a broad research portfolio, consisting of CGIAR Research Programs (CRPs), which are grounded in the Strategy and Results Framework (SRF).* The SRF provides, for the first time, a common research strategy for all 15 of the Centers. It establishes four System-Level Outcomes — reducing rural poverty, improving food security, enhancing nutrition and health and sustainable management of natural resources — which are addressed by the CRPs. These are major multi-year collaborative initiatives, through which the Centers and their partners aim to deliver measurable results, with a sharp focus on development impact.

As the SRF took shape in 2010, the Consortium solicited proposals for CRPs. The two approved so far are described in detail below.

### GLOBAL RICE SCIENCE PARTNERSHIP (GRISP)

Rice is the staple food for more than half of the world's consumers. It is especially important in Asia, where 90 percent of the crop is grown and nearly 560 million poor people spend about a fifth of their household budget on this grain. Because of rapid population growth, global demand for rice will outstrip supplies within the next several decades unless concerted action is taken now to boost the current rate of yield

growth and improve the management of water and other resources on which production depends.

In pursuit of these goals, GRiSP will embark on the most comprehensive attempt ever to deploy rice genetic diversity, while promoting simultaneous revolutions in rice agronomy, processing and policy. To ensure maximum impact from this endeavor, with a 5-year budget of nearly US\$600 million, it will be carried out jointly by three CGIAR Centers — IRRI (the lead Center), the Africa Rice Center and CIAT) — and major international organizations in France and Japan in collaboration with hundreds of partners, including national agricultural research systems, civil society and the private sector. Partners officially launched the new initiative in November 2010 at the Third International Rice Congress held in Hanoi, Vietnam.

Increased investment in rice research is expected to result in the impacts described as follows by 2020:

- Poor people's expenditures on rice worldwide will have declined by nearly US\$5 billion annually (holding consumption constant).
- Counting those reductions as income gains means that 72 million people will have been lifted above the poverty line of \$1.25 per day, reducing the global number of poor by 5%.
- As a result of increased rice availability and reduced prices, 40 million undernourished people in Asia, where rice is the primary staple, will have reached caloric sufficiency, reducing hunger in this region by 7%.
- Approximately 275 million tons of CO<sub>2</sub> equivalent emissions will have been averted.

#### CLIMATE CHANGE, AGRICULTURE AND FOOD SECURITY (CCAFS)

Agriculture is a significant contributor to climate change, accounting directly for about 15 percent of global greenhouse gas emissions, or nearly 26 percent if one takes into account the emissions from deforestation that are related to agricultural expansion. The sector is also highly vulnerable to climate change impacts, such as shifting rainfall patterns and more severe weather, which could severely depress agricultural productivity, with expected losses on the order of 10-30 percent in developing countries.

CCAFS will offer developing country farmers new options for adapting to emerging impacts in the coming decades and for mitigating climate change through a "carbon-friendly" agriculture that also strengthens food security and reduces poverty. Developed in collaboration with the Earth System Science Partnership (ESSP), the initiative involves all CGIAR Centers (under the leadership of CIAT) and a wide coalition of partners. With an initial 3-year budget totaling US\$206 million, it was launched during the United Nations Climate Change Conference held in early December at Cancún, Mexico.

Investment in CCAFS is expected to result in the impacts described as follows by 2020:

- The cross-sectoral efforts to which CCAFS contributes will have reduced rural poverty by 10% in the target regions (initially East and West Africa and the Indo-Gangetic Plains).

- The program's contribution to reduction in hunger will have helped reduce the number of undernourished people in rural households of the target regions by 25%.
- Agriculture will have contributed to climate change mitigation by enhancing storage or reducing emissions by 1,000 Million tons CO<sub>2</sub>-eq (considering all gases) below the "business-as-usual" scenario.

#### OTHER RESEARCH PROGRAMS UNDER DEVELOPMENT

Four more CRPs are expected to be submitted to the Fund Council in April 2011:

- **Wheat** — Dramatically boost wheat productivity while renewing the crop's resistance to globally important diseases and pests and enhancing its adaptation to warmer climates while reducing the water, fertilizer, labor and fuel requirements of wheat production.
  - **Maize** — Help double maize productivity, with essentially no expansion of maize area, through more intensive, sustainable and resilient maize-based farming systems that are adapted to climate change and to rising fertilizer, water and labor costs.
  - **Forests and trees** — Enhance the management and use of forests, agroforestry and tree genetic resources across diverse landscapes.
  - **Policies, institutions and markets** — Design appropriate policies and strengthen the capacity of institutions and markets to support pro-poor growth in agriculture.
- Other programs under development focus on:
- **Agricultural systems in the dry areas** — Pursue new technology, institutional and policy options for enhancing productivity and managing risks through diversification, sustainable intensification and integrated agro-ecosystem approaches.
  - **Agricultural systems in the humid tropics** — Widen the array of technologies and innovations available and strengthen local capacity to adopt these for rural livelihood improvement.
  - **Aquatic agricultural systems** — Change the way the CGIAR engages with aquatic agricultural systems to better address constraints faced by rural households.
  - **Roots, tubers and bananas** — Develop methods that better enable smallholder farmers to access markets for higher value products, thus raising incomes and contributing to more diverse farming systems.
  - **Grain legumes** — Identify ways to use grain legumes more effectively for enhancing human nutrition, raising feed quality and maintaining soil health.
  - **Dryland cereals** — Improve the efficiency of research on dryland cereals so that it better meets the needs of smallholder farmers in drylands.
  - **Livestock and fish** — Raise the productivity of small-scale livestock and fish systems to make meat, milk and fish more affordable and readily available to poor consumers while increasing rural incomes.

- ***Agriculture for improved nutrition and health*** — Accelerate progress in improving the nutrition and health of the poor through changes in agricultural and food systems.
- ***Water scarcity and land degradation*** — Develop and promote research-based solutions that address water scarcity and land degradation while contributing to ecosystem sustainability.

The Consortium and Fund Council are jointly developing a monitoring and evaluation system, which will provide a continuous stream of detailed information about achievements and impacts resulting from investment in the CRPs as well as about financial issues. External evaluations of CRPs and Centers will reinforce this activity by providing incisive assessments of their governance, management and financial health.

## COLLABORATIVE INNOVATION

***Stronger and broader partnerships are central to the new CGIAR Research Programs.***

Collectively, partners will foster a global process of innovation, in which national research systems shape the agenda with active participation by the private sector and civil society organizations as well.

CCAFS, for example, has created a major new partnership that links the CGIAR with more than a dozen other global actors, including the Food and Agriculture Organization (FAO) of the United Nations and the Global Donor Platform for Rural Development, which unites the World Bank, International Fund for Agricultural Development (IFAD) and others. CCAFS, GRIIP

and other new programs will also draw on useful lessons from the CGIAR's recent success in forming public-private partnerships and enhancing its engagement with civil society.

Recent efforts to strengthen partnerships build on a long history of creative effort to better integrate the work of all the CGIAR Centers and a wide range of regional and national partners. The HarvestPlus Challenge Program, for example, has blended the work of agricultural and nutrition scientists into a pioneering multidisciplinary effort to raise the micronutrient content of staple food crops through a process referred to as "biofortification."

Another successful partnership model on which new collaborative research can be patterned is the CGIAR Collaborative Research Program for Sustainable Agricultural Production in Central Asia and the Caucasus, which won the coveted King Baudouin Award in 2008 for its successful effort — involving nine CGIAR Centers — to rejuvenate food production in this region.

## THE CGIAR FUND

***The Fund Council is the decision-making body of the Fund.***

The Funders Forum, which brings together donors, CGIAR leaders and other stakeholders, endorses the Strategy and Results Framework of the CGIAR.

The Fund Office, located at World Bank headquarters in Washington, D.C., supports the Fund Council and Funders Forum. The 22 members of the Fund Council give equal representation to developing and developed countries plus multilateral organizations and foundations. The World Bank serves as the trustee of the CGIAR Fund.

*The Fund offers donors greater flexibility in their support for the CGIAR.* They can channel contributions through any of three “windows.” Contributions to Window 1 are pooled in support of the CGIAR as a whole, while those to Window 2 are allocated to specific CGIAR Research Programs. Using Window 3, donors can continue contributing to specific Centers during a 2-year transition period, at the end of which this practice will be reviewed.

*Since approval of the documents for its legal establishment in November 2010, the CGIAR Fund has begun operations.* By February 2011, it had received US\$38.5 million from Sweden, the Netherlands and the UK. The new CGIAR Fund is expected to receive about \$372 million for calendar year 2011. Additional funding to the CGIAR will continue bilaterally. 2010 contributions are estimated at \$645 million, and there is every expectation that in 2011 they will reach a similar level. A bigger challenge is reaching the target of \$1 billion by 2013. The Joint Agreement and SRF are pending final approval in April 2011. This will permit disbursements from Windows 1 and 2 of the Fund.

## ABBREVIATIONS

<b>CCAFS</b>	Climate Change, Agriculture and Food Security
<b>CGIAR</b>	Consultative Group on International Agricultural Research
<b>CIAT</b>	Centro Internacional de Agricultura Tropical (International Center for Tropical Agriculture), Colombia
<b>CIFOR</b>	Center for International Forestry Research, Indonesia
<b>CIMMYT</b>	Centro Internacional de Mejoramiento de Maiz y Trigo (International Maize and Wheat Improvement Center), Mexico
<b>CIP</b>	Centro Internacional de la Papa (International Potato Center), Peru
<b>CRP</b>	CGIAR Research Programs
<b>GRiSP</b>	Global Rice Science Partnership
<b>ESSP</b>	Earth System Science Partnership
<b>ICARDA</b>	International Center for Agricultural Research in the Dry Areas, Syria
<b>IFPRI</b>	International Food Policy Research Institute, United States
<b>IITA</b>	International Institute of Tropical Agriculture, Nigeria
<b>ILRI</b>	International Livestock Research Institute, Kenya
<b>IRRI</b>	International Rice Research Institute, Philippines
<b>ISPC</b>	Independent Science and Partnership Council of the CGIAR
<b>IWMI</b>	International Water Management Institute, Sri Lanka
<b>SRF</b>	Strategy and Results Framework
<b>UK</b>	United Kingdom
<b>US, USA</b>	United States of America



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