CGIAR STRATEGY AND RESULTS FRAMEWORK 2016-2030
REDEFINING HOW CGIAR DOES BUSINESS UNTIL 2030
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We are proud to present CGIAR’s second comprehensive Strategy and Results Framework (SRF).

CGIAR is the only worldwide partnership addressing agricultural research for development, whose work contributes to the global effort to tackle poverty, hunger and major nutrition imbalances, and environmental degradation. Our Strategy responds and will contribute directly to the achievement of the Sustainable Development Goals (SDGs) outlined by the United Nations, in particular to reduce poverty, to improve food and nutrition security for health, and to improve natural resources systems and ecosystems services. In order to feed the predicted global population of 9 billion people by 2050, food availability (increasing production and reducing losses) needs to expand by 60% globally and up to 100% in developing countries. Currently, over a billion people live on less than US$ 1.25 per day and more than 800 million are acutely or chronically undernourished. Under-nutrition remains the underlying cause of death for at least 3.1 million children a year, accounting for 45% of all deaths of children under 5 and stunting the growth of another 165 million. Women remain particularly disadvantaged, lacking access to productive resources. An estimated 3.5 billion hectares (ha) of degraded land now lie unproductive due to over-exploitation, unsustainable water use threatens 40% of the world’s grain production, and climate change is projected to reduce developing countries pastoralism and further reduce yields of major cereals, such as wheat and maize. We cannot simply tread familiar paths in response to these statistics.

Over the next few years we must redouble our focus on women and young people, extend our efforts to improve dietary quality among the poor and vulnerable, and intensify our work on climate-smart agriculture – all given new prominence in our research agenda. At the same time we will continue to build on our long record of achievement in research to improve the productivity of staple foods, livestock and fish, and to restore and protect the natural resources used to produce them – our traditional areas of strength.

This SRF reflects the collective expectations of the donor community, to whom we express our sincere gratitude for their continuing support. Many people have contributed to development of this SRF: those who direct and lead our research within CGIAR Centers; our partners in the wider research and development community; and, most importantly, those whom we seek to benefit – poor farmers, food producers and consumers of the developing world.

Not content to hear only from known sources, we have also proactively sought the views of people and organizations external to the CGIAR system. A stakeholder consultation convened by the Global Forum for Agricultural Research (GFAR) garnered many valuable insights and inputs. We are highly appreciative of all contributions. Collectively, they have greatly strengthened our strategy. We call upon all our stakeholders to support it – and to help implement it.

We believe this SRF provides a firm foundation for the research we must work on with our partners in the coming fifteen years if we are to achieve our vision of a world free of poverty, hunger, and environmental degradation.

Investing in research of CGIAR with partners is a strong and effective investment to tackle those challenges. We call upon all our stakeholders to support it – and to help implement it.
Agri-food system research is an effective investment toward poverty and hunger. Directly observed benefits of past CGIAR investments are already twice the level of costs, and benefits are likely to go as high as 17 times costs as they are harvested over the lifetime of projects. Just over half of the world’s rice land is sown to high yielding varieties derived from CGIAR breeding materials. Launched in 2006, Drought Tolerance Maize For Africa (DTMA) has produced more than 100 new maize varieties with drought tolerance that have been adopted on a total of one million hectares across East and Southern Africa, giving an average yield advantage of 20-50%.

In today’s world, over a billion people live on less than US$ 1.25 per day and more than 800 million are acutely or chronically undernourished. The number of people suffering from micronutrient deficiency or ‘hidden hunger’ is even greater, around 2 billion. Women remain particularly disadvantaged, lacking equal access to productive resources and providing much of the labor for agriculture without fully sharing in its financial returns. Meanwhile, threats to the natural resource base needed for future food production are rising steadily. An estimated 3.5 billion ha of degraded land now lie unproductive due to overexploitation. Unsustainable water use threatens 40% of the world’s grain production. The number of people affected by drought or floods each year has risen to 150 million. Between 1980 and 2008, climate change brought about global yield declines of 3.8% for maize and 5.5% for wheat. Collectively agriculture and food systems contribute up to 20% of global greenhouse gas emissions and will need to be much more climate smart.

CGIAR is a global research partnership that is a leading provider of research and development to address such challenges in agriculture (including crops, livestock, aquaculture and forestry). Our vision is a world free of poverty, hunger and environmental degradation. Our mission is to advance agricultural science and innovation to enable poor people, especially women, to better nourish their families, and improve productivity and resilience so that they can share in economic growth and manage natural resources in the face of climate change and other challenges.

CGIAR’s 2016 – 2030 Strategy and Results Framework (SRF) defines CGIAR’s aspirations and strategic actions to deliver on our mission. Our SRF defines how CGIAR will build on past successes and investments and find new and creative solutions to barriers to success — it defines how we will harness new opportunities.

Our SRF is ambitious. By 2030, the action of CGIAR and its partners will result in 150 million fewer hungry people, 100 million fewer poor people — at least 50% of whom are women, and 190 million ha less degraded land.

We plan to deliver on our SRF by focusing on the following three goals (System Level Outcomes or SLOs), and their Intermediate Development Outcomes (IDO):

1. Mitigating and adapting to climate change risks and shocks
2. Ensuring gender and youth equity and inclusion
3. Strengthening the policy and institutional enabling environment
4. Developing the capacity of national partners and beneficiaries

These goals and targets reflect and are aligned with increasing worldwide political convergence on necessary actions to meet the competing demands of global development.

Specifically, CGIAR’s new SRF will help achieve global ambition reflected in the following:

- SDGs, United Nations’ Zero Hunger Challenge, G8 Nutrition for Growth Compact, Global Alliance for Climate Smart Agriculture (GACSA)’s commitment, IUCN’s Bonn Challenge on Landscape Restoration, and the Convention on Biodiversity’s Aichi Targets.
- A US$1.5 billion annual budget in 2015 – and a resource mobilization goal of US$1.5 billion by 2025 – CGIAR and its partners’ contribution to

EXECUTIVE SUMMARY
the achievement of these global goals have been quantified and are summarized in table 1 that follows for two time periods. By 2022 to reflect outcomes from the 6-year next generation CGIAR Research Programs (CRPs) commencing in 2017, and 2030 to align with the SDGs.

To reach these targets, we will focus on the following eight research priorities where CGIAR has a comparative advantage to develop to tackle these pressing global needs:

- Genetic improvement of livestock, crops, fish and trees, to increase productivity, resilience and nutritious value and efficiency of resource use.
- Agricultural systems, adopt a systems approach to optimize economic, social and environmental co-benefits in areas with high concentrations of poor people.
- Gender and inclusive growth, creating opportunities for women, young people and marginalized groups.
- Enabling policies and institutions, to improve the performance of markets, enhance delivery of critical public goods and services, and increase the agency and resilience of poor people.
- Natural resources and ecosystem services, focusing on productive ecosystems and landscapes that offer significant opportunities to reverse environmental degradation and enhance productivity.
- Nutrition and health, emphasizing dietary diversity, nutritional content and safety of crops, foods, and development of value chains of particular importance for the nutrition of poor consumers.
- Climate-smart agriculture, focusing on urgently needed adaptation and mitigation options for farmers and other resource users.
- Nurturing diversity, ensuring that CGIAR in-trust plant genetic resources collections are safely maintained, genetically and phenotypically characterized to maximize the exploitation of these critical resources for food security, productivity, nutrient rich crops and resilient farming systems.

We will concentrate our research and our impact in specific geographies. Asia (over 50% of investments), Africa (about 30% of investments) and poverty hotspots in Latin America (about 20% of investments), where the majority of the world’s poor and hungry live. We will periodically review these investments in light of new politics, demographic, and climate change imperatives so that our research is aligned to major development goals. We will align with national agricultural priorities in the countries where we work, through national consultations as part of the Global Conference on Agricultural Research for Development (GCARD).

To make sure our research outputs have impact, we will build on earlier GCARD consultation processes and put in place a theory of change: this will identify the expected changes and benefits for the next users of these outputs, and what needs to occur for these outputs to be translated into the targets for 2022 have been assembled based on the projections to 2030 but recognizing that adoption rates are non-linear and will build on the work of the existing CRP portfolio.
1. SOCIETY GRAND CHALLENGES AND CGIAR

The challenges of the 21st century are both new and old. They are pressing against these bio-physical planetary boundaries.4 Research is needed to ensure that human activities, particularly those linked with food demand, are compatible with the world’s ecosystems.5

Specifically, these pressures include:

- Unsustainable harvests of fish and other aquatic products undermining marine habitats and the future of oceanic systems.
- Age and labor in agriculture. New approaches are needed to address the aging population and to redirect young people into agriculture.
- Overdrawn and polluted water supplies threatening social development and rising levels of conflict.
- Post-harvest losses of crop, livestock, fish, and non-food products, represents waste, and food.
- Directly observed benefits of past CGIAR investments have typically only reached a few thousand people (and in specific locations). CGIAR’s goal is to continue to emphasize research that delivers outcomes to wider populations.

CGIAR 2016 – 2030 SRF - WHAT ARE WE DIFFERENTIATING

- Looking outwards, recognizing the changing context, global commitments, and nature of research, priorities and expectations of investors.
- Ensuring that our research puts more emphasis on poverty, nutrition for health, resilience, degraded land, the agri-data revolution, and on the overarching interactions with climate change.
- Focusing on societal grand challenges through the identification of eight research priorities where CGIAR has a comparative advantage, further potential, and a commitment to build with partners’ capacity to deliver impact.
- Strategically building a more coherent and integrated portfolio of second generation CRPs that will collectively deliver System Level Outcomes.
- Using the theory of change and linking to partners to transform research outputs into outcomes for the targeted populations.
- Emphasizing entrepreneurship and innovation along the agri-food supply chain to provide major opportunities for youth employment.
- Committing to closing the gender gap by equitable access to resources, information and power in the agri-food system.
- Establishing a new accountability framework providing clear, measurable development targets, metrics and outcomes.
- Learning to operate more efficiently and effectively by reducing duplication and transaction costs.
- Seeking out strategic partnerships, including public-private partnerships, that add value and leverage new sources of funding.

We will work to achieve gender equity throughout CGIAR. CGIAR’s goal is to continue to emphasize equitable access to resources, information and power in the agri-food system for men and women, and we are committed to closing the gender gap by 2030. We will focus explicitly on the role of youth in agri-food systems, to embrace the dynamism of agriculture and innovation to create growth, income and jobs, particularly in rural areas.

We will focus on enhancing the capacity to innovate and to further advance strategies for capacity development.

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We will ensure that we are diligent when making investment choices at each step of the research evaluation phase. CGIAR’s Independent Science and Partnership Council (ISPC) will strengthen the quality, relevance, and impact of new investments throughout the provision of expert scientific guidance through an appropriate qualitative prioritization for the next generation of CRPs at both pre-proposal and final proposal stage. This will ensure that only the strongest, most directly relevant CRP proposals are approved for funding.

We will develop Site Integration Plans to bring together the work of CGIAR Centers and programs in key countries, where CGIAR innovations are expected to reach millions of people.

We will work closely with partners, including the world’s most advanced research institutes, national agricultural institutions and, increasingly, the private sector, to supply the best evidence research as well as with governments, national research partners, non-governmental organizations and the local private sector to ensure our research is up-and-out scaled.

CGIAR 2016 – 2030 SRF - WHAT ARE WE DIFFERENTIATING

- Common for land from multiple sources: food and feed crops, livestock, bio-fuels and biodiversity, forest products, protected areas, urban expansion, and a host of other ecosystems services.
- Unsustainable harvests of fish and other aquatic products undermining marine habitats and the future of oceanic systems.
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- Diminishing genetic resources. Between 7 and 25% of vascular plant species are under threat of extinction by 2050.5
- The insidious effects of malnutrition. Nutritional and diverse agri-food systems and diets are becoming more important. Increased conversions of land to agriculture is leading to pressing against these bio-physical planetary boundaries.
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THE BENEFITS OF CGIAR RESEARCH: WHAT PAST INVESTMENTS HAVE DELIVERED

- The economic benefits of CGIAR as a whole were estimated to range from about US$4 billion to more than $100 billion. Even under quite conservative assumptions, the benefits of research have been roughly double the investment.

- About 60 percent of the food crop area planted with improved varieties includes many of the approximately 7,250 varieties resulting from CGIAR research.

- In the late 1980s, Africa witnessed one of CGIAR’s most spectacular research achievements since the Green Revolution — biological control of two devastating insect pests of the tropical root crop cassava. The economic returns — reaching a current value US$9 billion for research on just one of the pests, the cassava mealybug — far exceed CGIAR’s total investment in Africa since 1971.

- A 2007 review of investments in agricultural research carried out by five CGIAR Centers and their partners in South Asia during the post-Green Revolution period (i.e. since the early 1980s) found average annual benefits of more than $1 billion from research on maize, rice and wheat alone, far above CGIAR’s total annual expenditures in the region.

- A 2009 study aimed at quantifying benefits from CGIAR research on yield stability estimated that the global economic value of genetic resistance to various wheat diseases amounts to as much as $2.0 billion annually.

Quotes from: CGIAR Fund Office, 2011
Our vision: A world free of poverty, hunger and unsustainable agriculture in Africa (over 50% of investments), Asia (about 30% of investments) and poverty hotspots in Latin America (about 20% of investments) where the majority of the world’s poor and hungry live. This reflects the political commitment of our donors, the damage projected to food and nutrition security from climate change, and the projected impact of climate change, and the research capacity of beneficiary region/countries. We will be responsive and agile and adapt investment in light of changing needs.

Our goals: System Level Outcomes (SLOs):
- Improve food and nutrition security for health
- Improve natural resource systems and ecosystem services
- Improve the productivity of poor people, especially women, to better nourish their families, and reduce malnutrition through improved agricultural and food systems
- Improve tenure rights and access to resources in the face of climate change and other challenges.

CGIAR’S COMPARATIVE ADVANTAGE

- The CGIAR System delivers research to millions of farmers.
- CGIAR produces public goods (from global to local) that can be distributed free of charge.
- CGIAR convenes partners, brokers research, and mobilizes expertise to understand needs, build capacity, accelerate innovation.
- CGIAR holds in trust unique genetic resources from CGIAR genebanks.
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- CGIAR is the world’s leading public-good research organization in agriculture.
- CGIAR has a strong track-record in leading research in Africa (over 50% of investments), Asia (about 30% of investments) and poverty hotspots in Latin America (about 20% of investments) where the majority of the world’s poor and hungry live. This reflects the political commitment of our donors, the damage projected to food and nutrition security from climate change, and the projected impact of climate change, and the research capacity of beneficiary region/countries. We will be responsive and agile and adapt investment in light of changing needs.

CGIAR’s mandate:
- Develop and transfer agricultural knowledge and technology to poor people, especially women, in developing countries.
- Improve food and nutrition security for health
- Improve natural resource systems and ecosystem services
- Improve the productivity of poor people, especially women, to better nourish their families, and reduce malnutrition through improved agricultural and food systems
- Improve tenure rights and access to resources in the face of climate change and other challenges.

CGIAR’S STRATEGY AND RESULTS FRAMEWORK 2016-2030

- CGIAR has a strong track-record in leading and conducting interdisciplinary research that combines biophysical and social sciences to combat poverty, hunger and malnutrition.
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Achieving and maintaining global food security, improving nutrition, and reducing rural poverty all require increased and targeted agricultural research to be supported by an efficient and effective Research and Development framework. CGIAR’s adaptation agenda in their subject areas.

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Besides new challenges, the context of CGIAR’s work over the coming fifteen years offers exciting opportunities: new global initiatives; new knowledge and understanding of agriculture and its contributions to other sectors; and very importantly, new scientific tools and, with them, new partnerships.

NEW GLOBAL INITIATIVES
As a new generation of leaders emerges to set the agenda at national level, new international mechanisms involving, for example, United Nations agencies, the G20, the revamped Committee on World Food Security, and an expanded range of development partners, are creating new ways of coordinating and delivering support, often with private-sector participation. In September 2015, the United Nations and its partners launched a new set of SDGs that have been taken on board by CGIAR. CGIAR also signed the G8 Nutrition Challenge, the IUCN’s Bonn Challenge on Landscape Restoration, and is a member of the Global Alliance for Climate Smart Agriculture. CGIAR will contribute to the Convention on Biodiversity’s Aichi Targets as well as the United Nations’ Zero Hunger Challenge. CGIAR is participating in setting targets and indicators, which it will work closely with its partners to achieve.

NEW UNDERSTANDING
Agriculture and the health, energy and environmental issues associated with it are gaining global attention. The double burden of under-nutrition and obesity has increased. The rapid growth of biofuels and biomaterials has linked agricultural and energy markets. The past focus of environmentalists on strict conservation has broadened to encompass the management of landscapes for multiple purposes, with tradeoffs and synergies between conservation and productive uses. As a consequence, agriculture is increasingly positioned within health and environment agendas.

NEW SCIENCE AND TECHNOLOGY
Advances in science and technology are also creating new opportunities for the work of CGIAR and its partners. Breakthroughs in nutrition, genetics, informatics, modeling, communication technologies, satellite imaging, remote sensing, meteorology, precision farming and conservation agriculture are driving global investments in agriculture, often with the private sector. Breakthroughs in satellite imagery and remote sensing, soil and water monitoring in agro-ecological practices, and precision farming are also specifically reducing the energy and environmental footprint of agriculture. Solutions implied by a ‘landscape’ approach to meeting the dual goals of food security and environmental sustainability will be particularly important for the sustainability of farming systems.

The most exciting advances are occurring at the interface between disciplines. Applications of synthetic biology promise better microbial systems with superior plant nutrition and disease resistance. Understanding the rhizosphere microbiome can enhance plant productivity and ecosystem function. New breeding techniques combined with environment and management practices are likely to lead to breakthroughs in photosynthesis and nutrient management, such as C4 rice and nitrogen-fixing cereals. These areas of ongoing discovery research for CGIAR require continued support to achieve breakthrough results within the next 5-10 years. The collation and application of insights from the study of large integrated data sets is starting to deliver benefits across genetics, economics, agronomy, and soil science. These insights and their associated predictive power have the potential to increase the resilience of food systems and reduce the risks associated with the management of water and nutrients. Data-intensive methods and new ways of gathering data will increase our capacity to monitor sustainability at different levels.
In sum, agriculture is now seen to be at the core of the new bio-economy; a user of and contributor to big data for innovation, part of the solution to environmental problems, an engine of economic growth, and the source of healthy diets. CGIAR, with its unique mandate for agricultural research across the world’s developing countries, will both harness and contribute to these advances in science and technology. Now CGIAR must go still further to get outcomes, working new partnerships and coalitions whenever these are needed to develop and spread new knowledge and practices.

4. RESULTS FRAMEWORK

CHALLENGES, IMPACT PATHWAYS, THEORIES OF CHANGE AND RESULTS FRAMEWORK

CGIAR’s Results Framework (Figure 2) describes the vision, mission and three strategic goals, or System Level Outcomes (SLOs), for the work of CGIAR and its partners over the 15-year period to 2030 set by our funders. CGIAR work will contribute to the reduction of poverty (and creation of wealth), to improved food security, nutrition and health, and to better management of natural resources (leading to improved ecosystem services).

The SLOs are the higher-level goals for CGIAR, with its unique mandate for agricultural research activities. CGIAR has introduced the concept of Intermediate Development Outcome (IDO), which enable researchers to think through the contexts in which their outputs might contribute to development outcomes.

TABLE 2. DIMENSIONS OF THE CHALLENGE BY SYSTEM LEVEL OUTCOMES (SLO) AS OF 2015

<table>
<thead>
<tr>
<th>IDO</th>
<th>Dimension</th>
<th>Focus</th>
<th>Indicators</th>
<th>Goal</th>
<th>Expected Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>SL01</td>
<td>Reduced poverty</td>
<td>Poor people (millions)</td>
<td>1,013</td>
<td>2000</td>
<td>2030</td>
</tr>
<tr>
<td>SL02</td>
<td>Improved food and nutrition security</td>
<td>Undernourished people (millions)</td>
<td>805</td>
<td>2000</td>
<td>2030</td>
</tr>
<tr>
<td>SL03</td>
<td>Improved ecosystems services</td>
<td>Stunted children under 5 (millions)</td>
<td>142</td>
<td>2000</td>
<td>2030</td>
</tr>
<tr>
<td>SL04</td>
<td>Increased access to natural resources</td>
<td>Micromutnant-deficient people (millions)</td>
<td>2,000</td>
<td>2000</td>
<td>2030</td>
</tr>
<tr>
<td>SL05</td>
<td>Improved water and energy systems</td>
<td>Women of reproductive age with anemia (%)</td>
<td>29</td>
<td>2000</td>
<td>2030</td>
</tr>
<tr>
<td>SL06</td>
<td>Reduced environmental and social shocks</td>
<td>Populations affected by land degradation (millions)</td>
<td>1,535</td>
<td>2000</td>
<td>2030</td>
</tr>
<tr>
<td>SL07</td>
<td>Enhanced livestock and natural resources management</td>
<td>Land, water and natural resources loss, including climate change and other forms of degradation</td>
<td>785</td>
<td>2000</td>
<td>2030</td>
</tr>
<tr>
<td>SL08</td>
<td>Improved food safety and security system</td>
<td>Threat from unsustainable water use</td>
<td>Food security of 2.5 billion people, 40% of grain production, 25% of global economy</td>
<td>150</td>
<td>2000</td>
</tr>
</tbody>
</table>

Below this level are Sub-Intermediate Development Outcomes (sub-IDOs), which represent research outcomes adopted by individuals or groups that are joint initiatives with other partners and international institutions. The IDOs and sub-IDOs will be adopted or adjusted by each CGIAR research program, according to pre-proposals prior to advancement to the full SRF document and will be periodically updated with new information and understanding evolves. The SRF is therefore a living document and will be periodically updated with new challenges and opportunities that reflect lessons learnt.
CGIAR and partners’ ambitious targets are set out in table 1 and represent two time periods: 2022 and 2030, respectively. They demonstrate the CGIAR system’s commitment to the goals and targets established by the international community. In addition to the CGIAR system’s commitment to contribute to achievement of the SDGs, CGIAR has signed the G8’s Nutrition for Growth Compact, which has committed, inter alia, to reaching 500 million pregnant women and children with effective nutrition interventions by 2030, prevent at least 20 million children under the age of five from having stunted growth, and save at least 1.7 million lives by reducing stunting, increasing breastfeeding, and treating severe acute under-nutrition. CGIAR also co-founded the 2014 Global Alliance for Climate Smart Agriculture, which has undertaken to reach 500 million farms with climate-smart interventions by 2030.

It should be noted that numbers in table 1 are not additive and that there is considerable overlap in the target populations. For example, many of the poor people lifted out of poverty (SLO 1, target 1.2) will be those farmers that have adopted improved practices (SLO 1, target 1.1) and/or will also meet minimum dietary requirements (SLO 2, target 2.2) and/or be without deficiencies of one or more of the essential micronutrients (SLO 2, target 2.4).

### TABLE 1. ASPIRATIONAL CGIAR AND PARTNERS’ DEVELOPMENT TARGETS FOR 2022 AND 2030 (REPRODUCED FROM EXECUTIVE SUMMARY, WITH ADDITIONAL NOTES)

<table>
<thead>
<tr>
<th>SYSTEM LEVEL OUTCOME 1: REDUCED POVERTY</th>
</tr>
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<tbody>
<tr>
<td><strong>TARGETS: 2022</strong></td>
</tr>
<tr>
<td>100 million more farm households have adopted improved varieties, breeds or trees, and/or improved management practicesvii</td>
</tr>
<tr>
<td>30 million people, of which 50% are women, assisted to exit povertyviii</td>
</tr>
<tr>
<td><strong>TARGETS: 2030 (ALIGNED TO THE SDGS)</strong></td>
</tr>
<tr>
<td>350 million more farm households have adopted improved varieties, breeds or trees, and/or improved management practicesix</td>
</tr>
<tr>
<td>100 million people, of which 50% are women, assisted to exit poverty</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYSTEM LEVEL OUTCOME 2: IMPROVED FOOD AND NUTRITION SECURITY FOR HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TARGETS: 2022</strong></td>
</tr>
<tr>
<td>Improve the rate of yield increase for major food staples from current &lt;1% to 1.2-1.5%/year</td>
</tr>
<tr>
<td>30 million more people, of which 50% are women, meeting minimum dietary energy requirements</td>
</tr>
<tr>
<td>150 million more people, of which 50% are women, without deficiencies of one or more of the following essential micronutrients: iron, zinc, iodine, vitamin A, folic acid, and vitamin B12</td>
</tr>
<tr>
<td>10% reduction in women of reproductive age who are consuming less than the adequate number of food groups</td>
</tr>
<tr>
<td><strong>TARGETS: 2030 (ALIGNED TO THE SDGS)</strong></td>
</tr>
<tr>
<td>Improve the rate of yield increase for major food staples from current &lt;2.0 to 2.5%/yearix</td>
</tr>
<tr>
<td>150 million more people, of which 50% are women, meeting minimum dietary energy requirements</td>
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<tr>
<td>500 million more people, of which 50% are women, without deficiencies of one or more of the following essential micronutrients: iron, zinc, iodine, vitamin A, folic acid, and vitamin B12</td>
</tr>
<tr>
<td>33% reduction in women of reproductive age who are consuming less than the adequate number of food groups</td>
</tr>
</tbody>
</table>

A wide expanse of wheat plots seen from the air at CIMMYT’s CENEB station (Campo Experimental Norman E. Borlaug, or The Norman E. Borlaug Experiment Station), near Ciudad Obregón, in the state of Sonora, northern Mexico. CENEB is used by the Global Wheat Program for irrigated trials over the winter season (November-May), and is the largest of CIMMYT’s sites. In conjunction with the Toluca and El Batán stations in the Mexican highlands, it allows for accelerated “shuttle” breeding with two growing seasons each year.
We will achieve this by focusing on the following eight global research priorities where CGIAR has a comparative advantage, further potential and where CGIAR can build with partners, capacity to deliver impact:

- Genetic improvement of crops, livestock, fish and trees, to increase productivity, resilience and resource use.
- Natural resources and ecosystem services, including through recycling and reuse of organic waste.
- Gender and inclusive growth, creating opportunities for women, young people and concentrated areas of poor people.
- Agricultural systems, adopting a systems approach to optimize economic, social and environmental co-benefits in areas with high concentrations of poor people.
- Sulphur-rich agro-ecosystems, including through recycling and reuse of organic waste.
- Enabling farmers to profit from innovation will mean increased poverty reduction, if it leads to increased incomes and employment opportunities.  Productivity increases can be achieved through improved traditional practices and use of genetic resources, leading to enhanced genetic diversity, safety of consumers, and increased productivity and income for smallholder farmers.
- The productivity gains described will be achieved by both genetic improvement and reduction of food waste, involving the reduction of pre- and post-harvest losses.
- The heterogeneity of the poor is important in determining the kinds of intervention that will reduce poverty. In some contexts, the poor are overwhelmingly landless rural laborers; in others, they tend to be concentrated in urban areas. Disparities are not the same among women – or perhaps even more intensively concentrated among specific classes of women (e.g. widows or adolescent girls). They will also vary depending on the overall shape and capacity of the system functions and structure while absorbing extreme fluctuations in the price of food, or the devestation of crops caused by a violent storm, or by a plant disease.

**CGIAR STRATEGY AND RESULTS FRAMEWORK 2016-2030**

We will deliver CGIAR’s contributions to the System Level Outcome 2: Improved Nutrition Security, Food and Agricultural Products and Services.

**CGIAR STRATEGY AND RESULTS FRAMEWORK 2016-2030**

<table>
<thead>
<tr>
<th>CGIAR STRATEGY AND RESULTS FRAMEWORK 2016-2030</th>
<th>CGIAR CONSORTIUM OFFICE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>SYSTEM LEVEL OUTCOME 3: IMPROVED NATURAL RESOURCES SYSTEMS AND ECOSYSTEM SERVICES</strong></td>
</tr>
<tr>
<td></td>
<td>5% increase in water and nutrient (biological) use efficiency in agro-ecosystems, including through recycling and reuse</td>
</tr>
<tr>
<td></td>
<td>20% increase in water and nutrient (biological) use efficiency in agro-ecosystems, including through recycling and reuse</td>
</tr>
<tr>
<td></td>
<td>Reduce agriculture-related greenhouse gas emissions by 0.8 Gt CO2-e by 2030 (10%) compared with a business-as-usual scenario in 2020</td>
</tr>
<tr>
<td></td>
<td>2.5 million ha of forest saved from deforestation</td>
</tr>
<tr>
<td></td>
<td>55 million ha degraded land area restored</td>
</tr>
<tr>
<td></td>
<td>7.5 million ha of forest saved from deforestation</td>
</tr>
</tbody>
</table>

**Notes**

- **Agricultural productivity** is based on projected yield growth rates on 10 major crops and their estimated areas, adjusted by inputs to derive a measure of increase in total factor productivity. We also tried to identify the incremental contribution of CGIAR, but we

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**SYSTEM LEVEL OUTCOME 2 – IMPROVED FOOD SECURITY AND NUTRITION SECURITY**

- The development and dissemination of agro-ecological knowledge and technology to improve access to improved food security and nutrition security, productivity, nutrient rich crops and resilient farming systems.

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**SYSTEM LEVEL OUTCOME 2 – IMPROVED FOOD SECURITY AND NUTRITION SECURITY**

- The development and dissemination of agro-ecological knowledge and technology to improve access to better farm inputs and other services – for example, veterinary services and other agro-ecological inputs.

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**SYSTEM LEVEL OUTCOME 2 – IMPROVED FOOD SECURITY AND NUTRITION SECURITY**

- Improved affordability of food comes through increased value capture. Reduced price volatility may be the most effective intervention, with the largest potential to reduce poverty. In some contexts, the poor are overwhelmingly landless rural laborers; in others, they tend to be concentrated in urban areas. Disparities are not the same among women – or perhaps even more intensively concentrated among specific classes of women (e.g. widows or adolescent girls). They will also vary depending on the overall shape and capacity of the system functions and structure while absorbing extreme fluctuations in the price of food, or the devestation of crops caused by a violent storm, or by a plant disease.

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production practices and technology, via better agricultural practices, such as agricultural and aquaculture practices that lead to improved water quality and increased safe use of inputs. Integrated pest management can help to reduce pesticide overspray. A combination of improved management and more effective disease surveillance can contribute to the control of zoonotic and vector-borne diseases (e.g. those associated with irrigation). Control can be augmented by longer-term strategies for the development and use of resistant or tolerant varieties and breeds. Such interventions will also lead to reduced livestock and fish disease risks, especially those associated with intensification and climate change. Cross-sectorial approaches will be required, targeting children under 5 and women of childbearing age in particular. CGIAR will harness increased expertise in nutrition through partnerships and coalitions with a wide range of partners, including leading NGOs and private-sector companies as well as government agencies. Alignment with key national, regional and international processes will be critical.

CGIAR recognizes that, for an agricultural research organization, improving nutritional outcomes is not ‘business as usual’. New approaches need to be adopted.

SYSTEM LEVEL OUTCOME 3 – IMPROVED NATURAL RESOURCE SYSTEMS AND ECOSYSTEM SERVICES

A primary aim of this SLO is to ensure that natural capital is enhanced and protected, from climate change as well as from overexploitation and other forms of abuse. The great gains made in food production over the past 50 years have in some areas come at a high environmental cost: degraded lands/soils, polluted water, depleted forest cover, and greatly reduced biodiversity. Now climate change threatens to accelerate this damage. This is an immense challenge that calls for new approaches, including payment for ecosystem services, the certification and effective marketing of specialized products that meet environmental standards, increased consumer awareness, and the deployment of new financial instruments such as the REDD+ concept developed by the United Nations Framework Convention on Climate Change (UNFCCC).

A complementary strategy, also researched by CGIAR, is to develop and disseminate biofortified crops. Besides availability, increased access to nutrient-rich foods is also essential. When food is sourced outside the farm, access depends on affordability, but also whether marginalized people in the community or household – mothers and infants, the old, the ill, the widowed – receive their share. This will be an important topic to pursue through research on gender and inclusion. Lastly, optimized consumption of these foods will ensure that the eight amounts of missing nutrients are introduced into the diet, especially in the case of livestock products. These can be important for people on low-calorie and nutrient-poor diets. Many nutrient-rich foods, such as vegetables and animal-source foods, are perishable. Food safety is thus a critical nutrition and health concern as well as a barrier to markets for poor producers, processors and traders. Here again, a strong focus on women will be required. CGIAR can contribute to improved food safety through the better management of production and processing in agri-food systems. This covers a wide range of possible interventions, from the development and use of aflatoxin-resistant crop varieties, through the management of slurry to avoid pollution from livestock enterprises, to the prevention of spoilage and contamination during storage and processing – all of which can lead to reduced biological and chemical hazards in the food system. CGIAR will make additional contributions to improved human and animal health through better agricultural practices, such as agricultural and aquaculture practices that lead to improved water quality and increased safe use of inputs. Integrated pest management can help to reduce pesticide overspray. A combination of improved management and more effective disease surveillance can contribute to the control of zoonotic and vector-borne diseases (e.g. those associated with irrigation). Control can be augmented by longer-term strategies for the development and use of resistant or tolerant varieties and breeds. Such interventions will also lead to reduced livestock and fish disease risks, especially those associated with intensification and climate change. Cross-sectorial approaches will be required, targeting children under 5 and women of childbearing age in particular. CGIAR will harness increased expertise in nutrition through partnerships and coalitions with a wide range of partners, including leading NGOs and private-sector companies as well as government agencies. Alignment with key national, regional and international processes will be critical.
matter content, increased above- and below-ground biomass will be essential for storing carbon and hence for mitigating climate change. A third key area of research towards this System Level Outcome is more sustainably managed agro-ecosystems. Land degradation is defined as a reduction or loss of the biological or economic productivity and complexity of rain fed or irrigated cropland, rangeland, pasture, forest and woodland resulting from land use or off-take, combined with natural processes such as soil erosion, desertification of the physical, chemical and biological properties of soil, and long-term loss of natural vegetation, especially tree cover. Agro-ecosystems may be already degraded now, in which case they need restoring, or vulnerable to degradation in the future unless they are better protected. An important ingredident contributing to this outcome is the increased resilience of agro-ecosystems and communities, which will be essential for absorbing price or climate shocks.

CROSS-CUTTING ISSUES

Although research conducted by CGIAR and its partners can and will contribute to the achievement of more than one System Level Outcome, four issues cut across the whole research agenda:

- Climate change. All research and development activities need to build in resilience to climate shocks and a focus on adaptation to and mitigation of climate change. Agriculture including forestry could be the most efficient contributor to the reduction of greenhouse gases through storage in the biomass and the healthy soils. CGIAR is committed to devoting at least 50% of its research to those issues.
- Gender and youth. Research conducted by CGIAR and its partners must be gender-sensitive and promote gender equality – that is, it is adapted to both the needs and the aspirations of poor women. The needs of young people must also be taken into account. Prioritizing rural and food sector entrepreneurship along with agricultural policy and agricultural research support can provide evidence as a basis for reforming agric food policies and institutions to make them more conducive to pro-poor development, improved nutrition and the sustainable management of natural resources. Again this spans most CGIAR and partner research activities with a special need in economic and social sciences.
- Capacity development. The need for capacity development arises in all fields of agri-food research, but is particularly pressing in new areas such as data management and communication technologies, landscape analysis and climate-smart agriculture. Besides addressing the needs of the research community, capacity development should seek to enhance innovation throughout the agric food system, including farmers and other groups along the value chain.

These issues, together with the IDOs and sub-IDOs that relate to them, are shown in figure 3.
6. PARTNERSHIP AND CAPACITY DEVELOPMENT STRATEGY

PARTNERSHIPS FOR IMPACT

Partnership will be critical to the achievement of CGIAR’s goals, especially given the disparity between the magnitude of the problems and the resources that CGIAR alone can bring to bear on them. CGIAR partnerships will be increasingly diverse, extending beyond the system’s traditional collaboration with national and regional research and extension programs to a broadening circle of advanced research institutes, development agencies, NGOs, policy bodies and private-sector companies. The contributions of all partners will be explicitly recognized, and the general expectation will be of burden sharing and parallel financing, rather than internal transfer from one partner to the others.

Future CGIAR partnerships will be guided by the following principles, based on relevant lessons from experience:15

- A common agenda. All partners must share a vision for change, including a common understanding of the problems and a joint approach to solving them.
- Shared measurement. Collecting data and measuring results consistently across all locations ensures that efforts remain aligned and partners hold each other accountable.
- Mutually reinforcing activities. Partners should have distinct roles, which need to be coordinated through a mutually reinforcing plan of action.
- Continuous communication. Consistent and open communication lines are critical in order to build trust and ensure the realization of shared objectives.
- Backbone support. Creating and managing collective impact requires a designated entity with staff and specific skill sets, to serve as the backbone for the partnership.

In some cases, particularly where countries have recently emerged from conflict or crisis or national research systems are severely under-resourced, the capacity of partners may not be sufficient to support relationships as defined above. In such cases, CGIAR will, upon invitation, work with implementation partners (often international NGOs or development organizations) and national clients to define the knowledge agenda and capacity development needed to accompany a development intervention.

CGIAR research program theories of change now explicitly acknowledge the role of the private sector. CGIAR can make important contributions in the pre-competitive space for innovations that will eventually be taken up and spread by private firms. Further work on intellectual property and related matters will be needed to harness the full potential of these growing partnerships.

SCALING UP

Achieving impact at scale is one of the greatest challenges facing the development community. Research by CGIAR and its partners can support the drive to disseminate innovations, but the scaling up effort must be led by national institutions, supported by regional or international development organizations where appropriate. The private sector also has a major role to play.

To support scaling up we will adopt a five-fold strategy of:

- Deliberate prioritization of research efforts to target constraints of wide applicability and regions of concentrated poverty and hunger;
- Close alignment of efforts by centers and CRPs in selected areas, to capture synergies;
- Coordinated planning with implementation partners so that the knowledge of CGIAR and the financial and programmatic resources of these partners complement each other;
- Commitments from clients and national partners to make complementary investments and policy reforms where CGIAR is investing; and
- Institutionalization of a culture of regular monitoring and evaluation to gauge progress towards impact and to learn from experience.

CAPACITY DEVELOPMENT

Capacity development is a strategic enabler of impact for both CGIAR and its partners. It provides the foundation for effective implementation by ensuring the sustainability of governance and improvement of the lives of millions in Bangladesh.
cuits across multiple levels – individual, organizational and institutional. To provide a set of tools for monitoring and evaluating this broader concept of capacity development, we have a Capacity Development Framework.

Stronger institutions in low-income countries enable CGIAR to concentrate on developing capacity for strategic and transnational research in relevant fields. The system can provide practical, hands-on mentorship in well-resourced research laboratories and expert stations, as well as in farmers’ fields. An example of such a CGIAR facility is the Nairobi-based Biosciences eastern and central Africa - International Livestock Research Institute (BecA - ILRI) Hub, co-created by ILRI and the New Partnership for Africa’s Development (NEPAD) to ensure that CGIAR and its partners are equipped to deal with today’s evolving research agenda.

New Partnership for Africa’s Development (NEPAD) New Partnership for Africa’s Development (NEPAD) can play a pivotal role in shaping approaches to research for development outcomes in addition to its focus on science and technology, including the development of tools to help institutions improve their capacity for strategic and translational research. The new framework therefore serves multiple users, including donors, program managers and partners, as well as the public at large (since CGIAR spends taxpayers’ money).

CGIAR’s accountability framework requires the setting of targets for SLOs and OOs by CGIAR and its partners. This is done with a 15-year time horizon, aligned for maximum impact. The CRPs’ collective, coordinated commitments in these geographies will be summarized in site integration plans to ensure transparent interaction with local stakeholders. The consultation process will be pursued through the OCARD.

At the system level, accountability will be a key approach in developing this Strategic Research Framework has been an analytical, long-term perspective and adoption of an inclusive consultation process that ensures focus on the highest priority issues to tackle through research programs, with the greatest potential for impact.

To devise plans for assessing impact, the CRPs will consult with representatives of partners and beneficiary groups in key countries where they aim to deliver outcomes at scale, including governments, NGOs, farmer organizations, processors and others along the value chain, and, ultimately, consumers. The CRPs will also coordinate with each other to ensure that, in key countries, their activities are aligned for maximum impact. The CRPs’ collective, coordinated commitments in these geographies will be summarized in site integration plans to ensure transparent interaction with local stakeholders. The consultation process will be pursued through the OCARD.

Our accountability framework seeks to mirror the CRPs in adjusting and gearing towards the transition phase to the single unified governance structure. Despite uncertainties over the timeframes needed for research to achieve developmental impact and the methodological challenges related to measuring attribution, accountability at system level is first and foremost about defining targets, a process that will ensure targets are set in line with the global level.

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ANNEX 1. CGIAR CENTERS AND PROGRAMS

AS AT MAY 2015

CGIAR CENTERS

Africa Rice, Cotonou, Benin
Bioversity International, Rome, Italy
Center for International Forestry Research (CIFOR), Bogor, Indonesia
International Center for Agricultural Research in the Dry Areas (ICARDA), Beirut, Lebanon
International Center for Tropical Agriculture (CIAT), Cali, Colombia
International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India
International Food Policy Research Institute (IFPRI), Washington DC, USA
International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria
International Livestock Research Institute (ILRI), Nairobi, Kenya
International Maize and Wheat Improvement Center (CIMMYT), Mexico DF, Mexico
International Potato Center (CIP), Lima, Peru
International Rice Research Institute (IRRI), Los Banos, the Philippines
International Water Management Institute (IWMI), Colombo, Sri Lanka
World Agroforestry Centre (ICRAF), Nairobi, Kenya
WorldFISH, Penang, Malaysia

CGIAR RESEARCH PROGRAMS (CRPs)

Agriculture for Nutrition and Health
Aquatic Agricultural Systems
Climate Change, Agriculture and Food Security
Dryland Cereals
Dryland Systems
Forests, Trees and Agroforestry
Grain Legumes
Humidtropics
Livestock and Fish
Policies, Institutions and Markets
Maize
Global Rice Science Partnership
Roots, Tubers and Bananas
Water, Land and Ecosystems
Wheat

GENEBANKS

Managing and Sustaining Crop Collections (Genebanks)

ANNEX 2. DONORS TO CGIAR

The following donors have contributed funds to CGIAR as at May 2015.

Abu Dhabi
African Agricultural Technology Foundation (AATF)
African Development Bank
Alliance for a Green Revolution in Africa (AGRA)
Asian Development Bank
Agricultural Research Council of Africa
African Council for Agricultural Research and Development (CORAF/WECARD)
Arabi Fund
Asian Development Bank
Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)
Australia
Austria
Belgium
Bulgaria
Canada
Catalyst Fund
Colombia
Commonwealth Scientific and Industrial Research Organisation
Consulat Général de France à Kigali
Costa Rica
Croatia
Czech Republic
Denmark
European Commission
Family Health International, Inc.
Finland
Food and Agriculture Organization of the United Nations
France
Germany
Global Environment Facility (GEF)
Grains Research and Development Corporation
Gulf Cooperation Council
Heifer International
India
Indonesia
Inter-American Development Bank
International Development Research Centre
International Fund for Agricultural Development
Iran
Ireland
Israel
Italy
Japan
Kazakhstan
Kenya
Table 3 comprises a compilation of data drawn from CRP 2013 Annual Reports, and data set out in 2015-2016 CRP approved extension proposals. These results have been indexed for 15 years to 2030 taking into account the following:

Based on current investments of US$ 1 billion annually, coverage to 2030 is estimated to reach approximately 300 million households. The assumption that CGIAR will secure US$ 1.5 billion annual investment by 2025, and recognizing that the last poor people are more difficult to reach, coverage by 2030 is projected to reach 350 million households.

1.2 100 million people, of which 50% are women, assisted to exit poverty.

This purpose of this target is to identify the effect of CGIAR additional investments over.

**ANNEX 3. TARGET JUSTIFICATION**

| TABLE 3: 2030 COVERAGE TARGETS FOR HOUSEHOLD ADOPTION OF IMPROVED VARIETIES, BREEDS, OR TREES, AND/OR IMPROVED MANAGEMENT PRACTICES. |
|------------------|-------------------|------------------|
| CGIAR RESEARCH PROGRAM (CRP) | 2030 TARGET (M) | ANNUAL (2013) OUTCOME (M/ YEAR) | 2030 TARGET CALCULATED (M, OVER 15 YEARS) |
| WHEAT | 60 | | |
| MAIZE | 20 | | |
| GRiSP | 3.75 | 56.25 | |
| Roots, Tubers & Bananas | 1.7 | 25.5 | |
| Dryland cereals | 0.07 | 1.05 | |
| Grain legumes | 0.32 | 4.8 | |
| Aquatic agricultural systems | 0.778 | 11.67 | |
| Dryland systems | 4 | 60 | |
| Humid tropics | 0.12 | 1.8 | |
| Climate change, agriculture and food security | 2 | 30 | |
| Policies, Institutions and Markets | 0 | 0 | |
| Forests, trees, and agroforestry | 0.5 | 7.5 | |
| Water, land and ecosystems | 0.035 | 0.525 | |
| Livestock and fish | 0.0005 | 0.0075 | |
| Agriculture for nutrition and health | 1.1 | 16.5 | |
| Total | 80 | 215.6325 | |

This Annex provides supportive data for Table 1 in the SRF. It comprises a compilation of inputs from the Directors of the CRPs listed at Annex 1, as at 3 April 2015. All targets apply to 2030.
For NARS only: 0.04 SSA; 0.08 Asia; 0.10 LAC and 0.04 MENA.

Combining these growth rates with the area of these crops to determine output growth, which was then adjusted by inputs to derive a measure of Total Factor Productivity (TFP) increase from the yield growth rates.

This, together with R&D investment, allows one to derive R&D elasticities for the NARS (by region) and NARS+CGIAR as follows:

- For NARS only: 0.04 SSA; 0.08 Asia; 0.10 LAC and 0.04 MENA.
- For NARS+CGIAR: 0.25 SSA; 0.15 Asia; 0.13 LAC and 0.08 MENA.

These elasticities are used to determine output growth in the NARS+CGIAR and NARS scenarios. The impact of CGIAR is derived as the difference of output growth in the two previous scenarios.

b. Calculating the impact on poverty

With output growth, one can calculate the impact on poverty using the model by Christiaensen, Demezy and Kuhl (2010). Their model estimated to capture direct and indirect effects of agricultural growth. They found that for US$ PPP 1-2.5 poverty line, the most important is the direct effect which depends on agricultural growth and on the Gini coefficient (the higher the inequality the less the impact on reducing poverty with agricultural growth). Non-agriculture in their model has no impact on the US$ 1.25 poverty level, however, indirect effects of agriculture on non-agriculture contribute to reduction of the US$ 2 a day poverty level.

Assumes a gestation period of 9 to 11 years for the four regions. So, investment in period 0 takes 9-11 years to reach its maximum efficiency. After the peak, the effect of investment decays at a rate of 0.1 in SSA and 0.17 in other regions. For CGIAR the gestation period is 15 years but the decay rate is of 0.1.

The resulting age-effectiveness curves for the different regions is set out in figure 4.

**FIGURE 4: IMPACT OF CGIAR INVESTMENT ON POVERTY - AGE/EFFECTIVENESS CURVES**

<table>
<thead>
<tr>
<th>Category</th>
<th>SSA</th>
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<tbody>
<tr>
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<td>0.000</td>
<td>0.600</td>
<td>0.800</td>
<td>1.200</td>
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</tbody>
</table>

**SYSTEM LEVEL OUTCOME 2: IMPROVED FOOD AND NUTRITION SECURITY FOR POVERTY SCENARIOS**

2.1 Improve the rate of yield increase for major food staples from current <2% to 2.5%/year.

This target range refers to maize, rice and wheat global annual average yield gains, which are based on national averages of actual on-farm yield growth and on germplasm improvement and sustainable intensification. These elasticities are used to determine yield growth and on the Gini coefficient (the higher the inequality the less the impact on reducing poverty with agricultural growth). Non-agriculture in their model has no impact on the US$ 1.25 poverty level, however, indirect effects of agriculture on non-agriculture contribute to reduction of the US$ 2 a day poverty level.

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<tr>
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<td>0.000</td>
<td>0.600</td>
<td>0.800</td>
<td>1.200</td>
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</tbody>
</table>

US$1 to 1.5 billion/year by 2025, the target is raised to 150 million over the 15 years to 2030.

2.5 300 million more people, of which 50% are women, without deficiencies of one or more of the following essential micronutrients: iron, zinc, iodine, vitamin A, folate, and vitamin B12.

Achieving a robust target to 2030

These 2 billion people with inadequate micrnutrient intake contribute to the moderate levels of undernutrition now prevalent in many countries across the globe, and may update this target based on how portfolio and CGIAR research evolves from 2017. Typically, one is looking to increase what people consume by one or two food groups to achieve an adequate rather than ‘recommended’ diet. Experience tells us that expansion in food groups will need to come from those foods that are more complex to supply at an affordable price – animal source foods, vegetables and fruits and pulses.

CGIR proposes the target of a 33% reduction, and may update this target based on how portfolio and CGIAR research evolves from 2017. Typical measures for diet diversity scores for a such a target, yet it is an important measure and one best suited to agriculture.

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SYSTEM LEVEL OUTCOME 3: IMPROVED NATURAL RESOURCES, SYSTEMS AND ECOSYSTEM SERVICES

3.1 20% increase in water and nutrient (inorganic, biological) use efficiency in agro-ecosystems, including through recycling and reuse.

This target has been set having regard to ongoing discussions under the Sustainable Development Goal process, specifically in regard to Goal 6 (Ensure availability and sustainable management of water and sanitation for all), with the final targets being set in September 2015.

3.2 Reduce agriculturally-related greenhouse gas emissions by 0.8 Gt CO2-e yr–1 (15%) compared with a business-as-usual scenario in 2030.

CGIAR is participating in a global effort – that is bringing together approximately 30 leading greenhouse gas emission scientists from around the world - to set an aspirational target for greenhouse gas reductions from the agriculture and land use sector that does not compromise food security, and keeps global warming to 2 degrees.

To meet this global aspiration, the group is discussing the required reduction against a ‘business-as-usual’ scenario, in a global (not merely developing country) context. The group’s aspirational target is a 15% reduction against the business as usual context, thus the formulation in the SRF.

The aspiration of limiting global warming to 2 degrees has been most recently affirmed in the work of the Open Working Group of the General Assembly on Sustainable Development Goals, Introduction, paragraph 8 (the full report is issued as document A/69/970, available at http://undocs.org/A/69/970).

3.3 190 million ha degraded land area restored.

This target is drawn from the global estimate of land degraded of 1964 million ha (Bai et al.,) CGIAR investments represent a 10% target of 0.19 billion ha. Source Soil Use Mgt. 24, 223-234, 2008.

3.4 7.5 million ha of forest saved from deforestation

This target replicates the target set out in the 2015-2016 Extension Proposal: CRP on Forests, Trees and Agroforestry (FTA), revised and dated 25 August 2014, page 5, indicator 6, as submitted to the 12th Fund Council meeting, November 2014.

Annual targets are extrapolated to 2030 (15 years) to give rise to the SRF target of 7.5 million ha.

ANNEX 4. HOW CGIAR GOALS ALIGN WITH THE SUSTAINABLE DEVELOPMENT GOALS (SDGS)

The CGIAR goals contribute strongly to SDG 1, 2, 3, 5, 6, 13 and 15, and moderately to SDGs 4, 6, 10, 13, 14, 16 and 17.
1. Relative to a counterfactual without climate trends, Loomis et al. 2011.
2. Vermeulen et al., 2012.
4. See, for example, Steffen et al., 2013. The landscapes approach is not new but builds on earlier concepts, notably that of multifunctional agriculture, a concept put forward by, inter alia, the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD).
6. Between 30% and 50% if not more, according to one study. See Steffen et al., 2015.
8. In the case of livestock, this includes the creation of biorepositories containing samples of animal genetic materials and their associated gut microflora, as well as accessions of pathogens and disease vectors.
9. Others will be needed, specific to key resources.
10. See Pittelkow et al, 2015 for a revealing meta-analysis.
11. See Sayers et al, 2013. The landscapes approach is not new but builds on earlier concepts, notably that of multifunctional agriculture, a concept put forward by, inter alia, the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD).
12. See Sayers et al., 2013. The landscapes approach is not new but builds on earlier concepts, notably that of multifunctional agriculture, a concept put forward by, inter alia, the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD).
13. Rice currently has a C3 photosynthetic pathway. Converting the plant to a more efficient C4 pathway involves re-arranging the cell structure of leaves and increasing the efficiency of expression of enzymes associated with photosynthesis, which is achieved by making the plant a more efficient user of solar energy. See IRRI (, 2012).
15. The bio-economy refers to the sustainable production of food, material (agriculture, forestry and animal-based raw material), energy and conversion of biomass into a range of food, raw material (agriculture, forestry and animal-based raw material), energy and conversion of biomass into a range of food, material and health, fibre and industrial products and energy. See, for example, Steffen et al., 2015.
16. Asia accounts for 95% of them. Source: Guha-Sapir et al., 2014b.
21. We show via targets for this System Level Outcome. Others will be needed, specific to key resources.
23. NIP is not primarily productivity, defined as the rate at which vegetation fixes CO2 from the atmosphere, less tissue transpiration.
25. Asia accounts for 94% of them. Source: Guha-Sapir et al., 2014b.
28. See, among several other recent papers on this subject, Mason et al, 2012.
29. REDD stands for Reducing Emissions from Deforestation and Forest Degradation. The instrument was launched at the Copenhagen UN climate conference of 2009. The + denotes the extension of the concept to cover such issues as conservation, sustainable management and the enhancement of carbon stocks. Source: UN-REDD Programme (2009).

PHOTO CREDITS
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