Transforming lives through the global rice sector

STRATEGIC PLAN
2017-2025
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Introduction

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Director General  
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The International Rice Research Institute (IRRI) is a dynamic, rapidly evolving organization focused on solving complex global problems through vibrant, rice-based agri-food systems. IRRI’s mission and purpose remain clear: to improve the quality of life of those who depend on the rice sector—from the ultra-poor to those moving up the development ladder—and the environmental sustainability of rice production systems.

As a founding member of CGIAR, IRRI contributes to the collective goals of CGIAR as articulated through its strategy and results framework and is the lead center of the CGIAR Research Program on Rice.

The world faces multiple complex challenges: continued population growth; scarcity of land, water, and labor; rapid urbanization; and climate change. Despite exponential technology advances and the continued evolution of the roles of the public and private sectors, it is clear that such complex challenges will rarely be solved by simple solutions.

IRRI has an opportunity to make a profound difference over the next few critical decades based on our differentiating capacities at the intersection of research and development.
Innovation custodian

First and foremost, IRRI is the custodian of extraordinary genetic resources in the International Rice Genebank—one of the premiere gene banks in the world. Second, IRRI is custodian of genetic populations and breeding germplasm that fuel varietal development across the globe. Third, IRRI has a powerful suite of production system technologies and knowledge transfer programs that scale to benefit rice farming productivity and profitability.

The combination means that IRRI, as a research institute, already plays a leading role in the discovery of pure research and establishing the pathway from pure science to scalable research impact outcomes for development.

Trusted advisor

IRRI is a trusted source of knowledge for the global rice industry. Our transnational nature and convening power enable us to work with competing countries, diverse political systems, and international organizations to set benchmarks, inform policy, and build strong agriculture systems.

Facing profound changes in the world, rice-based agriculture systems need continuous access to new genetic material and innovations to maintain the vibrancy of their national rice sectors. As an international research institute, IRRI will continuously restock germplasm pipelines, identify and demonstrate leading technologies, establish standards and guidelines, and broker agreement among various stakeholders to strive for International benchmarks.

Global reach

As a decentralized international organization, IRRI is able to rapidly move ideas, technology, and people across the globe to accelerate innovation, development, and adoption. We will continue to focus on Southeast Asia and South Asia, embedding teams in these countries and nourishing mutually beneficial relationships where there is a mission-critical need. At the same time, in South America and Africa, IRRI will work with its sister CGIAR institutes, AfricaRice and CIAT, and other partners, under the CGIAR Research Program on RICE to access, develop, and deliver unique germplasm, traits, and technologies. In Africa, IRRI will work closely with AfricaRice to translate global research and learnings into tailored programs that benefit sub-Saharan Africa. IRRI’s sector contributions in Africa will be guided by rice strategies formulated under the aegis of the Council of Ministers of AfricaRice.

Strong partnerships

IRRI understands the demand on donors’ dollars to produce immediate and tangible results for their investment and the urgency to scale innovations for impact. Equally, long-term strategic research for development (R4D) requires sustained investment that must come from a diversified and evolving base of partnerships, engagements, and funding mechanisms. To meet this challenge, IRRI puts “the customer first” and will focus on high-impact R4D targets delivered by staff who exemplify “service through science” while committing to stewarding resources efficiently.

Without its partners, IRRI could make little impact. Partners are crucial in disseminating improved varieties, new technologies and new tools; and in addressing sector- and agriculture-wide concerns such as trade. Accelerating global changes facing rice production make the role of our partners increasingly important in order to ensure the sector’s sustainability and maximize its voice. IRRI will focus on mission-critical partnerships with research institutes and national agricultural systems and greater strategic engagement with national governments and the private sector, aimed at delivering comprehensive yet locally targeted solutions for ecosystems, countries, or regions.

Between these global needs and IRRI’s capacity to deliver is a critical opportunity for agricultural innovation to be the catalyst for the transformation of the lives of millions of people.

IRRI is determined to deliver on this opportunity—for people and the planet.
Situation analysis
Feeding a world of 9 billion

1.2 billion
more people in developing countries and in urban areas by 2030

- Since IRRI began, global rice consumption has increased from 150 million to 450 million tons.
- More than 90% of this rice is eaten in Asia, including the region’s 560 million people still affected by hunger.

Sub-Saharan Africa’s share of the global population will increase from 16% to 20%

Out of the 667M children under age 5 worldwide, 161M are stunted as a result of malnutrition.

Urbanization
by 2030
80%
of the global middle class will live in developing countries

2 billion
will live in urban slums
double today’s number

Women managing farms and making decisions

Women continue to face significant constraints in accessing agricultural assets, inputs, and services.

140 million rice farms in Asia have an average size of 1 hectare

Income averages only USD800 - USD2,400 per year

Resulting in migration of men and youth from rural to urban, leaving women and the old to take care of the farms.
Shifting roles in the public and private sectors

- The public sector is enhancing their capacity to contribute to the rice sector.
- The private sector is springing up rapidly to service rice farmers who need access to mechanization, inputs, labor, and markets.

More from less

Rice production

- needs to increase **25%** without increasing water usage
- will have to compete for water with cities, environmental needs, and other agricultural enterprises

Water demand will increase by 2050 because of population and income growth

- **60%** Africa
- **50%** South America
- **30%** Asia

represents **70%** of global demand

Climate change

Because of climate change, land degradation directly affects **74% of the poor globally**

- In sub-Saharan Africa, poor rural farmers account for **33% of GDP** and **75% of rural employment**
- **12 million hectares** are lost through drought and desertification each year where **20 million tons of grain** could have been grown

8 out of 10 living in rural areas are farmers.

Game-changing technology

By 2030, **75% of the global population** will have access to mobile phones and the internet, up from **30% in 2015**.

**3D printing** use will grow by **2,000%**, making production of spare parts more accessible.
Mission

IRRI aims to improve livelihoods and nutrition, abolishing poverty, hunger, and malnutrition among those who depend on rice-based agri-food systems. In doing so, IRRI’s work protects the health of rice farmers and consumers, and the environmental sustainability of rice farming in a world challenged by climate change. IRRI’s work promotes the empowerment of women and supports opportunities for youth in an equitable agri-food system.

Our research for development is characterized by its collaborative nature: from alliances with advanced research institutes; through strong collaborations and capacity development with governments and national agricultural research and extension systems; to partnerships with the development sector and our ability to broker novel delivery channels through the private sector. IRRI’s work is supported by a diverse network of investors aligned to common goals.

Goal 1
Innovation leadership for the global rice sector

Be the linchpin of scientific innovation and thought leadership solving complex problems with deep research.

Working with advanced research institutes and national partners around the globe we will discover, translate, and integrate deep scientific advancements that enable the adoption of technologies, practices, and policies to solve complex global problems and serve our beneficiaries in rice-growing countries and beyond.

Goal 2
Catalyze impact at scale for people and planet

Create and support catalytic networks driving widespread adoption of high-impact innovations and technologies.

Working across rice-growing countries in rural and urban communities, IRRI will speed up the translation of targeted innovations into the local rice value chain through partnerships, education, and technology to facilitate appropriate adoption, maximize impact in the shortest time, and produce substantive benefits for rice farmers, producers and consumers.

Goal 3
Transform rice-based agri-food systems

Establish a track record of delivering successful policy interventions and institutional capacity building programs that underpin the development of equitable and sustainable rice sectors globally.

Capitalizing on its scientific and capacity building prominence and track record of delivery, IRRI will purposefully engage with global actors to inform policies and establish standards and benchmarks that transform how food is cultivated, produced, and marketed in rice-based agri-food systems.
Goal 1

Innovation leadership for the global rice sector

Be the linchpin of scientific innovation and thought leadership, solving complex problems with deep research. Working with advanced research institutes and national partners around the globe, we will discover, translate, and integrate deep scientific advancements that enable the adoption of technologies, practices, and policies to solve complex global problems and serve our beneficiaries in rice-growing countries and beyond.

Objectives

Anticipating and shaping the future

The long lead times of rice sector research—with most research stretching to a 5- to 10-year horizon or more—means that IRRI is continuously working to assess current impacts and anticipate future needs. We will anticipate emerging problems and drive the research and development agenda of the rice sector in response.

- Link with the best climate, population, and economic models to produce accurate foresighting and modeling.
- Focus on system-level solutions that overlay a diversity of factors, geographic, climatic, soils, germplasm, production systems, and socioeconomic.
- Pursue medium- to long-term innovations through advanced genetic technologies such as novel durable disease resistance mechanisms to address profound productivity limitations.
- Convene and assemble “big data” sets to develop fresh insights into the status of the rice-agri-food sector for novel research directions and policy interventions.

Addressing the food-energy-water nexus

The food-energy-water nexus is a particularly acute challenge for rice producers: water is more critical for rice than other crops and often entails high costs to access it and increased energy to lift water for irrigation and to mechanize operations. As highly contestable resources, there will be increasing competition from other sectors for water and energy for rice production in the face of population growth, urbanization, large-scale land degradation, and climate change.

IRRI will continue to deploy a powerful array of tools to maximize the resource-use efficiency of rice-based farms and reduce rice’s ecological footprint.

- Develop rice varieties and production systems that need fewer inputs such as water, fertilizer, and pesticide.
- Leverage advances in mechanization to address the challenges of labor shortages, facilitating the role of women farmers, and delivering increased profitability.
- Develop, adopt, and translate technologies to facilitate the use of rice by-products (straw, rice hull) as either energy or animal feed-generating products, enhancing incomes and delivering environmental and sustainability benefits.
Mitigating and adapting to climate change

Sector-wide investments in mitigating the impacts of climate change are lagging in agriculture relative to other sectors such as energy and transport. Yet, a truly sustainable agriculture sector will only be possible if consistent investment is made in innovations to mitigate as well as adapt to climate change. IRRI will substantively invest in climate mitigation research for the rice sector and rally partners and supporters to invest in the same.

- Develop climate-smart rice varieties, sustainable crop management techniques, and technologies that reduce dependence on inputs such as nitrogen fertilizer and water.
- Reduce GHG emissions from rice production by reducing the methane produced by anaerobic organisms in flooded rice systems.
- Contribute to public discourse on mitigation of urban health issues resulting from air and water pollution as a result of rice farming practices.
- Build on IRRI’s expertise in biophysical and biological processes to derive robust solutions that deliver in the face of climate change and changing production systems.

Generating incisive information and analysis

IRRI generates and accesses vast amounts of data about the biophysical, biological, and socioeconomic factors underpinning the global rice sector. Through this information, we will generate an enhanced evidence base from which we can drive research exploration and innovations as well as advice on vital economic, financial, and political aspects of the rice sector.

- Using a multidisciplinary approach, generate information and analysis advancing the understanding of the social and economic fabric of rice systems—from household use to policy levels—to guide geographic distribution and market response.
- Provide equivalent baseline data feeds for individual governments, national agricultural research and extension partners, and private sector partners to democratize data and increase access to information.
- Work closely with individual governments, agriculture research and extension partners, and the private sector to provide information tailored to their specific needs on terms consistent with IRRI’s commitment to CGIAR policies on open access and the use of intellectual assets.

Maximizing impact of unique traits and germplasm

The International Rice Genebank at IRRI holds the world’s largest collection of rice accessions—a huge reserve of genetic material to lead the fight against global hunger and malnutrition. IRRI is best placed to harness these resources to discover and validate the novel traits that will benefit both farmers and consumers.

- Develop the capacity to incorporate high-value traits into successive new generations of rice using new molecular breeding techniques such as gene editing.
- Enrich new varieties with genes that protect against and mitigate the effect of new pests and diseases.
- Establish concerted processes to examine proof of concept and the value of traits accessed either through IRRI’s discovery pipeline or from partners.
- Explicitly tailor product profiles to meet women’s preferences, market inclinations, and nutritional value.
- Reinvigorate breeding pipelines against internationally benchmarked performance indicators for delivery and cost.
Gene editing

A new gene editing tool called CRISPR-Associated Protein (Cas)9 System is a revolutionary, low-cost method of precision alteration of genes that enables gene activity to be turned on and off reversibly. Unlike other approaches to genetic modification, the plants from CRISPR/Cas9 gene editing rely only on genes already contained in their DNA. The technique has vast potential to rapidly develop protection for rice varieties against biotic and climate-related stresses. It may even become critical in enabling researchers to keep ahead of the evolution of rice pests and diseases.
Setting the bar for sustainable rice standards

In October 2015, the world’s first standard for sustainable rice production was established by the Sustainable Rice Platform (SRP)—a global alliance of agricultural research institutions, agri-food businesses, the public sector, and civil society organizations convened by the United Nations Environment Programme and the International Rice Research Institute. The standard uses environmental and socioeconomic benchmarks to maintain yields for rice smallholders, reduce the environmental footprint of rice cultivation, and meet consumer needs for food safety and quality. It draws on global experience in other sustainable commodity initiatives such as sugarcane, cotton, coffee, and palm oil. Consisting of 46 requirements, including productivity, food safety, worker health, labor rights, and biodiversity, the standard is supplemented by a set of quantitative performance indicators that enable farmers and market supply chain actors to gauge the sustainability of a rice system and to monitor and reward progress.
Goal 2

Catalyze impact at scale for people and planet

Create and support a network of catalytic agents to drive widespread adoption of high-level innovations and technologies.

Working across rice-growing countries, in rural and urban communities, IRRI will speed up the translation of innovations into the local rice value chain through partnerships, education, and technology to facilitate appropriate adoption, maximize impact in the shortest time, and produce substantive benefits for rice farmers, producers, and consumers.

Objectives

Delivering comprehensive solutions tailored to people and place

IRRI works in almost every rice-growing country in the world where local agriculture needs vary greatly depending upon underlying investments in the system, such as irrigation; the educational status of farmers; their access to information, soils, and inputs; and socio-political dynamics. Based on our intimate knowledge of these geographies and available best practices, we will help our partners envision and develop complete solutions tailored to ensure that farmers can improve their income and stability.

- Employ a “breeding for market” approach to encourage improvements in grain quality and address issues in yield gap and nutrition.
- Work with our partners to build their capacity in implementing market-oriented approaches to breeding tailored to regional needs.
- Tailor, package, and operationalize potential solutions based on the needs of specific groups and specific places.
- Identify and resolve existing paradoxes in product marketing, such as improving yield at the expense of market access.

Connecting global solutions to local needs

The emerging fourth industrial revolution will hasten the convergence of the “physical, digital, and biological worlds,” creating new technologies and platforms. Currently, information communication technology (ICT) innovations such as remote-sensing technology, geographic information systems (GIS), and high-resolution satellite images can monitor and evaluate agricultural systems to determine where and when rice is grown and whether crops are growing well or not. IRRI will speed up the adoption of these technologies to make rice farming more efficient and accessible.

- Ensure that ICT management systems and tools are affordable and conducive to existing smallholder farmers and youth—the farmers of the future.
- Help national systems develop their knowledge systems as knowledge banks that can be shared with other nations and systems on acceptable terms.
- Engage partners and the private sector to resolve data ownership, privacy, and ethical and research-use questions to ensure widest impact of ICT.
Offering solutions for rural and urban populations

As global rice demand grows by almost 13% in the next decade, an increasing number of urban middle-class rice consumers will have more diversified diets and be more environment and health conscious, fueling a desire for more choices of rice that are cleaner and more nutritious. For rice exporting countries, this presents an opportunity to sharpen their focus on high-quality rice varieties and products.

IRRI will draw on its expertise in product development for the rice sector to help rural and urban populations capitalize on this trend.

- Develop production technologies to limit plant uptake of arsenic and cadmium in grain varieties and minimize potential consumer health threats in affected areas.
- Ensure affordable access to quality, nutritious rice to alleviate the double-burden of malnutrition.
- Work with the public and private sector to realize additional high-value markets such as meeting urban consumers’ requirements for rice products that are convenient, high-quality, nutritious, and affordable.
- Promote production of specialty niche rice, such as heirloom or geographically unique rice, to increase livelihoods for marginalized and indigenous populations.

Equipping people and institutions for tomorrow

IRRI is committed to preparing the next generation of scientists, extension agents, value chain actors, farmers, and leaders to work effectively for positive change in the global rice sector. Capitalizing on the legacy of the institute’s training center, IRRI Education will provide the means to help individuals and organizations interpret and respond to the rapidly changing physical and political landscape of the global agricultural sector.

- Provide a customer-focused and demand-driven suite of educational programs that capitalize on IRRI’s expertise in rice research, agricultural extension, and rice sector policy.
- Work with IRRI and NARES scientists to make their scientific knowledge and expertise more widely accessible.
- Build programs geared to the broader agricultural sector, including policymakers and regulators, professionals in the international development community, and industry leaders from around the world.
- Partner with university agriculture programs to prepare the next generation of rice scientists at the undergraduate, graduate, and postdoctoral level.

Forging mission-critical private and public partnership

IRRI’s revitalized partnership model will be one of ‘partnership for impact,’ focusing on quality, not quantity of partnerships and opportunities for complementarity in research and/or financial investment. We will enhance our partnerships with the private sector to deliver research-for-development impact while safeguarding our reputation as an honest broker.

- Establish fruitful partnerships with the best advanced research institutes in the world.
- Participate in CGIAR system-wide research and development programs to improve impact across several agri-food systems.
- Engage partners in creative ways to contribute to social inclusion and development impact goals.
- Tailor engagements with national agricultural research and extension system (NARES) partners to account for varying needs, rice sector opportunities, and the changing political landscape in specific countries and regions.
Farmers of the Future

It’s 2035. Pedro and Tess, fourth generation rice farmers, sit in a prospering rural township. Pedro glances at one of the many screens that line one wall like rows of giant tiles and touches a button on the console to switch off the robot tractor that just harvested a few hundred hectares of rice and has docked itself in the recharging shed. She touches another button to start the automatic processing and bagging of the crop. Another screen shows them the first driverless truck moving into position to take the bagged rice.

On Tess’ phone, suggestions are coming in for rice varieties for next season’s planting that consider sophisticated climate and market modelling. From the soil and climate analyses the app completed, it looks like next season will be drier still but the market demand is strong.

They reminisce about their grandfathers, who used to spend hard days behind their plows, farming a few hectares to feed the family, and they wonder: how were they ever sure they would have enough to eat without knowing in advance that drought was coming?
Mechanizing the Rice Sector

The migration of farm laborers from rural areas to urban centers has created a labor shortage that is affecting agricultural production in many Asian countries. As the wages for workers to carry out labor-intensive farming activities rise, millions of smallholder farmers across Asia cannot afford these additional costs. In India alone, labor shortage affects the farm operations of about 600 million smallholders.

IRRI has been working with countries in Southeast Asia to solve this issue by encouraging them to establish mechanization hubs. The network would transfer mechanization technology to the regions in need and teach farmers to use it, easing the need for additional farm labor. The network brings together countries such as Japan, China, and the US; the private sector; donor and funding agencies; and major rice-producing countries.
A means to economic self-determination

In several economies in East Asia, such as South Korea, Japan, and China, the rice sector has been an economic impetus that enabled the transition from an agrarian-based economy to a more sophisticated one based on manufacturing and services. This outcome resulted from four parallel developments:

- The adoption of land reform policies that provided farmers with incentives to reinvest in productivity enhancements and creation of a “level playing field” to compete for market access.

- A more affluent rural population to serve as a domestic market for goods and services produced by emerging manufacturing and service sectors.

- Manufacturing and financial policies that drove export performance at the expense of domestic land speculation and other activities that did not deliver on national development goals.

- Reduction of any requirement to use scarce foreign exchange capacity to import staple foods such as rice.
Tailored solution to yield gaps

Across the rice producing world, there are well-recognized “yield gaps”—the difference between how much rice a system can potentially produce and the actual amount a farmer produces.

Typically, farming systems either use too little or too much of available agricultural inputs such as land, water, labor, or fertilizer to improve productivity and profitability. This situation could be improved by optimizing solutions that are tailored to people, their culture, and their production system. Some of the key issues include:

- Growing scarcity of agricultural inputs and the limited capacity for farmers to access them at an affordable price.
- Appropriate environmental stewardship by reducing the reliance on agricultural inputs that harm supporting ecosystems or reducing over-farming of land.
- Increased income and improved livelihoods to reduce the focus on increasing productivity through complex optimization of inputs against those factors that determine returns for the farmer.
Goal 3

Transform rice-based agri-food systems

Establish a track record of delivering successful policy interventions and institutional capacity-building programs that underpin the development of equitable and sustainable rice sectors globally.

Capitalizing on its scientific and capacity-building prominence and track record of delivery, IRRI will purposefully engage with global actors to inform policies and establish standards and benchmarks that transform how food is cultivated, produced, and marketed in rice-based agri-food systems.

Objectives

Improving smallholder livelihoods and resilience

Income gains in agriculture have proven to be two to four times more effective at reducing poverty than growth originating from other sectors. Increased productivity and equitable access to markets are proven ways of raising income levels and creating resilience in rice-based systems.

- Actively working with governments, the private sector, and research partners to encourage the viability and efficacy of financial safety nets such as microloans and crop insurance as a key risk mitigation tool for all rice farmers.
- Encourage the creation of farmer cooperatives to enable more equitable pricing negotiations on both inputs and grain marketing.
- Facilitate the diversification of rice-based farming toward higher-value commodities to increase income and overall farm stability and minimize risk.
- Promote the transformation of smallholder farms from subsistence farms to more commercially oriented farms.
- Define and implement a vigorous agenda in postharvest technologies, particularly those that can be deployed at the farm or village level to empower farmers in their dealings with traders and millers.

Empowering women and youth in an equitable rice sector

In many developing countries, the disproportionate migration of men, particularly young men, from rural settings to urban centers has meant that an increasing number of farm households are headed by women who may not have access to the same technology, finance, and extension services. As a further consequence, the average age of rice farmers continues to rise in many countries. These combined factors risk the economic viability of rice farming. IRRI will develop independent strategies to empower women and youth appropriately to engage more fully in the rice sector, ensuring the full participation of these important actors.

- Increase access to mechanization and ICT innovations as well as opportunities to act as service providers in order to drive profitability and sector attractiveness.
- Work with national partners and farmers’ groups to encourage the effective increase in farm size as a means to entice youth into rice production.
- Improve access to technologies, finance, and extension services for women.
- Engage with women and their collectives to promote their entrepreneurial roles in service provision, postharvest value addition, and marketing.
Underpinning healthier populations

In Asia, where rice is a staple for the majority of the population including the region’s 560 million hungry people, biofortification of rice and diversification of diets represent key strategies to improve the food security and the nutritional status of malnourished people. Further, many of these countries are now beset with the double burden of under- and over-nutrition within their populations. IRRI will build on its expertise in developing and promoting standards and regulatory frameworks for the rice sector to speed the advancement of public health and mitigate potential public risk.

Stimulating national resilience through economic self-determination

Clearly, a full range of policy interventions to drive national economic self-determination are beyond the scope of the rice sector to determine alone. However, as a strong convening force in rice-growing regions, IRRI has the ability to make the case for policies and investment in the rice sector that provide positive outcomes at the national level.

• Encourage “small farmer-large field” approaches, such as those developed in Vietnam, in order to derive the benefits of land consolidation without the turmoil and political inertia faced by land ownership reform.

• Provide business and technological assistance to countries in Eastern and Southern Africa to invest in domestic rice production in order to lessen their dependence on rice imports from Southeast Asia.

• Through our partners and civil society actors, cultivate vibrant rural populations with an aim to stemming the drive to migrate in order to reduce pressure on urban centers.

Actively informing evidence-based policy and benchmarks

Over six decades IRRI has built long-standing relationships with governments and civil society organizations across Asia and Africa, some of whom are transitioning to the role of investor and regional influencer. As a trusted advisor, we will draw on our information and knowledge banks to provide evidence-based recommendations, taking into account the implications of key drivers of change in a notoriously unpredictable and politically driven global rice market.

• Engage beyond the agricultural sector with the development organizations, government agencies, and investors to advise and tailor solutions to specific issues, such as land and water use.

• Bring incisive information and/or big data to the table as an honest broker to enable proper consideration of rice in the larger economic or political perspective.

• Actively seek opportunities to inform policy formulation and appropriations processes that cut across sectors or constituencies in order to cultivate an enabling environment for the rice sector.
Reducing agriculture's carbon footprint

Delhi’s chief minister has shut all schools in the Indian capital for three days as its citizens struggle with choking smog—BBC News

In November 2016 about 1,800 schools in the Indian capital city of Delhi were closed for three days and the city ground to a halt as residents retreated indoors to escape smog and haze that had engulfed the city of 11 million.

The move came after levels of PM2.5—tiny particles that can clog people’s lungs—soared to over 90 times the level considered safe by the World Health Organization (WHO) and 15 times the Indian government’s norms.

This was not the first time that fog had engulfed the capital. Delhi’s air pollution levels have been a concern for some time, and the Indian capital has vied with Beijing for the unwanted title of “world’s most polluted city.” Air pollution is a leading cause of premature death in India. WHO figures show that about 620,000 people perish every year from pollution-related diseases.

During the winter months, agricultural waste—such as rice straw—is also set on fire around Delhi to clear cropland, and burns for days on end adding to the usual causes. Technically such fires are banned, but attempts to impose cash fines on farmers who break the law have done little to stop them.

The Indian government currently promotes the use of seeding machines that do not need removal of the straw but these can cost as much as an entire harvest. The limited subsidies available can only reach a small proportion of farmers. Increased availability of these technologies as well as improved selection of rice varieties and production systems can improve the sustainability of rice farming and provide an economic incentive not to burn rice by-products.
Supporting resilience with crop insurance

Climatic risk in rainfed rice areas is a major constraint to adoption of improved farming technologies. Farmers in these areas are highly risk-averse, resulting in lower yields. Giving crop insurance at reasonable price, farmers may be more willing to adopt a new technology or rice variety. Past insurance schemes have had limited success because of inadequate analysis of farmers’ family needs such as school and medical fees, and the level of farmers’ technology knowledge. IRRI, in promoting an inclusive, equitable rice sector, will make available tools for small-scale farmers to inform them of such social safety nets as adequate insurance that will allow them to adopt improved practices with minimum risk, thus improving their income and future options.
New challenges in nutrition

The Sustainable Development Goals call for an end to hunger and an end to all forms of malnutrition. Today, around 3.5 billion people—half the people on the planet—are malnourished.

- In South Asia, about 281 million people are undernourished, in Africa it is about 23% of the population.
- Close to 2 billion people survive on diets that lack the vital nutrients needed to grow and develop properly, live productive lives, and raise healthy families.
- 1.4 billion people worldwide struggle with obesity. That’s more than the number of people who are hungry worldwide. Changing lifestyles and cheap calories mean many people find it hard to balance their diets and lifestyles.

- Each year, malnutrition undermines billions of people’s health. It kills 3.1 million children under 5 and leaves 161 million stunted.

Rapid population growth and climate change pose new challenges to ending hunger and malnutrition.

Data sources:
- The Lancet’s series of maternal and child nutrition
- Food and Agriculture Organization of the United Nations (FAO)
- World Health Organization (WHO)
- UNICEF
- http://www.gainhealth.org/
Achieving the goals

Innovation has been a hallmark of IRRI since its inception, from exploring rice germplasm for new traits to ways of making farming systems and value chains more productive, resource-efficient, profitable, and sustainable. Catalysis—how we scale-up and maximize the impact of these innovations—takes place through our partnerships, ICT tools, capacity development, and technical advice and assistance, enabling us to transform existing agri-food systems to benefit more people and the planet.

Guiding this work is a set of principles that help us clarify our intentions and crystalize our path forward to create the global impact we envisage in this strategic plan.
Great people, great purpose
The Green Revolution of half a century ago is indicative of the massive, lasting impact of IRRI’s research efforts. More than anyone, our people are awed and motivated by the responsibility and potential of our present and future work.

IRRI delivers through research excellence
IRRI is a vital catalyst across the rice sector. By the late 1990s, annual gains in Asia from the adoption of IRRI’s rice varieties numbered USD10.8 billion—nearly 150 times the combined annual investment in rice research by IRRI and the NARES. Our impact remains strong. IRRI will deliver.

We work for IRRI
IRRI’s success hinges on our ability to align our efforts and enthusiasm to collectively address IRRI’s goals. We cherish innovation and critical thinking that builds the collective whole and moves the entire organization forward.

The honest broker in rice
IRRI has a long-standing, trusted reputation as an honest broker. Through it, IRRI brings a diversity of perspectives to bear as a credible, neutral voice to build bridges among institutions, national systems, and private and public sectors.

Global expertise, embedded locally
To maximize our impact, more of IRRI’s research will be conducted at strategic locations in close partnership with local research and extension partners. Actively embedding research staff with the partners who influence the resulting technology dissemination and adoption enables quicker translation to the field.

Compelling storytellers
Our staff shares IRRI’s stories around the world in print and electronic media for scientific and popular forums. To accelerate IRRI’s impact, we will enlarge this role, using compelling narratives about our national and regional impact, as well as individual and village case studies.
Team IRRI, no boundaries
IRRI operates as a single team, with all its programs aligned closely with the strategic goals. From our Headquarters in Los Baños, Philippines, across the rice-growing world, we will systematically improve our ability to collaborate seamlessly to deliver.

Diversity is our strength
IRRI staff represents more than 40 nationalities from across the globe. IRRI’s greatest strength comes from the dynamics of this diversity of views, experience, and expertise that peppers our work.

Bold, proactive, and agile
IRRI’s success has been built on its ability to respond quickly to innovative opportunities. With wide-ranging global changes anticipated over the next decade, IRRI has the opportunity to influence the entire agricultural sector. We will take all measures to ensure that IRRI, in its programs, staff, and infrastructure, is ‘future ready.’

Wise stewards of our resources
Through rigorous quality management systems, IRRI will maintain the highest level of stewardship for information and financial resources, genetic resources, and intellectual property of IRRI and its partners, enabling us to remain a trusted and preferred partner.

We hire and develop great people
At IRRI, our people are our greatest asset. To deliver on our mission, IRRI strives to hire and develop people who excel in their area of expertise, are committed to IRRI’s mission and purpose, relish working across boundaries—whether scientific, functional, geographic, or cultural—as part of a vibrant team.

A magnet for diversified funding and support
IRRI is funded and supported by a wide range of investors who see merit in the work we do. To smoothen our financial future, IRRI will continue to expand its funding sources to include public-private partnerships, revenue-generating ventures, beneficiary investments, and a broader philanthropic funding base.