



HUNGER'S TIPPING POINT

AN URGENT CALL TO TRANSFORM FOOD AND NUTRITION SECURITY



TOWARDS A WORLD WITHOUT HUNGER

MEETING THE CHALLENGE OF FOOD AND NUTRITION SECURITY

AN URGENT CALL FOR RESEARCH AND INNOVATION

Today, 700,000,000 people are food insecure and desperately poor. About half that number don't know where their next meal is coming from. **And 60,000,000 children under the age of five are stunted**- cognitively and physically impaired for life - due to nutritional deficiencies.

Yet as difficult and as uncomfortable as it might be to imagine, **humanity is headed towards an even more food insecure, unstable world by mid-century than exists today, worsened by a vicious cycle of conflict and food insecurity.**

Climate change is projected to decrease the productivity of most major staples when substantial increases are needed to feed a world which will add another 1.5 billion people to its population by 2050. For maize, the major staple for much of Africa, the picture is particularly dire with decreasing yields projected for virtually its entire growing area. Increasingly common extreme weather events associated with climate change will only make matters worse. Moreover, additional factors such as soil erosion and land degradation, biodiversity loss, water shortages, conflict, and policies that restrict innovation, will drag crop productivity down even further.

Today's challenges of access to food will be exacerbated by production challenges tomorrow. We are not on track to meet future food needs. Not even close. While much can and needs to be done to improve the flow of food to those in need, food production and accessibility must rise sharply and sustainably by mid-century, particularly where hunger and malnutrition are most severe.

There is hope. Agricultural R&D has long been essential to increasing food production. Since the Green Revolution of the last century, our understanding of biology and genetics has increased greatly. However, requisite productivity increases are now hampered by lack of investment in basic and applied research, and by regulatory barriers prohibiting distribution and use of research advancements. Incremental agricultural productivity improvements will be insufficient to meet future needs. By failing to prioritize agricultural R&D and its dissemination today, we tie our farming systems and our fate to the past and to ever increasing use of diminishing non-replenishable resources to feed humanity.

Agricultural research enjoys extremely favorable returns on investment when all its benefits are considered, but there are multiple market failures when it comes to providing the people of the developing world with a nutritious diet in a manner that is resilient, environmentally sustainable, and cost-effective. The benefit of enabling healthy, productive, and secure lives for billions of people has returns that flow broadly through the global economy. While some of the market failures can be addressed with current technologies, within appropriate regulatory and "pricing" frameworks (such as the pricing of carbon and water), full success in meeting the world's nutritional needs will also require advances in basic research. Society sponsored research will be the foundation of the innovation that drives a successful food system of the future.

We must take bold action to change course. We must be prepared to pursue high risk, high reward, scientific research with the goal of transforming our food systems to meet the nutritional needs of everyone sustainably. These will be planet-friendly “moonshot” efforts leading to substantial, not just incremental, leaps in food production for food and nutrition security. Beyond research, success will require science-based policies, regulations, and incentives that are enabling and aligned with this goal, including those pertaining to AI, computational biology and advanced genomic techniques.

Reversing our current trajectory towards a tragic mismatch of global food supply and demand by mid-century requires definitive action now.

We are advocating for transformational efforts across the food value chain, from inputs to production to the post-harvest phase. Building on recent advancements in biology and genetics, moonshot initiatives that could be considered include: enhancement of photosynthesis in crops such as wheat and rice, biological nitrogen fixation of major cereals, transformation of annual to perennial crops, development of new and overlooked crops, innovations in diverse cropping systems, enhancement of fruits and vegetables to improve storage and shelf life and to increase food safety, and the creation of nutrient-rich food from microorganisms and fungi. Also critical will be the study and development of strategies to make certain that the fruits of these scientific research initiatives reach and benefit those most in need.

The scale of ambition and research we are advocating will require mechanisms to identify, recommend, coordinate, monitor and facilitate collaborative implementation of the proposed food security moonshots.

As leaders in science and innovation, we ask you to join us in sounding the alarm, raising collective ambitions, and advocating for research moonshots to ensure the world’s future food and nutrition security.

LAUREATES SIGNED IN PARTNERSHIP:

Aaron Ciechanover

2004 Nobel Prize in Chemistry

Ada E. Yonath

2009 Nobel Prize in Chemistry

Adam G. Riess

2011 Nobel Prize in Physics

Akinwumi A. Adesina

2017 World Food Prize

Alan Heeger

2000 Nobel Prize in Chemistry

Albert Fert

2007 Nobel Prize in Physics

Anthony J. Leggett

2003 Nobel Prize in Physics

Anton Zeilinger

2022 Nobel Prize in Physics

Ardem Patapoutian

2021 Nobel Prize in Physiology or Medicine

Arieh Warshel

2013 Nobel Prize in Chemistry

Arthur B. McDonald

2015 Nobel Prize in Physics

Avram Hershko

2004 Nobel Prize in Chemistry

Barry Clark Barish

2017 Nobel Prize in Physics

Barry J. Marshall

2005 Nobel Prize in Physiology or Medicine

Brian K. Kobilka

2012 Nobel Prize in Chemistry

Brian P. Schmidt

2011 Nobel Prize in Physics

Carl E. Wieman

2001 Nobel Prize in Physics

Cary Fowler

2024 World Food Prize

Charles M. Rice

2020 Nobel Prize in Physiology or Medicine

Christopher A. Pissarides

2010 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Craig C. Mello

2006 Nobel Prize in Physiology or Medicine

Cynthia Rosenzweig

2022 World Food Prize

Daron Acemoglu

2024 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

David Beckmann

2010 World Food Prize

David J. Gross

2004 Nobel Prize in Physics

David J. Wineland

2012 Nobel Prize in Physics

David W.C. MacMillan

2021 Nobel Prize in Chemistry

Dmitry Muratov

2021 Nobel Peace Prize

Donna Strickland

2018 Nobel Prize in Physics

Drew Weissman

2023 Nobel Prize in Physiology or Medicine

Edmund S. Phelps

2006 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Edson Lobato

2006 World Food Prize

Edvard Moser

2014 Nobel Prize in Physiology or Medicine

Elfriede Jelinek

2004 Nobel Prize in Literature

Elias James Corey

1990 Nobel Prize in Chemistry

Elizabeth H. Blackburn

2009 Nobel Prize in Physiology or Medicine

Emmanuelle Charpentier

2020 Nobel Prize in Chemistry

Eric F. Wieschaus

1995 Nobel Prize in Physiology or Medicine

Eric R. Kandel

2000 Nobel Prize in Physiology or Medicine

Eric S. Maskin

2007 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Erwin Neher

1991 Nobel Prize in Physiology or Medicine

Ferenc Krausz

2023 Nobel Prize in Physics

Finn E. Kydland

2004 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Frances H. Arnold

2018 Nobel Prize in Chemistry

Francoise Barre-Sinoussi

2008 Nobel Prize in Physiology or Medicine

Gary Ruvkun

2024 Nobel Prize in Physiology or Medicine

Gebisa Ejeta

2009 World Food Prize

Geoffrey E. Hinton

2024 Nobel Prize in Physics

Geoffrey Hawtin

2024 World Food Prize

Gerard Mourou

2018 Nobel Prize in Physics

Gerhard Ertl

2007 Nobel Prize in Chemistry

Giorgio Parisi

2021 Nobel Prize in Physics

Gregg L. Semenza

2019 Nobel Prize in Physiology or Medicine

Guido W. Imbens

2021 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Gurdev S. Khush

1996 World Food Prize

H. David Politzer

2004 Nobel Prize in Physics

H. Robert Horvitz

2002 Nobel Prize in Physiology or Medicine

Hamilton O. Smith

1978 Nobel Prize in Physiology or Medicine

Hans R. Herren

1995 World Food Prize

Harold E. Varmus

1989 Nobel Prize in Physiology or Medicine

Hartmut Michel

1988 Nobel Prize in Chemistry

Harvey J. Alter

2020 Nobel Prize in Physiology or Medicine

Heidi Kühn

2023 World Food Prize

Howarth Bouis

2016 World Food Prize

J. Georg Bednorz

1987 Nobel Prize in Physics

J. Michael Bishop

1989 Nobel Prize in Physiology or Medicine

Jack W. Szostak

2009 Nobel Prize in Physiology or Medicine

James Peebles

2019 Nobel Prize in Physics

Jan W. Low

2016 World Food Prize

Jean-Marie Lehn

1987 Nobel Prize in Chemistry

Jean-Pierre Sauvage

2016 Nobel Prize in Chemistry

Jennifer A. Doudna

2020 Nobel Prize in Chemistry

Jerome I. Friedman

1990 Nobel Prize in Physics

Jo Luck

2010 World Food Prize

Joachim Frank

2017 Nobel Prize in Chemistry

Johann Deisenhofer

1988 Nobel Prize in Chemistry

John C. Mather

2006 Nobel Prize in Physics

John C. Polanyi

1986 Nobel Prize in Chemistry

Joseph E. Stiglitz

2001 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Joseph H. Taylor Jr.

1993 Nobel Prize in Physics

Juan Manuel Santos

2016 Nobel Peace Prize

Jules A. Hoffmann

2011 Nobel Prize in Physiology or Medicine

Kailash Satyarthi

2014 Nobel Peace Prize

Kip Stephen Thorne

2017 Nobel Prize in Physics

Konstantin Novoselov

2010 Nobel Prize in Physics

Lawrence Haddad

2018 World Food Prize

Leland H. Hartwell

2001 Nobel Prize in Physiology or Medicine

Leymah Roberta Gbowee

2011 Nobel Peace Prize

Louis J. Ignarro

1998 Nobel Prize in Physiology or Medicine

Marc Van Montagu

2013 World Food Prize

Maria Andrade

2016 World Food Prize

Mario R. Capecchi

2007 Nobel Prize in Physiology or Medicine

Martin Chalfie

2008 Nobel Prize in Chemistry

Mary-Dell Chilton

2013 World Food Prize

May-Britt Moser

2014 Nobel Prize in Physiology or Medicine

Michael Kremer

2019 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Michael Levitt

2013 Nobel Prize in Chemistry

Michael Rosbash

2017 Nobel Prize in Physiology or Medicine

Michel Mayor

2019 Nobel Prize in Physics

Modadugu V. Gupta

2005 World Food Prize

Mohamed ElBaradei

2005 Nobel Peace Prize

Morten Meldal

2022 Nobel Prize in Chemistry

Moungi G. Bawendi

2023 Nobel Prize in Chemistry

Patrick Modiano

2014 Nobel Prize in Literature

Paul L. Modrich

2015 Nobel Prize in Chemistry

Pedro Sanchez

2002 World Food Prize

Per Pinstrup-Andersen

2001 World Food Prize

Peter Agre

2003 Nobel Prize in Chemistry

Philip E. Nelson

2007 World Food Prize

Rainer Weiss

2017 Nobel Prize in Physics

Randy W. Schekman

2013 Nobel Prize in Physiology or Medicine

Rattan Lal

2020 World Food Prize

Richard Henderson

2017 Nobel Prize in Chemistry

Richard R. Schrock

2005 Nobel Prize in Chemistry

Roald Hoffmann

1981 Nobel Prize in Chemistry

Robert Huber

1988 Nobel Prize in Chemistry

Robert J. Lefkowitz

2012 Nobel Prize in Chemistry

Robert Mwanga

2016 World Food Prize

Robert T. Fraley

2013 World Food Prize

Robert Woodrow Wilson

1978 Nobel Prize in Physics

Roger D. Kornberg

2006 Nobel Prize in Chemistry

Roger Penrose

2020 Nobel Prize in Physics

Ryoji Noyori

2001 Nobel Prize in Chemistry

Saul Perlmutter

2011 Nobel Prize in Physics

Shakuntala H. Thilsted

2021 World Food Prize

Sheldon Glashow

1979 Nobel Prize in Physics

Simon Johnson

2024 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Simon N. Groot

2019 World Food Prize

Sir Angus S. Deaton

2015 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Sir Gregory P. Winter

2018 Nobel Prize in Chemistry

Sir James Fraser Stoddart

2016 Nobel Prize in Chemistry

Sir John E. Walker

1997 Nobel Prize in Chemistry

Sir Michael Houghton

2020 Nobel Prize in Physiology or Medicine

Sir Oliver Hart

2016 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Sir Paul M. Nurse

2001 Nobel Prize in Physiology or Medicine

Sir Peter J. Ratcliffe

2019 Nobel Prize in Physiology
or Medicine

Sir Richard J. Roberts

1993 Nobel Prize in Physiology
or Medicine

Steven Chu

1997 Nobel Prize in Physics

Takaaki Kajita

2015 Nobel Prize in Physics

Tawakkol Karman

2011 Nobel Peace Prize

The 14th Dalai Lama

1989 Nobel Peace Prize

Thomas R. Cech

1989 Nobel Prize in Chemistry

Tim Hunt

2001 Nobel Prize in Physiology
or Medicine

Torsten N. Wiesel

1981 Nobel Prize in Physiology
or Medicine

Victor Ambros

2024 Nobel Prize in Physiology
or Medicine

Walter Gilbert

1980 Nobel Prize in Chemistry

Werner Arber

1978 Nobel Prize in
Physiology or Medicine

William D. Phillips

1997 Nobel Prize in Physics

William E. Moerner

2014 Nobel Prize in Chemistry

William G. Kaelin Jr.

2019 Nobel Prize in Physiology
or Medicine

Wole Soyinka

1986 Nobel Prize in Literature

Wolfgang Ketterle

2001 Nobel Prize in Physics

Yuan T. Lee

1986 Nobel Prize in Chemistry



ORGANIZATIONS SIGNED IN PARTNERSHIP ON MARCH 25, 2025:

1890 Universities Foundation
A Well-Fed World
Advanced Agrilytics
Africa Rice Center
African Orphan Crops Consortium (AOCC)
Agbioworld
agInnovation
agInnovation North Central
agInnovation South
agInnovation- West
AGRA
AgriFabriX
Agroanaime S.A.S Zomac
AgTech PR
America's Cultivation Corridor
American Society of Agronomy
American Society of Plant Biologists
Amy P. Goldman Foundation
Arcola, Inc.
Asia and Pacific Seed Alliance (APSA)
Association for Farmers Rights Defense (AFRD)
Association of 1890 Research Directors
Beckhauser
BioConnect Iowa
BioLumic
Branstad Churchill Group
Center for Food Security and the Environment
at Stanford University
Centro de Biotecnología y Genómica de Plantas
CFAES Rattan Lal Center for Carbon Management
and Sequestration
CGIAR System Organization
CIFOR-ICRAF
CIMMYT
Climate Civics International
Committee on Sustainability Assessment (COSA)
Council for Agricultural Science and Technology (CAST)
CropLife International
Crop Science Society of America
Digital Green
DMARC
EARTH University
ethical business building the future (ebbf)
European Foundation of Innovation (INTEC)
Faculty of Agricultural Sciences, University of
Abomey-Calavi
Food Systems for the Future Institute
Foundation for Agrarian Studies (FAS)
Fun and Education Global Network
Global Alliance for Improved Nutrition (GAIN)
Good Food Institute
Great Lakes Feeds
Green Gate Farms
Grow Further
Growing Hope Globally
Growing the Grassroots
Gujarat Life Sciences
HarvestPlus-Alliance Bioversity & CIAT
Heidi Nebel, McKee, Voorhees and Sease
Heifer International
Hello Tractor
iDE
IFA
III Ag, LLC
INARI

ORGANIZATIONS SIGNED IN PARTNERSHIP ON MARCH 25, 2025:

Instituto Lima Barreto para a Mobilidade Social

International Seed Federation

International Union of Food Science and Technology
Iowa State University

Islamabad Food Authority Pakistan

Japan International Research Center for
Agricultural Sciences

Kemin Industries

Kitchen Connection

LadyAgri Impact Investment Hub

Lillian Goldman Charitable Trust

Marchmont Communications

Millenium Institute

Model Livestock Advancement Foundation

MS Swaminathan Research Foundation

National Agricultural Research Organization of Uganda

NEST4US

North Carolina State University

Norwich Institute for Sustainable Development

Nutri8

OCP Group

PowerPollen

Prakriti Food

Purdue Center for Global Food Security

Raiz Vertical Farms

RAJU

RegenA.G.R.I. - Farm Hero Media

Rootooba

Roots of Peace

ROTASI Institute

Rye Revival

Sanaa's Gourmet Mediterranean

SecondBite

SeedNL

Sejfarm's Consults Ltd

Seventh Generation Interfaith Coalition for

Responsible Investment

Solutions from the Land

Soil Science Society of America

Ternes Agricultural Consulting Pty Ltd

The Crawford Fund

The Crawford Fund for Food Security

The Hunger Project

The Land Institute

The Norman Borlaug Institute for International
Agriculture & Development at Texas A&M AgriLife

The Outreach Program

The Refugee Collective

The Rockefeller Foundation

Tuskegee University

Universidade Rainha Njinga A Mbande

University of California, Davis

University of Illinois

Ustawi Afrika

Verdant Impact Partners, Inc

Vetkonect

Wageningen University and Research

Youth Agro-Marine Development Association

ZeaKal, Inc.