



SCIENCE
FORUM
2016



CGIAR

Independent
Science and
Partnership
Council

12-14 April 2016, Addis Ababa, Ethiopia

SF16 | PROGRAM-AT-A-GLANCE

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A Message from the Chair

It is a pleasure to welcome all delegates to the 4th Science Forum, which the Independent Science and Partnership Council (ISPC) is co-hosting with the United Nations Economic Commission for Africa (UNECA). We are expecting over 200 participants from a broad mix of disciplinary backgrounds. Our aim has been to create an atmosphere where every participant would have the opportunity to meet someone new and be challenged through talks and discussions to think about agricultural research in a slightly different way.

CGIAR research is dedicated to reducing rural poverty, improving food and nutrition security, and ensuring more sustainable management of natural resources. It is carried out by 15 Centers that are members of the CGIAR Consortium, in close collaboration with hundreds of partner organizations. The ISPC is a council of eminent scientific experts that advise CGIAR funders on strategic scientific issues, and help to strengthen the quality, relevance, and impact of science in the CGIAR.

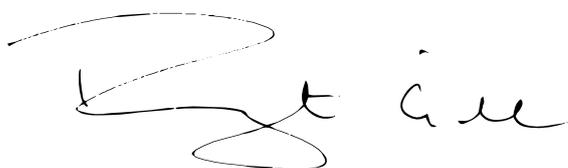
The Science Forum series is a flagship event initiated by the ISPC in 2009 under its remit of Mobilizing Science for development through international dialogue on critical and emerging issues. The Forum aims to foster partnerships that best complement expertise of the CGIAR and its partners on research initiatives and emerging issues. It serves to bring together scientists and scientific communities largely external to the CGIAR, but who have potentially important contributions to make to the CGIAR research portfolio, and members of the CGIAR community.

The Science Fora are not traditional science conferences and are designed as interactive meetings to stimulate provocative and productive dialogue. For the main program and to facilitate broad participation, we have Plenary Sessions raising the big questions and have cajoled experts into coordinating Breakout Groups, where we hope that everyone will have a chance to contribute to the discussions. We publish summaries and briefs on the major outcomes but also seek to promote new perspectives presented at the meeting through publication of a special issue of a high-quality scientific journal. Selected papers presented at the last Science Forum held in September 2013 in Bonn on "Nutrition and health outcomes: targets for agricultural research" were recently published in a special section of Food Security entitled "Strengthening the links between nutrition and health outcomes and agricultural research".

Science Forum 2016 focuses on the contribution of agriculture to reducing poverty, with the overarching objective to: *"rethink the pathways for agricultural research to stimulate inclusive development of rural economies in an era of climate change. The Forum will marshal evidence and build on lessons learned to date, to suggest an updated list of priority research areas and approaches which involve more strategic and inclusive engagement with partners."*

Our planning is now over and we look to all of you to help us to deliver. At the same time we hope you have fun and enjoyable and stimulating few days.

On behalf of the Steering Committee (Bruce Campbell, Gebisa Ejeta, Anil Gupta, Rashid Hassan, Victor Konde, Rajul Pandya-Lorch, Tom Tomich and Preet Lidder).



Maggie Gill
ISPC Chair

DAY 1 – Tuesday, 12 April, 2016

Theme of the Day – Learning from Experience

What does the evidence tell us about which pathways have worked and how has the challenge changed? What are the pathways that link agricultural research and poverty reduction?

09:00 - 11:15

PLENARY: SETTING THE SCENE

Chair: Maggie Gill, ISPC Chair, Coordinator Scientific Programme Science Forum 2016

Welcome from ISPC and UNECA

Links to other meetings/initiatives

Stefan Dercon, DFID & University of Oxford: Agricultural Research for Rural Prosperity: Rethinking the Pathways

Ruth Meinzen-Dick, Senior Research Fellow, IFPRI: Assets Keys to Prosperity

Mark Howden, Director, Climate Change Institute, Australian National University: Challenges Ahead As a Result of Climate Change

11:15 - 11:45

TEA/COFFEE

11:45 - 13:00

PLENARY: PATHWAYS TO POVERTY REDUCTION

Panel discussion

Chair: Tom Tomich, Director, Agricultural Sustainability Institute & Professor, University of California Davis and ISPC

Panelists: Doug Gollin, University of Oxford and ISPC; Anil Gupta, Honey Bee Network; Saleem Ismail, Western Seed Co, Kenya; Fentahun Mengistu, Ethiopian Institute of Agricultural Research; Jing Zhu, Nanjing Agricultural University

DAY 1 – Tuesday, 12 April, 2016

13:00 - 14:00

LUNCH

14:00 - 15:00

BREAKOUT SESSIONS

The aim of these four breakout sessions is to show how agricultural research on different commodities has/can contribute to poverty reduction.

- 1) **Linkages between staple crops research and poverty outcomes**
- 2) **Nutrient-dense climate-resilient future crops**
- 3) **Animal agri-food systems research for poverty reduction**
- 4) **Contribution of research on agricultural policies, institutions, and markets to poverty reduction**

15:15 - 15:45

MOVE TO ILRI CAMPUS

15:45 - 19:00

KNOWLEDGE SHARE FAIR AND RECEPTION:
CO-HOSTED BY THE CGIAR CENTERS ON SITE + EIAR

DAY 2 – Wednesday, 13 April, 2016

Theme of the Day – Regional Context

Exploring the main pathways from agricultural research to poverty reduction in five regions and then exploring the drivers of change and partnerships for impact in more depth.

09:00 - 09:30

PLENARY: REFLECTIONS FROM DAY 1

Report back from Day 1 breakout sessions

Chair: Rajul Pandya-Lorch, Head 2020 Vision Initiative and Chief of Staff, IFPRI

09:30 - 11:15

PLENARY: REGIONAL PERSPECTIVES

Chair: Rashid Hassan, Director, Centre for Environmental Economics and Policy in Africa, University of Pretoria, South Africa

- Eastern and Southern Africa: Wanjiru Kamau-Rutenberg, Director, African Women in Agricultural Research and Development (AWARD), Kenya
- West and Central Africa: Baba Yusuf Abubakar, Agricultural Research Council of Nigeria, Nigeria
- Latin America: Ruben Echeverria, Director General, International Center for Tropical Agriculture (CIAT), Colombia
- South Asia: S. Mahendra Dev, Indira Gandhi Institute of Development (IGIDR), India
- Southeast Asia: Dang Kim Son, Former Director General, Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), Vietnam

11:15 - 11:45

TEA/COFFEE

11:45 - 13:00

BREAKOUT SESSIONS: DRIVERS OF CHANGE

5a) Africa

6a) Asia

7a) Climate change

8a) Understanding impact delivery from agricultural research

DAY 2 – Wednesday, 13 April, 2016

13:00 - 14:00

LUNCH

14:00 - 15:00

BREAKOUT SESSIONS: PARTNERSHIPS FOR IMPACT

The previous four breakout groups will continue, but now with a focus on partnerships (types of partners and partnership approaches).

5b) Africa, 6b) Asia, 7b) Climate change, 8b) Understanding impact delivery from agricultural research

15:00 - 15:30

TEA/COFFEE

15:30 - 16:00

PLENARY: REPORT BACK FROM DAY 2 BREAKOUT SESSIONS

Chair: Rajul Pandya-Lorch

16:00 - 17:45

PLENARY: CAPACITY DEVELOPMENT FOR POVERTY REDUCTION

16:00 - 16:30 Gebisa Ejeta, Distinguished Professor of Plant Breeding & Genetics and International Agriculture, Purdue University: Capacity Development for Poverty Reduction

16:30 - 17:45 Panel discussion

Chair: Gebisa Ejeta

Panelists: Suresh Babu, IFPRI; Karen Duca, USAID; Carl Erik Schou Larsen, World Bank; Solange Uwituze, RUFORUM

18:00 - 19:30

EVENING RECEPTION HOSTED BY ISPC

DAY 3 – Thursday, 14 April, 2016

Theme of the Day – Synthesis and Way Forward

Identify key topics/pathways within the overall context that merit further discussion.

09:00 - 09:45

PLENARY: SYNTHESIS AND REFLECTIONS

Chair: Maggie Gill, ISPC Chair, Coordinator Scientific Programme Science Forum 2016
Brhane Gebrekidan, Fellow, Ethiopian Academy of Sciences: Key Topics, Pathways and Priority Research Areas (synthesis and key messages from Day 1 discussions)
Keijiro Otsuka, Professor, Kobe University, Japan: Key Topics and Inclusive Partnership Approaches to Cater for Regional Differences and Generate Cross-regional Products (synthesis and key messages from Day 2 discussions)

09:45 - 11:15

PLENARY: RESEARCH PERSPECTIVES – PATHWAYS TO PROSPERITY

Panel discussion

Chair: Doug Gollin, Professor, University of Oxford and ISPC

Panelists: Peter Carberry, Deputy Director General for Research, ICRISAT; Victor Manyong, Director, Eastern Africa Hub and Social Science, IITA; Howard-Yana Shapiro, Mars Incorporated; Jimmy Smith, Director General, ILRI; Oscar Ortiz, Deputy Director General for Research and Development, CIP; Florence Wambugu, Chief Executive Officer, Africa Harvest Biotech Foundation International

11:15 - 11:45

TEA/COFFEE

DAY 3 – Thursday, 14 April, 2016

11:45 - 12:45

PLENARY: POLICY PERSPECTIVES – PATHWAYS TO PROSPERITY

Panel discussion

Chair: Segenet Kelemu, Director General, ICIPE and ISPC

Panelists: Berhanu Abegaz, Executive Director, African Academy of Sciences;
Shantanu Mathur, IFAD; Sarah Simons, World Bank; Maya Takagi, FAO

12:45 - 13:00

Final wrap-up: Tom Tomich

Close of Forum: Maggie Gill

13:00 - 14:00

LUNCH

14:00 - 16:00

**Continuation of day 1 breakout sessions
+ breakout session on gender**

PLENARY SESSION ABSTRACTS



DAY 1 / 12TH APRIL / 09:00 – 11:15

PLENARY: SETTING THE SCENE

AGRICULTURAL RESEARCH FOR RURAL PROSPERITY: RETHINKING THE PATHWAYS

Stefan Dercon

DFID and University of Oxford, United Kingdom

Summary:

Can we be confident that agricultural research creates rural prosperity and reduces poverty?

What is the evidence base, and if so, what are the pathways and mechanisms through which this works?

What lessons can we draw from past experiences – both successes and failures? How can we improve our understanding of the pathways to impact?

ASSETS KEYS TO PROSPERITY

Ruth Meinzen-Dick

Senior Research Fellow, International Food Policy Research Institute (IFPRI), Washington, DC USA

Summary:

For lasting prosperity, it is important to think beyond increasing income, to building assets. To end the intergenerational transmission of poverty, it is essential to consider the gender distribution of those assets. There is increasing evidence that assets - including not only land and natural capital but also physical capital such as equipment and financial, social and human capital - under the control of women can strengthen their bargaining power and affect the intrahousehold distribution of resources. Yet few agricultural interventions consider their impacts on assets at the individual or even household level.

Assets influence the design, implementation, and outcomes of programs by determining who participates (and who does not participate) in the programs as well as how and how much they benefit. Some agricultural projects distribute agricultural assets such as land, livestock, infrastructure, or machinery. Agricultural interventions can also introduce improved technologies or institutional innovations that increase the returns to the productive assets used in agriculture-based livelihood strategies, potentially raising the returns to and

DAY 1 / PLENARY: SETTING THE SCENE

value of some assets (and possibly lowering others) as well as producing surplus that can be reinvested in asset accumulation.

The Gender, Agriculture, and Assets Project (GAAP) conceptual framework helps identify mechanisms through which women's, men's, and joint assets interact with shocks, livelihood strategies, full income, leading to welfare outcomes. To better understand the importance of gender and assets in agricultural development projects, and the potential of projects to build women's assets, the research program worked with eight agricultural development projects in Africa and South Asia to build explicit attention to gender and gendered ownership of assets into their monitoring and evaluation plans. The eight projects took diverse approaches to gender—ranging from gender blind to gender transformative—and to assets, with some projects distributing agricultural assets such as land, livestock, or machinery and others promoting increased productivity through access to inputs and training. This presentation will draw upon qualitative and quantitative evidence to examine how participants understood gendered use, control, and ownership of assets; how assets influenced who was able to participate in and benefit from projects; and how projects impacted a range of outcome measures, including women's access to and control over assets. Evidence from these cases points to mechanisms through which agricultural research and development can build assets and close critical gender gaps in control over assets, for lasting development outcomes.

CHALLENGES AHEAD AS A RESULT OF CLIMATE CHANGE

S.M. Howden

Climate Change Institute, Australian National University, Canberra, Australia

Summary:

The potential effects associated with climate change on agriculture and food security are substantial – and interact strongly with other potential drivers of change. The key potential impacts of climate change on production of major food crops are increasingly well-documented and will be summarised, drawing from inter alia CCAFS research and the recent IPCC Working Group 2 report. However, impacts on livestock, on minor and 'orphan' crops, on nutrition and quality aspects, on value chains and on social norms and institutional arrangements are not as well advanced. Similarly, the stability dimension of food security is less well-studied than the availability, access and utilisation elements, often due to methodological limitations. Unfortunately, these gaps in science understanding of impacts often align with the issues that are most important to poor people and less-developed regions. Furthermore, the likelihood of rapidly closing these gaps seems low.

Perhaps more importantly, there is inadequate exploration of meaningful adaptations to these impacts. The focus to date has often been on single, simple, technical and short-term adaptations to existing systems with relatively little attention to the more complex, compound, highly contextual, strategic, socially and institutionally-mediated changes that often characterise real-world change processes. In addition, there is a need to consider the full range of adaptations from incremental to systemic to transformational so as to ensure that good options are not overlooked and to limit the occurrence of unwanted path-dependency. A particular challenge in implementing climate adaptation options is that they are hard to assess in terms of relative advantage, compatibility, manageability, trialability and observability: all key characteristics which facilitate adoption. In such situations, assessment and implementation of adaptations often requires significant building of adaptive capacity, especially strategic decision-making skills and provision of a variety of supportive institutional arrangements: both challenging, especially as climate stress can affect the psychological state of farmers, reducing their capacity to make effective decisions. These decisions can either be supported or hindered by societal norms and networks depending on the nature of the adaptation being considered. Hence a better understanding and influencing of social norms and social learning is a key need.

DAY 1 / PLENARY: SETTING THE SCENE

Nevertheless, the fundamental proposition behind adaptation is essentially common-sense—that failure to respond to emerging changes results in either underperformance and/or increased risk—both of which are undesirable especially where food security is marginal. Hence, there is both an inherent private interest in being well-adapted to change as well as a broader public interest through enhancing food availability and stability and a key challenge is removal of barriers to effective adaptation.

One of those barriers can be simply an understanding of the local historical climatology. For example, in some regions that are relatively poorly serviced in terms of weather information, there can be limited objective understanding of historical climate averages, variability and the drivers of these and this constrains consideration of what climate change might entail. Consequently, there remains considerable opportunity for research and operational systems to deliver relevant climate information to enhance food security outcomes. To do this, mounting evidence shows that the information delivery systems need to be embedded into the social and institutional processes through which decisions are made. However, there seems to be a range of barriers to this which can result in weather and climate research being less than fully productive and in some cases arguably misdirected. An important part of addressing this challenge is in framing the discussions about values, aspirations, expectations and decisions rather than around climate per se.

Emission-reduction (mitigation) is also an important but somewhat contested area of concern. Mitigation options are often (but not always) aligned with sustainable agricultural practices but the reliability, practicality, effectiveness and priority of these can vary. Given the likely initial progress on reducing fossil-fuel based emissions, the proportion of emissions arising from food systems may increase over time. This could increase the focus on mitigation in food systems and have profound effects on both the supply and demand parts of the systems. Consequently a significant challenge is to develop practical, cost-effective and verifiable options to reduce net emissions that are also climate-adaptive.

DAY 2 / 13TH APRIL / 09:30 – 11:15

PLENARY: REGIONAL PERSPECTIVES

MAIN PATHWAYS FROM AGRICULTURAL RESEARCH TO POVERTY REDUCTION IN EASTERN & SOUTHERN AFRICA

Wanjiru Kamau-Rutenberg

Director, African Women in Agricultural Research and Development (AWARD), Kenya

Summary:

More than a decade of relative stability and economic growth has led many observers to conclude that an African era of prosperity may be starting. Between 2000 and 2014, five of the world's ten fastest growing economies were in Africa. On average for Sub-Saharan Africa, GDP grew by an annual rate of 4.9% between 2000-14, compared to 1.7% per year for all OECD countries in the same period. The agriculture sector has been a big part of this African growth story. Exploration of the realities of Eastern and Southern Africa in particular reveals a region that faces both insurmountable opportunities, and overwhelming challenges on the journey to agriculture-driven prosperity.

On one hand, Eastern and Southern Africa are on the cutting edge of adopting technologies that are transforming agriculture in the region. For example, mobile phones are bringing radical change to the way extension services to rural farmers are provided. Increasing urbanization is also providing new domestic markets for farmers even as investments in infrastructure, such as roads, promise to drive new prosperity for players along the domestic value chains. Increased regional integration also means that trade barriers are coming down at an unprecedented rate and opening up new foreign markets.

However, in the midst of this optimism, the region is also facing some overwhelming challenges. Climate change presents a real challenge that the region must overcome. Southern Africa and the northern parts of Eastern Africa are in the midst of a severe drought attributed to El Nino. Further, despite remarkable progress already made, gender imbalance remains a real threat to agricultural productivity in the region. Studies indicate a continuing gender gap with women farmers having far less access to inputs and extension services compared to male farmers. This imbalance, in a continent where women are a full half of the agricultural workforce, presents a real threat to the sustainability of the growth that agriculture is currently experiencing in Eastern and Southern Africa.

MAIN PATHWAYS FROM AGRICULTURAL RESEARCH TO POVERTY REDUCTION IN WEST & CENTRAL AFRICA

Baba Yusuf Abubakar

Executive Secretary, Agricultural Research Council of Nigeria, Abuja, Nigeria

Summary:

Credible studies have shown that agricultural interventions, through R4D, that have been emphatic on commodity output increases (e.g. crop yields/unit land area, carcass weight/animal unit or volume of milk per lactation), may be important development goals in their own rights, but it has also been amply demonstrated that merely producing more food does not ensure food security or improved nutrition. As a consequence, reports have increasingly shown lack of sufficient downward trend in indicators, such as reduced infant mortality rate, child stunting, underweight, wasting, etc) with increased output. Even when R4D shifted gear from enhanced production to biofortification, using biotechnology tools (as in sorghum, quality-protein-maize or orange-fleshed-sweet potato), the impacts have not been markedly different. In contrast to the traditional characterization of agricultural research as involving a linear chain from output to impact, with minimal engagement between remote parts of the chain, impact pathway analysis identifies causal links by which research achieves its intended benefits. Impact pathway analysis is particularly useful in view of the new perspective on impact, which conceptualizes technical change in agriculture as a complex process involving feedback loops, and interactions between social, cultural and biophysical systems.

Africa is one of the world's most vulnerable regions in the world in terms of impact of extreme weather events, such as drought and floods and their impact on agriculture. This is due to the region's heavy reliance on rain-fed agriculture, poor socioeconomic situation, low adaptive capacity and limited infrastructure development. Climate change poses a great challenge to promoting inclusive growth in Africa, particularly the Sub-Saharan region where growing seasons are increasingly unpredictable. Experts estimate that each 1°C rise in mean temperature will reduce dry land farm profits in Africa by nearly 10 per cent and by 2050, cereal production growth in Sub-Saharan Africa is projected to decline by 3.2 percent as a result of climate change. Yet, the Malabo Declaration includes targets to eliminate hunger and halve poverty by 2025 through agriculture, a target which is only achievable by leveraging action agenda for Science, Technology and Innovation-cum research and development (STI/R&D) in driving an agriculture-led economic and social transformation of Africa significantly.

Policy reforms that remove export taxes and replace them with other less distortionary sources of taxation, as well as implementing regional integration agreements; land policy reforms that will, amongst other things, enable smallholders to access land and engage successfully in profitable commercial agriculture; scaling up public investments particularly for agricultural research and related institutions to strengthen agricultural education and develop cost-effective and demand-driven advisory services, as well as rebuild the aging infrastructure base (irrigation, roads, energy and logistics, especially port infrastructure); institutional reforms to make markets more efficient and less risky are some of the government policies that will foster agricultural growth in Sub-Saharan Africa.

MAIN PATHWAYS FROM AGRICULTURAL RESEARCH TO POVERTY REDUCTION IN SOUTH ASIA

S. Mahendra Dev

Director and Vice Chancellor, Indira Gandhi Institute of Development Research (IGIDR), Mumbai, India

DAY 2 / PLENARY: REGIONAL PERSPECTIVES

Summary:

In the last few decades, South Asia has experienced significant economic growth as well as social and structural changes. However, the South Asian region has the highest number of poor people in the world even as the rate of poverty reduction in the last decade has been quite rapid. While agriculture's share in GDP is low at 18%, the share in employment is high at nearly 50%. Therefore, the performance of the agricultural sector is crucial for poverty reduction in the region.

A two pronged strategy is required to achieve poverty reduction through a focus on agriculture. One is diversification and increase in productivity. The second is preventing and coping with risks due to price variability and weather, particularly climate change. This talk focuses on a number of agricultural pathways for poverty reduction including: (1) Diversification and sustainable agricultural productivity, particularly among smallholders; (2) Increasing public investment in rural infrastructure; (3) Increasing water productivity and water use efficiency through technical and policy interventions; (4) Reducing price volatility and food prices for consumers and producers (while maintaining reasonable price incentives for producers); (5) Better integrating smallholders into high value chains; (6) Reducing inequalities in agriculture and promoting shared growth; (7) Investing in climate resilient agriculture; (8) Encouraging risk mitigation measures, including agricultural insurance; (9) Focusing on linkages between agriculture and nutrition; and (10) Promoting rural non-farm sectors.

MAIN PATHWAYS FROM AGRICULTURAL RESEARCH TO POVERTY REDUCTION IN SOUTHEAST ASIA

Dang Kim Son

Former Director General, Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), Vietnam

Summary:

In the last few decades, Southeast Asian (SEA) countries have enjoyed quite a stable period for economic development – this, despite some social and economic volatilities. Therefore, SEA has become an active place for economic, social, environmental development. Agricultural development and poverty reduction have also achieved outstanding achievements.

At present, a majority of the poor in SEA countries are concentrated in mountainous regions, and other remote areas – such places also tend to have more minorities who tend to be poor and vulnerable. At the macro-economy level, the agriculture sector and rural economy are falling behind the industrial sector and urban economy. The infrastructure and technical services gap between the two regions is also widening. One can infer that there are external as well as internal drivers that promote this gap. The internal drivers are the country/regional development strategy and the rule of market mechanism. Instead of adopting an inclusive development approach, most countries use policy instruments such as subsidies to compensate for the lack of development in some geographical areas and sectors (or among certain populations). The external drivers are an increasingly integrated global economy and challenges such as climate change. While SEA is one of the regions affected most severely by climate change, the active global integration trend also tends to increase competition and inequality in agricultural trade.

We believe that the most sustainable approach for development in the long term is to change the development mindset and adopt a more inclusive development strategy. In the meantime, this talk proposes that agricultural research should target the poor, particularly in disadvantaged areas, by focusing on provision of technical services and skills.

DAY 2 / 13TH APRIL / 16:00 – 17:45

PLENARY: CAPACITY DEVELOPMENT FOR POVERTY REDUCTION

CAPACITY DEVELOPMENT FOR POVERTY REDUCTION

Gebisa Ejeta

Distinguished Professor of Plant Breeding & Genetics and International Agriculture, Purdue University, USA

Summary:

Foreign governments, foundations, and international agencies fund and conduct numerous “research for development (R4D)” efforts in many poor nations around the world. Nearly all of the externally funded agricultural research programs are undertaken to reduce hunger and poverty, effect livelihood changes, and ensure sustainable economic development for all. Many such programs have demonstrated success in producing palpable results and in generating badly needed global public goods. Unfortunately, these programs often lacked the needed wisdom to fully appreciate local realities that their contributions were not producing transformative and lasting changes.

Programs often function reasonably well as long as they are supported and led by able professionals and incentives are provided. Seemingly successful research and development programs often collapse as soon as external programs withdraw. Externally initiated programs often do not have local ownership, as development programs in poor nations suffer from weak institutional infrastructure, managed by poorly trained technical professionals and leaders. The agricultural professional capacity in Africa, in particular, has not been sufficiently built up to generate the innovative capacity and leadership potential for the many technical and developmental challenges that the realities on the ground demand. Donor agencies appear withdrawn and fearful of the huge resource demand required for building the local human and institutional capacity in poor nations. Yet, they continue to fund many development programs to demonstrate what can be done, even as they see that the local capacity is generally weak to sustain the changes that have been implemented.

Leaders of the poor nations have been slow to realize the value of building functional institutions and the virtue of training and retaining local talent. And when they do invest in local higher educational and training programs, their graduates appear to be ill equipped for employment outside the local civil service programs. This reality calls for an urgent need to invest in programs that strengthen higher education and technical training of professionals from poor nations. We also need to encourage governments of poor and rich nations, as well as foundations and global agencies to resume investing in people and programs for protecting their respective investments and for building equitable economic growth globally. Building human and institutional programs in poor nations is foundational to enhancing scientific and entrepreneurial programs that provide gainful employment, enhance livelihood changes among the poor, and advance global peace and stability for all. Well-functioning agricultural development programs around the world can positively contribute towards these lofty goals.

BREAKOUT SESSION ABSTRACTS



DAY 1 / 12TH APRIL / 14:00 – 15:00

BREAKOUT SESSIONS

BREAKOUT SESSION 1: LINKAGES BETWEEN STAPLE CROPS RESEARCH AND POVERTY OUTCOMES

Conference Room 3

Session coordinator(s):

Graham Thiele, Director, CGIAR Research Program on Roots, Tubers and Bananas (RTB) and Jordan Chamberlin, International Maize and Wheat Improvement Center (CIMMYT)

Summary:

Agricultural research is potentially a potent vehicle to increase productivity, add value and reduce poverty. This session reviews theories of change and builds on the available evidence of impacts on poverty of international agricultural research working with staple crops (maize, rice, wheat, roots, tubers and bananas) to see how this is borne out in practice. Growth in agricultural productivity and increase in farmers' income are the two major pathways that link research to poverty reduction. Increased productivity can lower food prices and reduce poverty indirectly through lowered expenditure on staples by poor consumers. Impact analysis has largely focused on the economic surplus approach to estimate standard rates of return to the research. However, donors want to be better informed about impact more closely related to development goals of food security, poverty reduction, and environmental sustainability. Despite the increasing interest and several ex ante assessments, including poverty dimensions, examples of ex post poverty assessments are scarce in the literature.

The session will begin with a 10 minute overview of major, generic impact pathways of staple crops research and evidence that these are working. This will be based on the short background note prepared for the session and make reference to the morning's plenary presentations. This will be followed by a lively discussion and card output in small groups around five key questions to draw in participants' experience and knowledge. The session will close with a short feedback from each small group. Small group work will be documented by resource persons, and subsequently feed into the development of a short paper synthesizing the discussion generated during the session.

Objective:

Facilitate a documented discussion on how agricultural research on staple crops has or can contribute to poverty reduction. The discussion generated will be synthesized into a short paper, to be made available following the forum.

DAY 1 / BREAKOUT ABSTRACTS

Expected outcomes:

1. Characterize the relevant impact pathways for staple crops to lead to greatest impact
2. Identify novel approaches to understand impacts of staple crops research on poverty reduction
3. Propose next steps to build evidence base for poverty impact of staple crops research
4. Identify actions and stakeholders to improve impact of international staple crops research
5. Identify the top three factors that can translate farmers' productivity gains into improved and more stable incomes and contribute to poverty reduction
6. Consider if the primary goal of staple crops research should be to reduce food prices

Speakers/contributors:

Jeffrey Alwang, Virginia Tech University

BREAKOUT SESSION 2: NUTRIENT-DENSE CLIMATE-RESILIENT FUTURE CROPS

Large Briefing Room

Session coordinator(s):

Shoba Sivasankar, Director, CGIAR Research Program on Dryland Cereals, Grain Legumes

Summary:

This session focuses on two classes of "Future Crops", grain legumes and millets. Within these classes, specific crops were selected for centering the discussion based on proven examples of income generation, nutritional value, climate resilience and/or soil-health benefits. Usually called "orphan" crops, some of these are gradually coming under the banner of "smart food", "climate smart" and "future crops". The one-hour session will address three specific questions in three groups. Success stories will be discussed that have led to income generation in subsistence farming in some of these crops.

Objective:

Facilitate a documented discussion on how agricultural research on "Future Crops" has or can contribute to poverty reduction.

Expected outcomes:

The following crucial, timely questions will be explored to probe the potential of these "Future Crops" towards improving food, nutrition and income security under climate change.

- What is the role of the "Future Crops" in the subsistence to market-orientation continuum? Discussion will be based on 2-3 examples.
- Where and how have opportunities for step changes in productivity enhancements for the "Future Crops" led to increased income?
- Does the extreme climate resilience of some of these "Future Crops" offer decreased risks to the poor in dryland regions? If yes, how?

DAY 1 / BREAKOUT ABSTRACTS

Speakers/contributors:

Kassahun Tesfaye, Assistant Professor, Institute of Biotechnology Addis Ababa University; Aissetou Yaye, Executive Secretary of the African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE); Alexandre Dansi, University of Abomey-Calavi, Benin; Feyera Senbeta, Associate Professor of College of Development Studies, Addis Ababa University; Festo Massawe, Professor and Head, School of Biosciences, Faculty of Science, University of Nottingham, Malaysia Campus

BREAKOUT SESSION 3: ANIMAL AGRI-FOOD SYSTEMS RESEARCH FOR POVERTY REDUCTION

Conference Room 5

Session coordinator(s):

Tom Randolph, Director, CGIAR Research Program on Livestock & Fish

Summary:

This session will challenge the theory of change (ToC) for animal agri-food systems research with respect to its contribution to reducing poverty by reviewing its main impact pathways and the evidence underlying them, with a focus on informing priorities for strategic research going forward. The proposed CRPs on Fish and Livestock will contribute to all three CGIAR System Level Outcomes, including poverty reduction. The theories of change for how research on animal agriculture can translate into benefits for the poor and help them escape or avoid falling into poverty describe multiple pathways for how impact is expected to be achieved, including generating income and employment in the short term, strengthening resilience to a range of potential shocks in the medium term, and improving nutrition and human productivity in the longer term. These pathways rely on several key assumptions supported by varying degrees of evidence.

The session will begin with a two minute overview of the ToC, followed by a debate format in which three speakers make a 5-min argument as to why their impact pathway is the most significant for poverty reduction, including reference to the key evidence supporting their argument. The audience will be asked to “judge” the strength of arguments based on three criteria and participants will work in groups to identify three priority research needs required to make the ToC more convincing. The session will close with a report back and synthesis.

Objective:

Review the key impact pathways by which animal research can contribute to reducing poverty and the quality of the supporting evidence to inform priorities for new research. More specifically:

- Which pathway(s) promise the higher impact and therefore deserve higher priority?
- How strong is the evidence for these pathways?
- What are the priority opportunities to strengthen the evidence base and the ToC?

Expected outcomes:

Sharpened understanding and consensus on the priority strategic research needs for improving the evidence base for the animal agriculture research theory of change.

DAY 1 / BREAKOUT ABSTRACTS

Speakers/contributors:

Clare Heffernan, University of Bristol/University of Reading; Philippe LeComte, CIRAD; John McPeak, Syracuse University; Isabelle Baltenweck, International Livestock Research Institute (ILRI); Michael Kidoido, ILRI; Froukje Kruijsson, WorldFish

BREAKOUT SESSION 4: CONTRIBUTION OF RESEARCH ON AGRICULTURAL POLICIES, INSTITUTIONS, AND MARKETS TO POVERTY REDUCTION

Conference Room 6

Session coordinator(s):

Tassew Woldehanna, Ethiopian Development Research Institute and Karen Brooks, Director, CGIAR Research Program on Policies, Institutions, and Markets (PIM)

Summary:

Much work of CGIAR is predicated on the assumption that direct effects of new varieties and management practices on producer incomes are the most important pathway through which agricultural research affects poverty. This is not necessarily the case, and secondary and economy-wide effects linked to agricultural growth can have equal or greater impacts on poverty. Emphasis only on the direct income effects on farmers may lead to significant underestimation of the impact of agricultural research. This session will explore Ethiopia's recent experience in poverty reduction to understand its magnitude and causation. Which pathways (e.g., producer income growth, increased within-household consumption, employment generation and income diversification, general economic effects and structural change) transmit benefits of agricultural research to low-income households and under which circumstances? How does the magnitude of the direct income effect on producers compare to less direct effects along the other pathways? What policies and institutions determine the relative magnitude of impact along the different pathways? How has evidence generated by research contributed to policy and institutional change?

The panel members will give short presentations, with the remainder of the time devoted to discussion of the various ways in which research on policies, institutions, and markets affects agricultural earnings, rural transformation, job creation, gender equity, and ultimately has an impact on poverty.

Objective:

A better understanding of the indirect, as well as direct effects of agricultural research on poverty.

Expected outcomes:

Shared understanding, new questions, suggestions for priority research topics.

Speakers/contributors:

Ruth Meinzen-Dick, International Food Policy Research Institute (IFPRI); Tassew Woldehanna, Ethiopian Development Research Institute; Alemayehu Seyoum Taffesse, IFPRI

DAY 2 / 13TH APRIL / 11:45 – 13:00

BREAKOUT SESSIONS: DRIVERS OF CHANGE

BREAKOUT SESSION 6a: REGIONAL DRIVERS OF CHANGE - ASIA

Conference Room 5

Session coordinator(s):

S. Mahendra Dev, Indira Gandhi Institute of Development (IGIDR), India

Summary:

The different regions within Asia (South Asia, South East Asia and East Asia) have different cultures, political economies and biophysical attributes; all the countries in the Asian region have experienced rapid economic growth, industrialization and integration with the global economy. Agriculture has also played an essential role in the region's development and greatly enhanced poverty reduction efforts. Looking ahead, there are important shifts occurring in the region which need to be better understood to adjust and adapt agricultural research.

The purpose of this session is to understand the drivers of change that are impacting agri-food systems and poverty reduction efforts in the region and what this means for different pathways for agricultural research and prioritizing research in the region. The session will look at different research pathways and the drivers (and restrainers) of change. Some of the potential research pathways to support poverty reduction efforts, include:

- **Diversification:** How do we promote more diversification in different regions of Asia? What are the strategies needed to promote the rural non-farm sector? What are the drivers and restrainers for a diversification pathway?
- **Productivity:** this has been a traditional research pathway. How effective is a productivity strategy given new constraints? What new technologies and approaches are necessary?
- **Nutrition and Food security:** One emerging area of research is the linkages between agriculture and nutrition/ food security. What are the pathways for these linkages? These linkages in the region should be improved.

We will look at these pathways through the drivers and restrainers of change in four areas:

- **Technical drivers of change:** new technologies in agriculture production
- **Economic drivers of change:** including national policies and regional trade agreements like the ASEAN Economic Community, WTO, etc.
- **Socio-political drivers of change:** push for modernization, industrial agriculture, farmer groups/unions, urbanization, health/nutrition and food security
- **Environmental drivers** such as climate change, water variability, etc.

DAY 2 / BREAKOUT ABSTRACTS

Speakers/contributors:

Pratap BIRTHAL, Institute for Development Studies, India; Jing Zhu, Nanjing Agricultural University; Dang Kim Son, Former Director General, Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), Vietnam

BREAKOUT SESSION 7a: REGIONAL DIFFERENCES IN THE IMPACT OF CLIMATE CHANGE

Conference Room 6

Session coordinator(s):

CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and the Tropical Agricultural Research and Higher Education Center (CATIE)

Summary:

The impacts of climate change are evident from gradual changes we see today, from sea level rise, shifts of climatic zones due to increased temperatures and also changes in precipitation patterns, to name a few. Climate change is also most likely to increase the frequency and magnitude of extreme weather events such as floods, droughts, and storms. These events will especially affect the poor communities in different regions, and their vulnerability to climate change vary greatly.

Key Questions:

- **Is the published literature really so poor, in terms of our understanding of the climate change-poverty relationship?** What are some key methods and approaches to improve our understanding of climate change as a driver of poverty?
- **What are the adaptation options that enhance resilience and provide a pathway out of poverty?** What are some of the key research questions that need to be answered in terms of these?
- **How do we identify maladaptation and poverty traps?** What are some of the key research questions in this regard?
- **The focus in the literature is on production** – what other aspects of the food system should be investigated to understand the climate change-poverty relationship?

Speakers/contributors:

Maureen Arguedas Marin, CATIE; Karl Deering, Climate Change Coordinator for Africa, CARE International; Robert Zougmore, Regional Program Leader for Africa, CCAFS

DAY 2 / 13TH APRIL / 14:00 – 15:00

BREAKOUT SESSIONS: PARTNERSHIPS FOR IMPACT

BREAKOUT SESSION 6b: REGIONAL PARTNERSHIPS FOR IMPACT - ASIA

Conference Room 5

Session coordinator(s):

S. Mahendra Dev, Indira Gandhi Institute of Development (IGIDR), India

Summary:

Partners are essential at all stages of the impact pathway: generating evidence (discovery), engaging multiple sectors to contribute to and influence decision-making (proof of concept), and shifting mind-sets and behaviors related to agricultural development and the environment and bringing about wide-scale change (impact).

The increasing complexity that impacts agri-food systems requires multiple linkages and feedback loops among different sectors and actors as well as between different partners. It requires researchers to actively engage with different types of partners. Linear research to development pathways have been shown to be ineffective and there is a need to emphasize co-design research for development projects with partners and stakeholders.

This session will explore the partnership mechanisms necessary for actualizing the pathways identified in the previous session and the role of research. The session will look at what works, what does not and how research can adapt to changing demands.

Some key issues to be discussed include:

- What are the key partnerships that are needed at different stages of the impact pathway (discovery, proof of concept, scaling)?
- What are examples of innovative and successful (and unsuccessful examples) partnerships for change at different stages of the impact pathway (discovery, proof of concept, scaling)?
- What mechanisms are needed for engaging partners?
- What is the role of research in multi-stakeholder arrangements?

Speakers/contributors:

Alan Nicol, Theme Leader, Governance, Gender and Poverty, International Water Management Institute (IWMI); Chanda Nimkar, Director, Animal Husbandry Division, Nimbkar Agricultural Research Institute, India

BREAKOUT SESSION 7b: PARTNERSHIPS FOR TACKLING CLIMATE CHANGE

Conference Room 6

Session coordinator(s):

CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and the Technical Centre for Agricultural and Rural Co-operation ACP-EU (CTA)

Summary:

Adaptation to climate change is a priority for ensuring the long-term effectiveness of our investment in poverty eradication and sustainable development. However, the enormous scale and reach of climate change means that adaptation is not something a single company, industry, or government can address by itself. Preparing for a changing environment will be most effectively achieved through large-scale partnerships along and across business activities with the support of both government agencies and the public.

Key Questions:

- **What are the key action areas or focus areas for achieving impact on the ground?** For example, we propose that one of these is working with partners, particularly policy partners, to understand what works for coordinated policy and governance.
- **What ways of working with partners or approaches are needed to achieve impact on the ground?** For example, we propose that an effective AR4D program tries as far as possible to participate in the processes of next users rather than creating new stakeholder processes and events.
- **What kinds of partners are crucial for success in the climate arena, and what are the experiences to date?** To consider cases where coordinated action by partners have led to impacts on the ground, the triggers for the coordinated actions and lessons learnt.

Speakers/contributors:

Michael Hailu, Director, CTA; Ana Maria Loboguerrero, Regional Program Leader for Latin America, CCAFS; Theo de Jager, President of the Pan African Farmers' Organisation (PAFO) and Southern African Confederation of Agricultural Unions (SACAU); Julian Gonzales, International Institute for Rural Reconstruction (IIRR); Fatima Denton, Director, African Climate Policy Center, UN Economic Commission for Africa (UNECA)

BREAKOUT SESSION 8a, 8b: UNDERSTANDING IMPACT DELIVERY FROM AGRICULTURAL RESEARCH

Large Briefing Room

Session coordinator(s):

CGIAR Independent Science and Partnership Council (ISPC)

Summary:

With an increasing world population, growing scarcity of natural resources, and accelerating climate change,

DAY 2 / BREAKOUT SESSIONS

the road towards sustainable agriculture is increasingly challenging. Agricultural systems not only need to supply growing amounts of nutritious, safe food and support rural livelihoods, but at the same time they need to deal with growing resource scarcity and reduce their environmental footprint. From industrial to extensive, agricultural systems face highly diverse challenges that require different responses that need to reconcile the requirements of a wide array of stakeholders and changing national and global policy imperatives.

This makes for a challenging setting in which to participate in innovation processes. Understanding innovation¹ and impact in dynamic agricultural systems is a relatively new field of scientific inquiry. It is, however, rapidly becoming critical to the CGIAR's ability to pursue an impact-oriented, client-responsive AR4D agenda. Building the underpinning science and capacity to develop and apply an analytical framework to systematically investigate different ways of using research and partnership to contribute to SDGs, combined with protocols to collect data towards such programmatic learning objectives, will thus be indispensable.

The scientific guidance resulting from such strategic studies will be key in facilitating international dialogue and global agenda setting on critical issues in sustainable food and agriculture, and in moves towards a truly global resource for servicing clients' poverty impact demands in international research and development investment. A first step towards this is to explore what a framework and tools might look that could support decision making in research, public policy and private sector organizations in their efforts to get better at innovation.

Objectives and expected outcomes:

This parallel session thus aims to (i) illustrate, using a series of practical examples, how innovation processes contribute to poverty impacts; (ii) explore the types of evidence needed to analyze innovation processes in contrasting contexts and impact domains; and (iii) contribute to the outline of an analytical framework to guide research in this area and that ensure the strategic and inclusive engagement of partners.

The first half of the session will begin with a panel discussion on linking innovation processes to poverty impact, followed by a facilitated plenary card exercise to highlight the wider process of innovation, its different players and dynamics, its serendipity of events and connections, its time frames, its contorted trajectories, its dead ends, and unexpected out comes.

The second half of the session will focus on group work commenting upon the elements of an analytical framework to guide scientific enquiry on relationships, institutions and policies that enable innovation and poverty impact in dynamic contexts. The output of the working groups will feed into the session summary and synthesis document resulting from the discussions.

1 What do we already know about agricultural innovation?

Conceptual development on understanding how agricultural innovation takes place is now quite mature and considerable work has been done in elaborating agricultural innovation systems ideas:

- Innovation is not research or technology, but often involves both.
- Innovation's critical feature is not novelty in the sense of invention, but novelty in the sense of putting ideas into use in new ways for economic and social gain at scale.
- Innovation can involve technological change, business model change, and policy and institutional change and is usually a combination of these.
- Innovation often emerges from dense networks of interaction and frequently involves a two-way interaction between knowledge creation and knowledge use by farmers or companies.
- Innovation is a multi-scale phenomena with, for example, technological changes at the producer level being co-dependent on accompanying changes in markets and policy regimes.
- Innovation is rarely a linear, predictable process of ideas -> application -> impact. More generally, it involves complex pathways and chains of events with innovation trajectories unfolding in unpredictable ways often over long periods. These often involve feed- back loops, where ideas are refined and applications are adapted to be fit- for-purpose.
- Innovation capacity has multiple dimensions: (i) Skills in research, business practice, and management; (ii) Routines and learnt behaviors of organizations that help in creating interfaces with sources of ideas and partners; (iii) Links, networks, partnerships, and alliances that connect players, allow ideas to flow and help in the co-construction of conditions to use those ideas; (iv) Policy regimes that promote innovation through incentives, investment and regulation.
- The roles of the public, private, and the tertiary sectors in innovation are neither exclusive nor fixed. Instead, the role of players evolves during the innovation process, with configurations of players adapting to the opportunities and challenges being addressed.
- Innovation creates winners and losers. Politics, power, and competing agendas shape the pace and direction of innovation as dominant stakeholders jostle to capture new opportunities or to maintain the status quo.

EARLY CAREER SCIENTISTS



EARLY CAREER SCIENTISTS

AMANUEL TAMIRU ABAMO Early herbivory defense trait introgression for effective cereal stemborer management in Africa

AYANSINA AYANLADE Smallholder farmers' awareness and attitude to climate change adaptation techniques in Southwestern Nigeria

SYLVIA BALUKA ANGUBUA Socio-economic risk factors associated with foot and mouth disease, and contagious bovine pleuropneumonia outbreaks in Uganda

MARTIAL BINDOUMOU Climate uncertainty and dynamic adjustment in agriculture: the case of Cameroon

JELLY CHANG'A Smallholder dairying system transformation for improved livelihoods

MICHEL DIONE Gender dimensions in disease control in the smallholder pig production systems in Uganda: case of African Swine Fever (ASF)

MILLION GEBREYES Cultural political economy of irrigation management: A case study from Northern Ethiopia

JANE GITHINJI Epidemiology and control of infectious bursal disease in Kenya

TATIANA GUMUCIO Gender-sensitive CSA practices for coffee agroforestry in Nicaragua

FRANK KAGODA Development of maize lethal necrosis resistant maize varieties for the highland areas of eastern Africa

MONICA KANSIIME KAGORORA Farm diversity and resource use efficiency: A guide for targeting agricultural policy interventions in East Africa farming systems

EARLY CAREER SCIENTISTS

MAXWELL MKONDIWA Economics of downscaling agricultural research recommendations to upscale adoption and impact

MARIAM MTUNGUJA Selection of rice landraces adapted to climate changes

SALLY MUSUNGU Revitalizing sesame production in Busia county, Kenya

LUMBANI MWAFULIRWA Could redirecting crop breeding strategies towards root-trait selection lead to more sustainable agricultural production systems?

LINDA MWALE Participation of women in fish trade in Malawi

LILIAN NKENGLA Impact of and coping strategies to climate change: Evidence from smallholder farmers in Cameroon

CHINYERE OKEBALAMA Fertilizer micro-dosing in humid forest zone: Efficient strategy for increasing maize yield and income in smallholder farming

IFEOLUWA OLOTU Creation of value chain for solid waste from cassava processing by using this waste as substrate for cultivating edible mushrooms

PHOEBE SIKUKU Development of climate smart and low nitrogen tolerant improved rainfed rice varieties for resource poor rural farmers

MBURU SIMON Agrobiodiversity conservation and its contribution to food security in subsistence-oriented farming systems of Eastern Kenya

ABHINAV TIWARI Institutionalizing women's indigenous knowledge in farming: Financial accessibility framework to ensure gender neutral outcomes in Himalaya

PRINCE UMEH Speed of recovery of a grazed montane forest

JANE YATUHA *Clarias liocephalus*, a small indigenous wetland fish, can potentially curb rural malnutrition in Uganda



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Economic Commission for Africa