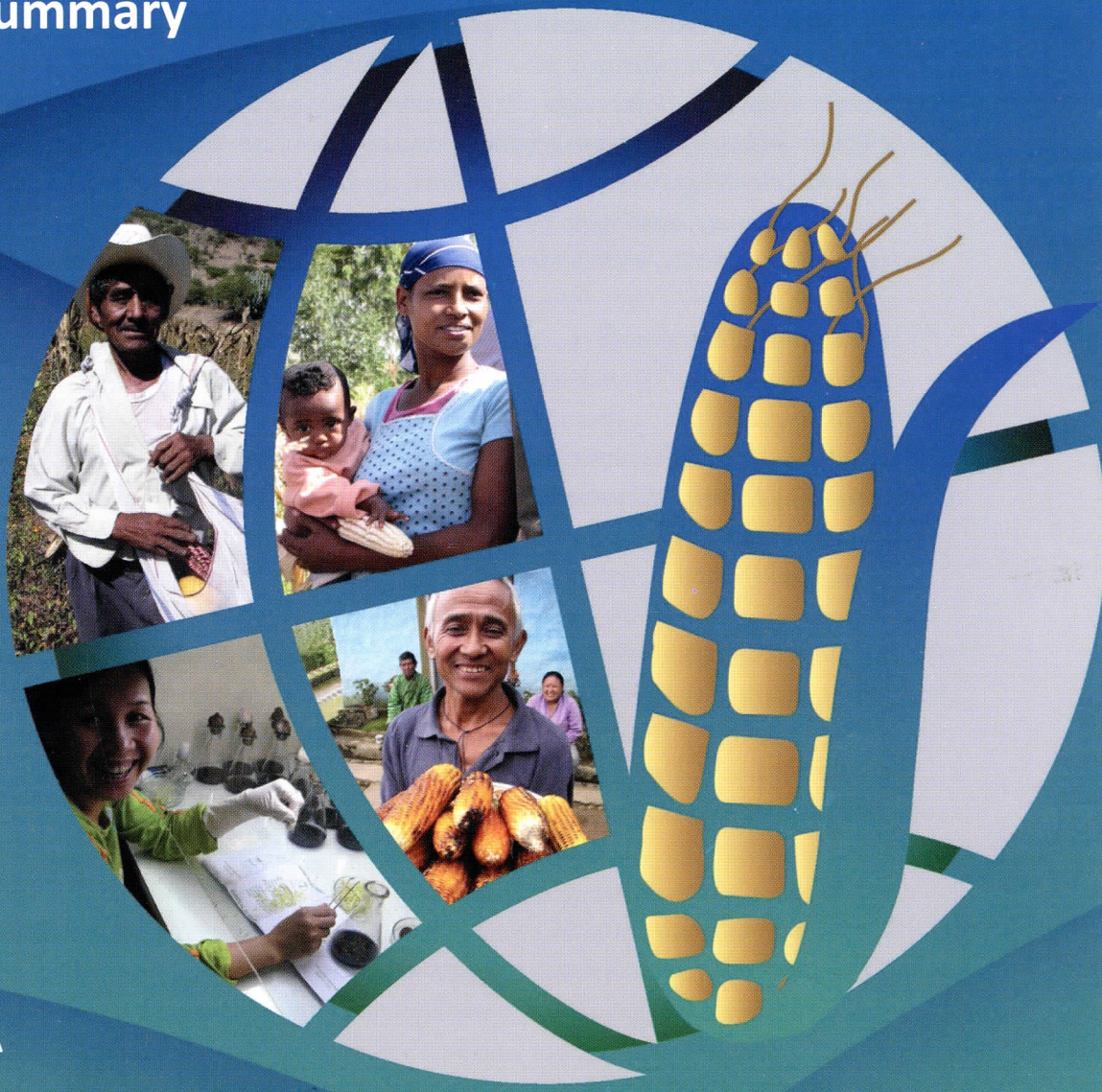
MAIZE - Global Alliance for Improving Food Security and the Livelihoods of the Resource-poor in the Developing World

Executive Summary



CIMMYT and IITA

in collaboration with

CIAT, ICRISAT, IFPRI, ILRI, IRRI, the World Agroforestry Centre

130 national agricultural research institutes • 18 regional and international organizations • 21 advanced agricultural research institutes • 75 universities • 46 private sector organizations • 42 non-governmental and farmer cooperative organizations • 11 countries hosting MAIZE offices

CIMMYT MR International Maize and Wheat Improvement Center | IITA Research to Nourish Africa

Recurrent food price crises—combined with the global financial meltdown, volatile energy prices, natural resource depletion, and climate change—threaten the livelihoods of millions of poor people. Together with rice and wheat, maize provides at least 30% of the food calories of more than 4.5 billion people in 94 developing countries. They include 900 million poor consumers for whom maize is the preferred staple, 120 -140 million poor farm families, and about one-third of all malnourished children. Between now and 2050, the demand for maize in the developing world will double, and by 2025 maize will have become the crop with the greatest production globally and in the developing world. But harvests at current levels of productivity growth will still fall short of demand and millions of farm families will remain in poverty. Unless vigorous measures are taken to stabilize food prices, accelerate yield growth, increase incomes from more productive, sustainable, and resilient maize based systems, and give greater opportunities to women and young adults, the outcome will be less affordable food for millions of poor maize consumers, continuing poverty and childhood malnutrition, deforestation, soil degradation, reduced biodiversity, and accelerated depletion of water and fertilizer reserves.

This challenge is the main reason that the CGIAR centers engaged in maize research, together with a community of over 350 public- and private-sector partners worldwide, are implementing a new strategy for international maize research. The strategy is designed to ensure that publicly-funded international agricultural research helps most effectively to ***stabilize maize prices and double the productivity of maize-based farming systems, making them more resilient and sustainable and significantly increasing farmers' income and livelihood opportunities, without using more land and as climates change and fertilizer, water, and labor costs rise.*** The strategy will support and greatly strengthen the efforts of national governments, the private sector, international, regional and local organizations, and farming communities, creating or capitalizing on synergies and building on the different skills, knowledge, and resources of the community that designed the strategy.

For 900 million farmers and consumers in low- and middle-income countries, maize is a preferred crop or food. Well over 90% of resource poor maize farmers and consumers live in tropical and subtropical areas of Africa, Asia, and Latin America. The **first target group** for MAIZE worldwide is **smallholders** who live **in stress-prone environments and who have poor market access** (typically both factors go together). This group includes an estimated 640 million poor people who live on USD 2 per day or less; 275 million are maize dependent and 72 million of those are malnourished children. The **second target group** comprises **market-oriented smallholders in more favorable production areas** and with great potential to supply markets but who lack access to appropriate technology. This group includes 470 million poor, of whom 367 million are maize dependent and among whom there are at least 49 million malnourished children. Beyond these two target groups, there will be spill-over benefits to other farmers in developing countries. The third target group includes poor maize consumers and governments in low- and middle-income countries affected by maize price fluctuations.

At the core of the strategy are nine **Strategic Initiatives** (SIs)**.** Of high priority for international maize research and reflecting partners' feedback, the SIs are designed for integrated implementation to generate products and services that meet the needs and aspirations and leverage the capacities of

regional and local research and development partners and smallholder farmers in the above-mentioned target groups, in particular women and young adults. Their titles and main outputs are listed below:

SI 1 Socioeconomics and policies for maize futures. Work will increase the effectiveness and positive impacts of maize research on food security, poverty reduction, gender equity, and the environment through an improved understanding of maize price developments and better targeting of new technologies, policies, strategic analysis, and institutional innovations.

SI 2 Sustainable intensification and income opportunities for the poor. Efforts will foster sustainable intensification and income opportunities in six maize-based farming systems where 315 million of the poorest and 22% of all malnourished children live.

SI 3 Smallholder precision agriculture. The initiative will offer crop management advice and practices that allow 20 million information-constrained smallholders to close the maize yield gap, lower production costs, and reduce agriculture's environmental foot print, especially through more efficient fertilizer use.

SI 4 Stress tolerant maize for the poorest. Partners will develop stress tolerant maize varieties that reduce hunger and production shortfalls for 90 million people as climates change and abiotic and biotic stresses become more frequent, widespread, and intense.

SI 5 Towards doubling maize productivity. Public-private partnerships with the local seed sector and agro-industry will provide better adapted and diverse maize hybrids to smallholders in emerging markets, allowing them to produce enough maize grain to meet the daily requirements of 160 million consumers while strengthening the local breeding sector.

SI 6 Integrated postharvest management. This initiative will offer integrated approaches to improve food safety and reduce post-harvest losses of grain.

SI 7 Nutritious maize. The chief product will be bio-fortified maize varieties that, together with outputs from SI 6, will allow heavy consumers of maize in 15 countries to attain healthy and nutritious diets and farmers to benefit from marketing opportunities.

SI 8 Seeds of discovery. Applying cutting-edge research, partners will open the "black box" of maize genetic diversity, permitting researchers to mobilize its full potential in breeding programs worldwide, especially for hard-to-solve problems related to climate change.

SI 9 New tools and methods for NARS and SMEs. This initiative will offer novel tools to give small- and medium-scale public and private seed enterprises in developing countries the same tools as multinational ones and thereby fill demand niches not attended by large companies, especially for smallholders.

All SIs include **capacity building** to empower a new generation of women and men scientists in the range of topics covered.

With a targeted annual budget rising to USD 97.8 million—to which the CGIAR currently contributes approximately 19% of the funding through unrestricted support, and bilateral CGIAR and non-CGIAR donors contribute approximately 53% of the funding through over 100 individually designed projects—MAIZE will increase the productivity of the target groups by 7% by 2020 and 33% by 2030, adding an annual value of USD 2.0 billion by 2020 and 8.8 billion by 2030. It will reach 40 million smallholder farm family members by 2020 and 175 million by 2030, and provide enough maize to meet the annual food demand of an additional 135 million consumers by 2020 and 600 million by 2030.

MAIZE will be implemented by the same community of traditional and newer partners who developed the strategy, that is:

- The principal research partners: lead center CIMMYT and IITA.
- CIAT, ICRISAT, IFPRI, ILRI, IRRI, and the World Agroforestry Centre.
- 130 national agricultural research institutes.
- 18 regional and international organizations.
- 21 advanced agricultural research institutes.
- 75 universities in developing and developed countries.
- 46 private sector organizations.
- 42 non-government organizations and farmer associations.
- 11 country governments that host MAIZE offices.

As the strategy is implemented, other principal research partners will join in managing MAIZE, from among those who contribute most in research staff and skills, infrastructure and financial resources, and whose goals are aligned with those of MAIZE.

MAIZE outputs and work of co-funded and cooperative endeavors will contribute to and benefit from other CGIAR Research Programs (CRPs). These are CRPs 1.1 and 1.2 (Integrated agricultural systems for the poor and vulnerable - dry areas and humid tropics); CRP 2 (Policies, institutions and markets for enabling agricultural incomes for the poor); GRiSP (The global rice science partnership – a part of CRP 3); CRP 4 (Agriculture and improved nutrition for health); CRP 5 (Durable solutions for water scarcity and land degradation); and, especially, CRP 7 (Climate change agriculture and food security).

Humanity faces tremendous challenges to food security and environmental degradation that will worsen if no measures are taken. Given the time needed to create the improvements described, we must act now so that poverty and hunger can be reduced, human health and nutrition improved, and better care taken of resources to support future generations.