



Agricultural Research for Rural Prosperity: Rethinking the Pathways

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INTRODUCTION

One of the ways the ISPC provides assurance to the System Council for science quality and relevance is through convening and brokering science discussions with outside experts and science groups within the CGIAR System. The ISPC has used the holding of a biennial Science Forum to catalyze discussion and to convene scientific groups external to the CGIAR around important issues and to foster partnerships that best complement the expertise of the CGIAR and its partners on research initiatives and for development impacts.

The ISPC Science Forum 2016 (SF 2016) was co-hosted by the United Nations Economic Commission for Africa (UNECA) and held from 12-14 April 2016 in Addis Ababa addressing the topic of: *“Agricultural research for rural prosperity: rethinking the pathways”*. The objective of the Forum was to reassess the pathways for agricultural research to stimulate inclusive development of rural economies in an era of climate change. Nearly two hundred participants from around the globe, including 114 from Africa, attended SF 2016. Participants largely represented the CGIAR and research organizations. SF 2016 comprised of a series of plenary sessions on key issues pertaining to the major theme and breakout sessions for discussion.

The contents of the Plenary and Breakout sessions are summarized in this report.



DAY 1

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?

PLENARY SESSION: SETTING THE SCENE

Chair: *Maggie Gill, Independent Science and Partnership Council (ISPC) Chair, Coordinator Scientific Programme Science Forum 2016*

Maggie chaired the opening session and commenced by welcoming the participants to the Forum. She indicated that the CGIAR is guided by its 2016-2030 Strategy and Results Framework (SRF) which provides an overarching structure for the combined work of the CGIAR. The three System Level Outcomes (SLOs) of the CGIAR aim to reduce poverty, improve food and nutrition security and improve natural resources and ecosystem services. She reminded the participants that SF16 would focus on agricultural pathways, partnerships and priorities for rural prosperity and concluded by introducing the SF16 Steering Committee members, the ISPC Council members as well as the 23 early career scientists (selected out of 74 expressions of interest that were received in response to a call for applications).

Siboniso Moyo, Program leader, Animal Science for Sustainable Productivity and Director General's representative, International Livestock Research Institute (ILRI) then welcomed the participants on behalf of the 11 CGIAR Centers hosted at the ILRI campus in Addis Ababa. She mentioned that the second Ethiopian Growth and Transformation Plan was launched in 2015 that aims to realize Ethiopia's vision of becoming a lower middle income country by 2025 and increasing agricultural

productivity and efficiency is one of the strategic pillars. She ended by stating that 70% of Africa's population lives in rural areas and depends upon agriculture for livelihood – how can CGIAR centers better align to contribute to rural prosperity?

a) Links to Other Meetings and Initiatives

Rajul Pandya-Lorch, Head 2020 Vision Initiative and Chief of Staff, IFPRI, noted that there were a number of ongoing meetings, events and initiatives and called upon five people in the audience to give their perspectives and share highlights of some of these key events.

Leslie Lipper, Executive Director, ISPC, reported on the 2016 State of Food and Agriculture, FAO's major annual flagship publication that focused on climate change, agriculture and food security. She was part of the research and writing team for the publication and stated that the report was aimed at agricultural ministries, agricultural technical people but also broader audiences, and looked globally at key vulnerabilities as well as responses to be made in agriculture. One chapter of the report specifically examined rural poverty and adapting to climate change in smallholder agriculture, together with the opportunity costs of adaptation to climate change.

Mark Holderness, Executive Secretary, Global Forum on Agricultural Research (GFAR), gave a brief update on GCARD3, the third Global Conference on Agricultural Research for Development that took

place from 5-8 April 2016. GCARD3 is a process that aims to align regional and national priorities and activities with CGIAR Research Programs (CRPs) and explores the challenges for agrifood research and innovation to better contribute to achieving the Sustainable Development Goals (SDGs). Five key areas were discussed: scaling up – from research to impact; showcasing result and demonstrating impact; keeping science relevant and future-focused; sustaining the business of farming; and, ensuring better rural futures. The outcomes statement, which will guide the work of partners and stakeholders over the next three years, came up with 17 collective actions, accompanied by three implementing principles.

Azage Tegegne, LIVES Project Manager, ILRI, shared a summary of the stakeholder forum in association with the Africa-EU High Level Policy Dialogue on Science, Technology and Innovation that was held in Addis Ababa from 5-6 April 2016. Day 1 of this forum focused on the roadmap towards a jointly funded EU-Africa Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture while day 2 was dedicated to multi-stakeholder collaborations. Three parallel sessions were also held on partners, resources and inclusive research agendas.

Monica Kansime Kagorora (early career scientist) described her research interests and talked about what her expectations from the Forum were, including learning, sharing and forming some new partnerships.

b) Keynote Presentation: Does Agriculture Reduce Poverty?

Stefan Dercon, Chief Economist, Department for International Development (DFID) & Professor of Economic Policy, University of Oxford

Stefan Dercon's plenary talk challenged the very notion that agricultural research, or even, for that matter, agricultural improvements, significantly help reduce poverty or create prosperity in the rural regions of the developing world. He did not say

that agricultural research has no impact on global rural poverty; rather, he challenged the participants to think this relationship through anew. He reviewed a few lessons that can be drawn from past failures and successes in agricultural research for development work that can help improve our understanding of which pathways lead to rural prosperity.

Despite the fact that, in the developing world's rural areas, agriculture is close both to poverty and to livelihoods, there is as yet no clear evidence of macro-scale links between agricultural development and poverty reduction. In terms of both theory and evidence, the links are tenuous (food insecurity is a poverty issue, not a food production issue and assuming that the rural poor will benefit is naive; links between agricultural innovations and their benefits for small-scale food producers are mixed and ambiguous). The best quantitative evidence to date has come from modeling exercises but in unconvincing ways.

Recalling the Green Revolution in India, he stated that the benefits were slow in coming for the rural poor. Poverty barely changed during the entire 1960-1990 Green Revolution period. The big poverty reduction changes happened in the 1990s and largely in northern India, not during the period of cereal transformation itself. He quoted a still-useful 1989 publication by Lipton and Richard Longhurst "New Seeds and Poor People"¹⁷ that details the impacts of use of modern cereal varieties in poor countries. Although these technical innovations created more employment, cheaper food and less risk for small farmers, the authors argued, many remained too poor to afford the grains. The book concluded that technical breakthroughs alone will not solve deep-rooted social problems and that only new policies and research priorities will increase the choices, assets and power of the rural poor.

So what has changed since publication of the Lipton and Longhurst book? The attention of the development community has shifted to Africa, which

1 <http://www.amazon.com/Seeds-Poor-People-Michael-Lipton/dp/0415849063>

has very different issues and challenges: different crops, more diverse agriculture and more difficult environments. These differences affect the scope of gains we can expect from agricultural research for Africa. In Africa, most of the poor live in rural areas, most are smallholders, agricultural wage labor makes up only 5% of rural income on average, off-farm work is a common route out of poverty, 55% of total household income comes from crops, but not necessarily from food crops, and about 50% of smallholders are net buyers, not sellers, of food. With these facts in mind, it is not obvious that growing more food is the most effective way for poor farmers to reduce their poverty levels.

Regarding the impacts of agricultural technology changes, Dercon noted that such impacts often depend on how a technology affects the critically important demand for labor. And whether the technology saves farmer time, demands more time, or releases time for (possibly more stable or remunerative) off-farm work. And how technology adoption affects a farmer's profit margins and, as net buyers of food, food consumption.

We need technologies that demand labor. In general, we need to keep thinking about who are likely to be the winners and losers of agricultural research, as there will always be winners and losers. We often focus on getting ever larger numbers of poor people to adopt improved agricultural technologies, when it may be that for these people any direct impacts are less important than secondary effects generated by growth and structural transformation processes. While targeting agricultural research to support economic growth and transformation may be a route to rural poverty reduction, it will depend greatly on food prices and, moreover, does not necessarily mean that targeting smallholder food producers is optimal. It is not at all obvious that agricultural productivity growth is the best way of increasing economic growth. Agriculture, after all, globally is a low-productivity sector.

Dercon asked if it was wise to put money in the lowest productivity sector? Is agricultural growth really the best way of getting growth growing everywhere? Growing the economies of developing

countries matters, of course, and that includes agricultural growth, but that is not the same thing as "doing agriculture first". The proper role of agriculture will depend on how agriculture fits into a given country's growth opportunities. Economic context matters. For coastal and resource-rich countries, rural poverty alleviation will not necessarily be dependent on domestic production of staple foods or on the corresponding agricultural research. In landlocked economies (or poorly connected regions within coastal or resource-rich economies), smallholder staple food production for quasi-subsistence may be important as a means of delivering improvements in livelihoods. In Ethiopia, for example, starting with agriculture may have been a smart thing. And we may have to start with agriculture in more marginal environments elsewhere, where little activity other than agriculture is possible.

Regarding agricultural R&D for Africa as a whole, Dercon stressed that with no obvious promises of large yield gains "on the shelf", and with the great diversity of Africa's poor smallholders who are largely net buyers of staple foods, food crop incomes have less relevance on poverty reduction than in Asia. In summary, he recommended that we take another look at the large assumptions we tend to make about agriculture's impacts on rural poverty. These, he indicated, will profit from scrupulous reviews of the evidence.

c) Assets: Keys to Prosperity

Rajul Pandya-Lorch (on behalf of Ruth Meinzen-Dick, Senior Research Fellow, International Food Policy Research Institute [IFPRI])

This year, Ruth Meinzen-Dick and colleagues at IFPRI and ILRI, working with eight agricultural development projects in South Asia and sub-Saharan Africa, completed the Gender, Agriculture and Assets Project (GAAP)² to better understand gender and asset dynamics in agricultural development programs. This four-year project was funded by the Bill & Melinda Gates Foundation with additional

² <http://gaap.ifpri.info/about/>

support from two IFPRI-led CGIAR research programs: Agriculture for Nutrition and Health (A4NH) and Policies, Institutions and Markets (PIM). GAAP aimed to determine what strategies help close gender gaps in accessing, controlling and owning assets. The project also helped partner organizations better measure and analyze data related to links between gender and assets.

Agricultural research has typically focused on raising productivity and incomes. So why focus on assets? Meinzen-Dick listed some of the most obvious, if generally under-appreciated, economic, social and psychological reasons (access to, control over, and ownership of assets are critical components of well-being; productive assets can generate products or services that can be consumed or sold to generate income; assets are stores of wealth that can increase in value; assets can act as collateral and facilitate access to credit, financial services, increase social status; assets give individuals the capability to be and to act; and, increasing control over assets enables more permanent pathways out of poverty compared to increased incomes or consumption alone).

The next question Meinzen-Dick's presentation answered was, why focus on women's assets? Within households, she reported, it matters who owns what assets. Studies have shown that in households where women own assets, both individuals and whole families benefit, for example, from better education and nutrition. The conceptual framework used in GAAP illustrates how central assets are to livelihoods and wellbeing in rural agriculture. Because men tend to have more rights to own land and more access to irrigation than women, for example, men and women experience low levels of rainfall very differently. Assets can be owned individually or jointly. But joint ownership does not mean that an asset is owned equally. Different individuals can have different types of rights: use rights, control rights, ownership rights and rights to sell or give away an asset. And some rights are stronger than others.

Men tend to own transport assets, making it easier for them to take goods to markets and to earn mon-

ey from them. In all eight projects that GAAP worked with, gendered use, control and ownership of assets affected the take-up of agricultural interventions. Most of the projects, particularly the livestock projects, were associated with increases in the labor of women and other household members. While all the projects reported increased productivity and income, women were usually not able to maintain control of the income generated in product sales.

In conclusion, Meinzen-Dick said that projects that unambiguously benefit households may have mixed effects on individuals within the households, with women receiving fewer benefits. Among the implications for agricultural research is that a gender-assets perspective usefully focuses on the different barriers to technology adoption that men and women typically face. A gendered perspective also sharpens the focus of projects on wellbeing broadly defined and links agricultural research to better health and nutrition outcomes.

More information on this topic is available in a 2016 paper by Meinzen-Dick³ and others that reports that while women's control of assets benefits both households and individuals, and while all eight projects were associated with increases asset levels and other household benefits, only four projects documented significant improvements in women's ownership or control of assets, and of those, only one project provided evidence of a reduction in the gender asset gap. The results show that it is both feasible and important to consider assets in the design, implementation and evaluation of projects. Greater attention to gender and assets by researchers and development implementers could improve outcomes for women.

d) Challenges Ahead As a Result of Climate Change

Mark Howden, Director, Climate Change Institute, Australian National University

3 <http://www.sciencedirect.com/science/article/pii/S0305750X16000073>

Mark Howden's presentation looked at the successes, opportunities and risks we are facing and began with evidence of just how much the climate change challenge for agriculture is changing. He started by presenting a figure from the IPCC's 5th Assessment Report that shows the proportion of studies reporting positive or negative changes in major crop yields over a 100-year period, from 2010 to 2109. The proportion of studies indicating increased global yields decreases over time, while the proportion of studies showing reduced global yields increases significantly over time. What jumps out is that after 2050 none of the studies, which show increases in agricultural yields, are for developing countries. So there are no positive analyses coming out of this meta-study - no agricultural benefits of climate change - for developing countries, where most of the world's poor people live.

This is a worrying picture though it does not go down to the detail needed to make national or local decisions. This analysis is also limited by high levels of variation and uncertainty. It does not do much justice to climate change adaptation. Only a very limited range of adaptations were assessed, although including adaptations in this kind of assessment would tend to reduce the negative impacts of climate change, and possibly increase the positive. Pests and diseases are largely absent from these analyses. And, lastly, climate variability is very limited in terms of representation in the global climate models at the moment. While those climate models - when we actually put them through crop models - show very, very large increases in the variability of yields of major crops over time, they do not actually show much change at the moment. But we already see significant variability occurring right now as a function of climate change. So we are running a significant risk of underestimating the risk of climate change effects on these major crops. And there are many limitations and gaps in these types of studies. Livestock, for example, is under-represented, as are minor and orphan crops. And there is a large omission, now starting to be corrected, of investigating the nutritional aspects of foodstuffs as a function of climate change. And there is starting to be some recognition of value chains.

There is almost total absence of understanding of the social norms and institutional arrangements that determine how individuals and villages and broader communities respond to climate change. The stability dimension of food security, which is really crucial, is much less known and much less studied than the availability and access dimensions of food security, which focus on yield. These gaps often align with the concerns of poor people and of less developed nations.

A recent paper by Lacey et al. compared what we do in climate adaptation work with what is done in the health sector. In the health sector, there are well-established ways of moving from clinical research to assessing treatment effectiveness to rolling out widespread medical care among members of a community. We must think more carefully about how we move agricultural research into operational modes. We need to think about the nature of the science that is being done and also the institutional arrangements that mediate the transitions among those different components, those different phases, of the innovation or solution pipeline.

Looking at the literature that was summarized at the start of the presentation, almost all of those adaptation analyses were single, were simple, were technical and were focused on short-term changes to existing systems. There's very little in the analysis that takes into account the real-world nature of change, which is often complex, compound, highly contextual, strategic, often tacit and often socially and institutionally mediated in all sorts of ways. This is the nature of real-world adaptation. Yet it is largely absent from adaptation studies. Additionally adaptation has to link with climate change mitigation, with gender concerns, with a whole range of other sustainable development agendas, which largely do not get included. We need to think more broadly about systemic change (changes in the nature of a system) and transformative change (fundamental changes to the nature of a system).

Howden highlighted a lesson learned from the field - when one first interacts with a group of farmers, their focus is entirely on agronomic changes, such

as planting dates or cultivation practices. But as one interacts with a given group of farmers over time, the thing they focus on at the end is strategic business management—the ability to think carefully about different options and to make better decisions. We can leapfrog a whole stack of such agronomic processes and instead train people to be better strategic decision-makers. That of course will often involve a real adaptation building exercise. So we need to start thinking about social norms—about information and social networks.

The social networks of people who are making incremental versus transformational changes to their systems are fundamentally different. Incremental adapters had very strong, very local networks, essentially confirming the way things are done and limiting ideas about what could be done because of those social norms. The transformational adapters had much weaker social networks, which were also often located at a distance. They were not constrained by the ways things were done and how people around them were saying they should be done. The information networks of these two groups were completely the opposite. The incremental adapters were not thinking about the long term or about options being explored in distant places, but the transformation adapters were. It is really important to think about value chains and to think about adaptation along those value chains. Adaptation propagates change up as well as down a value chain.

Part of adaptation research involves research ethics. We must think about how we, as a research community, operate effectively, and start to remove some of our practices, or transparently address some of our practices, that may increase the risks incurred by the people we are trying to help. Different groups providing adaptation information often have significant conflicts of interest. We must think about how to make our science “real”. It has to be relevant to the decisions that people are making and it still has to be robust - rigorous, repeatable, appropriate. It also has to be robust in terms of the outcomes we promise that our science will deliver, and therefore we have to have much better monitoring and evaluation systems. Finally, we have to learn to talk and work better with our partners.

PLENARY PANEL DISCUSSION: PATHWAYS TO POVERTY REDUCTION

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, India; Saleem Ismail, Western Seed Co, Kenya; Fentahun Mengistu, Ethiopian Institute of Agricultural Research; Jing Zhu, Nanjing Agricultural University, China*

Tom Tomich introduced the panel by emphasizing that context is important and asked the panelists to give their favorite example(s) of the pathways that will have to be prioritized for rural prosperity.

Fentahun Mengistu indicated that impact at scale demands system level change. Change needs to take a systems perspective and address all, including the farmers’ portfolio; trade-offs need to be taken into account. Creating prosperity requires diversification into a multi-disciplinary, trans-institutional approach to identify the integrated responses required.

Saleem Ismail pointed out that research needs to be focused on efficient use of resources and respond to climate change. It will require the best of technology to make progress on drought tolerance and disease tolerance. Maize yields have gone up from one to three tons per hectare over the past 20 years in Western Kenya, but there’s still a huge gap between farmers’ field yield and potential. Drought tolerance is the most important factor (water use efficiency, earliness), but it works against yield. These two objectives must be combined in research, and the private sector needs stronger partnership with the CGIAR.

Jing Zhu highlighted the necessity to reframe partnerships within today’s changing dynamics. Scientific results need to be translated into farmer practice. In China, networks, partnerships of researchers, extension, organizing communities and

farmers, and a system of subsidies to farmers that adopt technologies has more than doubled yield. Such a top-down approach works fine when food shortage is the key. However, under consumer preference scenarios, the questions become very different, crops become different. The old system does not account for this very well, and new partnerships, new connections, and new knowledge systems that take into account such market orientation for value addition, value chains, traceability, etc. are required.

Anil Gupta focused on how to treat the knowledge-rich but economically poor. The perception that they need to be treated as sinks of information must be changed. He offered suggestions including: 1) monitoring their innovation; 2) adding value *in situ*, through new partnerships; 3) sharing simple knowledge; 4) promoting diversity and flexibility, to foment new choices and entrepreneurship; and 5) creating networks of open source technologies and new partnerships at different levels to share lessons learnt as widely as possible.

Doug Gollin asserted that development is a process of various transformations. As the economy moves from rural to urban areas and from subsistence to market-oriented agriculture, the role of research changes. The locus of poverty will shift dramatically within each of these transformations. For example, the bulk of the poor will be in middle-income countries. This will require very different strategies. The ways in which specific contexts and specific situations are targeted has benefitted from a fantastic increase in the data available. As a result, our understanding of poverty has increased tremendously - this tells us a lot about what the targets are and also gives us great insights into context and contrasts. Is everything so complex that we cannot identify some transferable generics?

The panel was also asked: What can the CGIAR do better as a partner?

Mengistu responded that EIAR works with nearly all the CGIAR centres. In these partnerships, we ought to look at the rural landscape in its entirety. Multi-disciplinarity and inter-disciplinarity, in-

cluding collaboration with national partners, are needed to provide the appropriate answers. **Ismaïl** shared that CIMMYT makes its germplasm available and accessible to the private sector; it provides assistance not only through the technology developed but also with respect to skills building within the private sector, particularly for inter-disciplinary work. To close the gap between research yields and farmer results, interaction among all stakeholders is required. Interaction on policy and regulation is required with government, as protection can sometimes become a barrier. **Zhu** suggested that one important role of the CGIAR role should be in capacity building, training researchers and policy makers on science and policy assessment. It should also conduct joint research. Comparative policy research in collaboration with the CGIAR has broadened the perspective of local scientists, through exposure to experiences from other places. IFPRI has helped and sometimes influenced policies, but it also needs to engage more with the Chinese sub-regions, not just in the capital (although the failure to do this thus far may be related also to Chinese culture). Technologies should not only be production and productivity focused, but should include catering to consumers' upgraded quality preference and along the value chain. **Gupta** proposed that first of all, disruption of the existing research system is required, to move into decentralized, local, specific research. Second, while the whole economy is moving to a shared economy, there is still very little linking of different knowledge stocks - these walls need to be broken down. Third, transformative innovation is required, with research catering to specific portfolios of people. **Gollin** cautioned that while agricultural science is seen as a collection of tools that could be used for dealing with poverty, it is just one of a number of tools, not the only tool. We need to be precise on what agricultural science can offer that other sciences cannot.

The ensuing discussion focused on the lack of empirical evidence for value-chain innovation platforms and demand driven participatory research; the lack of multi-disciplinarity as a serious barrier; the need for bottom-up grassroots research; turning participation, coupled with learning networks, into "movement-based" change; and, engaging

farmers from the beginning to enhance adoption and market-orientation.

BREAKOUT SESSIONS

a) Linkages Between Staple Crops Research and Poverty Outcomes

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

Jeffrey Alwang, Virginia Tech University, USA provided an overview of major, generic impact pathways from staple crops research to poverty impacts and evidence that these are working (based on the short background note prepared for the session):

1. Productivity growth leading to increased market supplies, lowering prices, making food more affordable for the poor, and expanding employment;
2. Adoption of new technologies by small-scale and poor farmers leads to direct income gains; and,
3. Reduced or avoided losses from shocks to production allow marginal farmers to maintain their productive base and avoid sliding into poverty.

The first pathway is one for which most evidence exists - productivity growth and lower food prices have been the major engine of poverty reduction (e.g. the Green Revolution, China), but poverty reduction via this route requires widespread adoption, substantial reduction in per-unit cost of production, and appropriate market conditions. With regards to the second pathway, there is evidence that for some technologies poor producers face unique obstacles to adoption, e.g. those needing complementary inputs. DIIVA (and other) studies have shown that poor producers adopt improved varieties of many staple crops (stronger evidence for maize and wheat; weaker for potatoes and

sweet potatoes), but small areas under production for poor producers limit major income gains as do market conditions. Not much is known about the third pathway - risk reduction makes people better off and prevents some from sliding into poverty, but there is little evidence on how risk reduction leads to change in behavior such as the propensity to invest.

Pathways to poverty reduction are complex and many do not involve agricultural research. It is important to understand the obstacles along the impact pathway - some of these are well outside of the purview of agricultural research. Indirect pathways are important too, for example employment generation, gender and youth, value chains, etc.

The presentation was followed by discussions in small groups around five key questions to draw in participants' experience and knowledge (participants' feedback is summarized in italics under each question).

1. Given the current state of our knowledge, and the aspirations of the CGIAR, what are the current knowledge gaps (related to poverty impacts of staple crop research) which international agricultural research should prioritize addressing?

Understanding at the household level the actual trade-offs between increasing productivity and risk and how that relates to improving household income.

2. How can we better build an evidence base for poverty impacts of staple crop research within international agricultural research?

Clear ex ante definition of impact pathways and expected outcomes of the proposed research, key partnerships and resources needed (including capacity building) for data collection; ex post assessment needs to be based on identified pathways.

3. What approaches and methods deserve more

emphasis for identifying impacts of agricultural research on poverty?

Any method used must conceptualize a counterfactual and, compare observed outcomes relative to the counterfactual.

4. What do we have to do – and with whom should we work – in order to improve impact of international staple crop research on poverty?

a) Demand-driven research; b) Agronomy/management; and c) Value chain development; better networking & communication across various actors with whom we already work.

5. Should the primary goal of staple crop research simply be lower food prices?

No - staple crop research should focus on both lowering prices and strategies for alleviating the effect of low prices on the producers, such as reducing production (and transaction) costs and risks of climate change.

b) Nutrient-Dense Climate-Resilient Future Crops

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

Kassahun Tesfaye, Addis Ababa University, introduced the session saying it was aimed at analyzing the contribution of agricultural research to poverty reduction with a focus on “future crops”. Food production must increase in response to a growing world population. Additionally, the challenges posed by climate change (changes in weather patterns and extreme weather events) are exerting greater pressures on agriculture. We are seeing recurring changes in geographic distribution of crops, pests and disease which cause shifts in food production and yield losses in major food crops of the world (maize, wheat, rice and soybean). Increased awareness and development of minor crops will help provide dietary needs, overcome shifts in food

production and lead to income generation opportunities. The inherent natural resilience and nutrient-dense nature of some of these crops have made them important options for cultivation in risky, harsh agricultural environments. Minor crops are gradually coming under the banner of “smart food”, “climate smart” and “future crops”. Examples for future crops include finger millet, pigeonpea, lentil, noug, pearl millet and minor tubers. Other minor crops used in Ethiopia are enset and tef.

The session focused on grain legumes and millets as future crops, as they have evolved to be important sources of nutrition and income for smallholder agriculture in dryland regions. The discussions focused on their income potential, nutritional value, climate resilience and soil-health contributions from both a crop perspective and from the perspective of cropping/farming systems.

The presentation was followed by discussions in small groups around three key questions (participants’ feedback is summarized in italics under each question).

1. What is the role of the “Future Crops” in the subsistence to market-orientation continuum?

Many efforts in terms of the internal markets for these crops, but also regional markets are coming up (for example, tef). Value addition of these crops is becoming more and more important. Conservation of seeds is a big problem. There is a need to expand the market – how can the transformation be enhanced? Is it more important to grow these future crops or other staple crops?

2. Where and how have opportunities for step changes in productivity enhancements for the “Future Crops” led to increased income?

Technology to increase productivity should ensure that the nutrient content is maintained. Fonio (a cereal like tef) is grown in West Africa and intense labor is needed to separate the grain from the husk – adopted machinery from other crops created labor. Both in India and Af-

rica, consortia were created to enhance productivity. Research is needed regarding the benefits (effect on yield) of intercropping cereals with legumes. Policy provides information but more is needed in terms of extension, seed supply systems, subsidies and market development.

3. Does the extreme climate resilience of some of these “Future Crops” offer decreased risks to the poor in dryland regions? If yes, how?

Success story of Bambara groundnut; it has done well in areas where other crops failed, but can Bambara be expanded to other areas? There are different cropping systems with regards to their role in achieving climate resilience. Research evidence exists that millet does well in rainfall deficient areas and thus is a good crop for adaption to climate change. Environmental sustainability should be considered. Institutional support and favorable policies are paramount. Some crops have resilient traits enabling them to grow where other crops do not. These crops allow farmers to generate income that they can reinvest.

When considering whether it is more important to grow these future crops or other staple crops, both location and context specific aspects need to be analyzed.

c) Animal Agri-Food Systems Research for Poverty Reduction

Session coordinator: *Tom Randolph, Director, CGIAR Research Program on Livestock & Fish*

The objective of this session was to, through discussion with participants, challenge the Theory of Change for animal agri-food systems research through a review of the main impact pathways and evidence underlying these. Clare Heffernan (University of Bristol and University of Reading), John McPeak (Syracuse University), and Philippe Lecomte (CIRAD) presented the case for three pathways related to nutrition (increased food security and balanced diets); resilience (resilient environ-

ments and sustainable livelihoods); and, growth and income (increased productivity and equitable livelihoods). A challenge in assessing the criticality of these pathways was that they are not necessarily at the same level – there is synergy and inter-dependence. For instance, one could view income and resilience as components of livelihoods.

Clare Heffernan presented the case for the nutrition pathway. Increased production and productivity and greater consumption of animal-source food leads to direct and indirect benefits for better household nutrition and health. Ensuring appropriate management of animal production and products, e.g. proper drug use mitigates the emergence of antimicrobial resistance leading to lower animal and human health costs. Reduction of postharvest waste and losses leads to lower economic losses, more efficient resource use, and a higher supply into markets.

John McPeak, primarily using results from household surveys, presented the case for the resilience pathway. Kenya and Ethiopia (2000-2002) data underlines the importance of livestock in total household income, that includes self-consumption and sale of livestock products. Niger and Mali (2008-2009) data on how households cope with shocks illustrates that sale of animals is the single most important strategy. McPeak also spoke about the two livestock research related pathways to resilience – one related to preserving, protecting and enhancing mobility for the extensive grazing system, and another related to intensification (for e.g., the prices for goats and sheep varies quite substantially in Dubuluk market in Ethiopia depending on their size – going from USD 17 for a “very thin” goat to USD 53 for a “fat” one).

Philippe Lecomte, presented joint work with colleagues on the links between livestock and income/employment in North and West Africa, and stated that livestock keeping remains the most important livelihood activity for 40 million people across the Sahel and Horn of Africa, contributing to 5-15% of GDP and up to 60% of agricultural GDP. The difficulty in pinning down numbers for livestock contribution to GDP stems from the multiplicity of direct

and indirect livestock productions and functions. The market and value chains impact pathway (employment), in his view, contains all the ingredients of an innovative partnership platform – with issues of the role of women, youth employment, high urban market demand, etc. all relevant for research to examine.

Participants were encouraged to form groups, and assess the strength of the case presented on the three pathways and related evidence. The consensus from these discussions was that the pathway related to growth and income, particularly as it operates through value chain interventions is the most convincing. Then, the critical research question is on how best to ensure inclusive, equitable participation in such value chains.

d) Contribution of Research on Agricultural Policies, Institutions, and Markets to Poverty Reduction

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

Karen Brooks stated that the main purpose of the session was to understand different pathways for agricultural research to contribute to rural prosperity, and how policy makes a difference. Much work of the 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 underestimates of the impact of agricultural research. Intra-household economics are also important to consider, i.e. how different members of households benefit from additional incomes.

This was followed by two presentations from Ethiopia. Tassew Woldehanna, Ethiopian Development

Research Institute, talked about his experience on poverty reduction in Ethiopia, incomes and household incomes, women and children, as well as the different metrics to think about poverty reduction. Alemayehu Seyoum Taffesse, IFPRI, shared his experience with the Ethiopian country strategy research programme.

Key take-aways from Ethiopian context: Agricultural growth has been the major engine for poverty reduction in Ethiopia, but not the only one. The implementation of safety nets, by the government and development partners to enhance the resilience and resistance, has been key. More recently, other sectors have taken over as the major source of growth. Unpacking the different elements of agricultural growth is a major challenge and the shift in policy focus has to reflect such elements. There are four key drivers of this growth in agriculture - land and labor expansion, intensification of inputs, technical change (agricultural research) and complementary investments such as in roads, infrastructure, education, etc. Complementarity among investments is key, and increased wealth at the household level has brought significant improvements in the nutritional status and educational attainment of children.

Key policy considerations for direct, economy-wide, and intrahousehold pathways:

- Investment in agricultural research (all disciplines) is necessary;
- Access to land, water, inputs, output markets;
- Complementary public investments;
- Modes of public support vary (subsidies a mixed bag, infrastructure, education, safety nets high payoffs);
- Policy-oriented research and strong evidence enrich dialogue and improve feedback loops;
- Policies have differentiated impacts – crucial to understand that there are winners and losers and social equity is essential;
- Politics and the policy process matter; and,
- Support to local institutions and fiscal decentralization.



DAY 2

Regional Context: Exploring the Main Pathways from Agricultural Research to Poverty Reduction in Five Regions and then Exploring in More Depth Drivers of Change and Partnerships for Impact

PLENARY: REGIONAL PERSPECTIVES

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

The session on regional perspectives aimed to set the economic, social, and policy context, particularly with respect to agricultural research in five selected regions (Eastern and Southern Africa, West and Central Africa, Latin America, South Asia, and Southeast Asia).

Wanjiru Kamau-Rutenberg, Director, African Women in Agricultural Research and Development (AWARD), Kenya, described the context for East and Southern African, with the caveat that there are natural limits to generalization considering the number of countries and massive diversity involved. While there is not a substantial difference between the human development index (HDI) at the country level, the key descriptor remains “diversity” for both between country and within country comparisons on indicators such as GDP per capita, hunger and malnutrition, NRM endowment in the agricultural sector, etc. At the same time, these countries are undergoing rapid transformation and growth. For instance, there is increasing diversification of economies – agriculture now competes with sectors like manufacturing and real estate; increasing regional integration affecting the size of the market for agricultural products; a rapidly growing middle class that requires smallholders to adapt to their tastes and preferences; etc. In terms of trade, there is a close relationship with China, and decisions being made in Beijing have a

massive impact. There are also massive changes in technology – mobile phones and access to internet influencing the way agricultural extension is done – and, massive political changes (the significant larger trend being towards democracy, but with countries opting for both centralized and decentralized models) that are relevant to the questions raised on agricultural pathways to prosperity. The percentage contribution of agriculture to overall GDP is reducing and its attractiveness as a sector (growth potential) is starting to decline, even as it has high growth potential in the coming years. Considering these challenges and opportunities, Kamau-Rutenberg emphasized that pathways to rural prosperity must be customized to the specific country context and that NARS will remain critical partners for delivering context-relevant, innovative interventions.

Yusuf Abubakar, Agricultural Research Council of Nigeria, spoke to the West and Central African context. In his view, agriculture remains a major driver of poverty reduction in West Africa where poverty is predominantly rural, but there are considerable challenges limiting its potential. Rural poverty reduction discussions must consider a number of strategies that involve agricultural research and development, climate change, environmental sustainability, and non-farm activities. There is also a need to continually examine poverty trends – for instance, while poverty declined in West Africa, it increased in Central Africa between 2000 and 2010. Reforms in agricultural research in the region are much needed to increase the focus on research for issues of importance such as value chain development and market competitiveness. Across

Sub-Saharan Africa, while spending on agricultural research is low, it is showing growth in recent times. Additional institutional reforms would help refocus the functions of the state to locally needed public services. The agricultural research, health and nutrition nexus is an issue that IFPRI is helping look at. There is recognition that one may need to increase access to non-farm activities that are more likely to improve income and food security. Agricultural research will also need to consider the correct technology and environment-targeted user context mix for more effective and sustained poverty reduction. He concluded by stating that boosting agricultural output in SSA will likely require faster rates of growth in both the use of resources and productivity, and that there is a strong need to develop a research agenda that addresses the multiple challenges posed by (and opportunities in) sustainable intensification, nutrition and health, and agricultural markets and trade.

Mahendra Dev, Director and Vice Chancellor, Indira Gandhi Institute of Development Research (IGIDR), India, set the context for South Asia by showcasing a range of poverty and development indicators for South Asia, particularly for India. For instance, while the rate of poverty reduction in South Asia has been rapid and it is the fastest growing region in the world (GDP), the highest number of poor in the world still live in the region (one third of the world's poor, to be specific) and nearly 50% of all-employed remain in the agricultural sector. The challenges for agriculture and poverty reduction in South Asia are related to productivity, equity (nutrition security), and resilience to climate change. He then went on to focus on a number of pathways (with different drivers) from agriculture to poverty reduction that are relevant to the South Asian context. For instance, in case of the agriculture-nutrition pathway, it is clear that sanitation is a very important driver in the Indian context. Diversification of agriculture is key for the growth and income pathway, and the question of how to diversify remains. A significant amount of poverty reduction in Bangladesh and India was driven by rural non-farm employment. On farm, policies still focus on and support cereal production, while diversification to oilseeds, pulses, livestock and fish, and high value crops, as well as a value chain

approach that shifts focus from production to processing is needed. Diversification is again a driver for climate resilient agriculture with technologies, extension and research as well as risk mitigation measures (crop insurance, social protection) being the other drivers. Climate change also impacts/challenges all the other pathways. In the context of these pathways and drivers, there are challenges (and opportunities) emerging from issues of water use efficiency and management, inclusive development of smallholders, and women empowerment and gender equality. He concluded by highlighting the importance of regional cooperation in South Asia, specifically the opportunities in free trade agreements (SAFTA), IPs in agriculture, cross-border energy and water issues, climate change and disaster management etc.

Dang Kim Son, former Director General, Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), Vietnam, in describing the Southeast Asian context, observed that it had experienced a stable growth period in general with positive implications for the social and environmental situation. Southeast Asia is another region where most of the poor live in rural or remote areas. There is a dual economy, with industrialization and urbanization not well-linked to agriculture. This aspect is visible in flows of Foreign Direct Investment (FDI) as well – even as FDI is high, it is not directed towards the agricultural sector. At the same time, the economic boom this region has experienced (is experiencing) is creating very big changes in demand, and the role of agriculture is changing beyond providing food security. It is also recognized that SE Asia is highly vulnerable to climate change – one of the most vulnerable regions. In considering the role of agricultural research in poverty reduction, his view was that research has a role in influencing or supporting government strategic thinking on the dual economy model; and to shift focus from productivity to responding to market demand (in the context of urbanization and global integration). Other important research areas are related to the better management of natural resources, environmental protection, effective climate change adaptation, and supporting the global integration processes.

Ruben Echeverria, Director General, International Center for Tropical Agriculture (CIAT), Colombia, presented on the critical pathways and drivers in Latin America. At the outset, there has been substantive progress on how to rethink the pathways of agricultural research for poverty reduction in Latin America. It is recognized that the rural economy is much more than agriculture and that agricultural research is one but many of the factors in agricultural development. Consideration of the rural-urban linkages and rural territorial development are critical to rethinking these pathways – a global, generic, sustainable intensification strategy may not be the option that two thirds of the family farms choose since they are looking to diversify (out of agriculture, unless it is high value niche markets). But, agricultural research still has the potential to contribute - via productivity growth - a lot in raising the incomes of about 4 million of the 15 million small and medium size farmers in the region; and, to all people (consumers) in LAC via research on sustainable food systems within the region, linking not only farmers to markets but markets to consumers, working on a more diversified and nutritious diet, on reducing food waste, etc. Such views are a change from the 1980s and 1990s where the idea was that global markets, foreign investment, and trickledown economics with migration was going to solve the rural poverty issues – now, there is a refocus on public research on territorial rural development, the rural-urban space, market options for family farms, land markets, etc. Complementing that, there are strong commodity markets and global value chains that benefit from private (and public) research and have grown fast in the past decade. A challenge the region is facing is to articulate social and productive policies under a territorial logic, which is the institutional change needed to boost technical change even further. The challenge for the CGIAR is to not work on the margins (or following only the crop research achievements of the past), but rethink its strategic involvement in national sustainable food systems at the rural-urban interface, recognizing the rapid changes in all sections of the food system as well as the heterogeneity of national research systems.

BREAKOUT SESSIONS: DRIVERS OF CHANGE & PARTNERSHIPS FOR IMPACT

a) Africa

Session coordinator: *CGIAR Independent Science and Partnership Council (ISPC)*

Five major drivers of change for reducing poverty across the continent of Africa were debated in this (intentionally) loosely structured and discursive break-out session: urbanization; changing consumer preferences (or “the dietary transition”); ICT transition; regional integration / improved transport linkages; and climate change. Participants were charged with thinking through some of the implications for agricultural research strategies and priorities.

Urbanization: Migration from rural to urban areas is changing the rural labor market, resulting in an aging rural population that remains behind engaged in farming. One of the many implications of this fundamental demographic transformation is the potential for it to transform the demand for agricultural mechanization. Furthermore, in peri-urban areas, a transition to production of high-value products for the growing urban market can offer a pathway out of poverty for smallholders.

Changing consumer preferences: Urbanization is closely linked to a process of dietary change in which a transition to a greater share of processed foods in the diet and greater consumption of food outside the home takes place. There is the potential for this process to drive up demand for high-quality, nutrient-dense and high-value processed foods, thereby increasing the demand for the associated production and processing technologies, practices and policies.

ICT transition: The rapid and deep penetration of cell phones across every country in Sub-Saharan Africa offers new possibilities for reaching farmers with technical advice. There is also tremendous potential for cell phone and mobile internet connectivity to change the way that data are collected

in research. Participatory research can potentially also shift to a model in which a two-way dialogue between scientists and people living in poverty is maintained through phone calls or SMS.

Regional integration: The opening up of markets, and the construction of new roads, railways and ports will, in certain African countries, result in a different range of commodities becoming profitable for production and export. In this context, research to understand the inclusiveness of agricultural commercialization processes will be highly policy-relevant. Comparative research to study the impact of development corridors and free-trade zones represents an important area of new policy-oriented research.

Climate change: Strengthening the resilience of rural populations in the face of repeated and more severe climate shocks is already an important policy imperative for Africa. Research on technological innovations (e.g. drought-tolerance; water conservation) and social innovations (e.g. safety nets; warning systems; insurance models) can help ensure that this policy process is evidence-based.

In terms of how research is organized, there was broad agreement in the group on the following:

- Research needs to reflect the context-specificity within a highly heterogeneous continent. Researchers need to understand context before they can start.
- Interactions between biophysical and social research needs to be strengthened.
- Research needs to get “comfortable with complexity”.
- Accountability to communities should be central to M&E systems.
- Impact evaluation should operate at the whole farm level and higher, not at plot level as there is an urgent need to understand farmer decision-making in relation to new technologies and how this interacts with “off-farm life” / livelihoods strategies.
- Issues related to land ownership and gender should be the focus of further study and information-sharing.

Partnership principles derived from these lessons included the following:

- Platforms should be established for consultation and information-sharing to build ownership: implies effective communication systems in place.
- Different partners are likely needed at discovery, proof concept, scaling stages.
- Partnerships are not a panacea and sometimes do not work (i.e. not recipients or beneficiaries, but true partners and users of research).
- Need to build capacity of weaker partners for stronger ownership and contributions.
- Win-win partnerships are grounded in rights, duties, trust and transparency.

b) Asia

Session coordinator: *S. Mahendra Dev, Indira Gandhi Institute of Development (IGIDR), India*

The purpose of this session was to understand the drivers of change that are impacting agri-food systems and poverty reduction efforts in the region and options and possible pathways to ensure a second green revolution in Asia. Panelists (Pratap BIRTHAL, Institute for Development Studies, India; Jing Zhu, Nanjing Agricultural University, China; Dang Kim Son, formerly with IPSARD) discussed what has been achieved through agricultural R&D - significant progress has been made in increasing productivity of crops like rice and wheat in the continent, but this has not been enough to lower poverty levels in the continent (especially among the rural communities) to desirable standards.

Key pathways discussed included productivity improvement, diversification, land consolidation, policy tools/mechanisms and nutrition/health. An enhanced focus on agricultural diversification that is consumer driven is important. Agricultural research interventions should adopt a value chain approach, paying attention to other issues along the value chain like marketing of produce, packaging, etc. Land consolidation and reduction of drudgery (introduction of less labor intensive technologies) also offer alternative pathways out of poverty, because in Asia farm sizes are small and production is very labor intensive.

The big questions that emerged from the discussion were:

- Should the CGIAR focus on high value consumer driven crops?
- Should the CGIAR focus on nurturing farmer entrepreneurship?
- Who will benefit from the research and partnerships?
- What is the fate of smallholders? Should we look at ways to help farmers exit farming?
- How to manage risk from increasing variability of climate change? Should the CGIAR get involved in risk management?
- Should the CGIAR focus on research around agriculture investments (subsidies, infrastructure, etc.)?

With regards to partnerships, participants talked about consumer driven partnerships. A range of other issues related to partnerships included:

- Incentives for partnering? Who benefits and how?
- Power and knowledge in partnerships?
- Match-making brokering – using media
- Partnership maintenance
- Capacity to engage in partnerships
- How to evaluate partnerships?

C) Climate Change

Session coordinator(s): *CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS), the Tropical Agricultural Research and Higher Education Center (CATIE) and the Technical Centre for Agricultural and Rural Co-operation ACP-EU (CTA)*

Two breakout sessions were organized around climate change and poverty, and climate change and partnerships themes, focusing on implications for agricultural research. Robert Zougmore (Regional Program Leader for Africa) and Ana Maria Loboguerrero (Regional Program Leader for Latin America) presented snapshots of the CCAFS work in their regions. Maureen Arguedas (CATIE) presented a review of literature examining the relationship between climate change and poverty; Julian Gonzales

(International Institute for Rural Reconstruction) spoke to the role of partnerships in being “lighthouses” of information and their role in testing and making evidence obvious; and, James Murombedzi (African Climate Policy Center, UNECA) briefly reflected on the links between climate change and vulnerability.

Arguedas and team’s literature review of 112 studies looked at impacts of climate change on production and productivity; climate-crop relationship; and income. She underlined that generalizations are difficult to make because of the complexity of the relationship and context-dependency (locally-specific impacts). Their review suggests that climate change is often not the main driver of vulnerability or change in poverty but in general may increase poverty (or keep people in poverty). In speaking about adaptation options, while this is a “no-regret” strategy and will be context-dependent, Arguedas noted that actions that promote adaptation can sometimes lead to maladaptation and inequity. Along similar lines, James Murombedzi observed that responses to climate change in itself are creating new vulnerabilities. For instance, when the focus is on market mechanisms that might influence realignment of strategies towards, say, exports or biofuels. At the same time, climate change offers an opportunity to address structural disadvantages.

Karl Deering (CARE International) reflected on discussions from the two climate change related breakout sessions. The broader message is that the link between climate change and poverty is under-researched: studies have predominantly focused on vulnerability or productivity aspects, and not its linkages with poverty, even when it is implicit in papers that it increases poverty. The focus of studies also tends to be on extreme events, and not the more frequent events (salt water intrusion, coastal erosion, etc.). There has not been sufficient examination of the impact of extremes and of longer-term changes and social inclusion for adaptation. The first discussion session concluded by identifying topics for future research such as detailed livelihood studies that consider agrobiodiversity, value chains, off-farm income, migration, gender & social differentiation; how to increase resilience to climate change through integration of

indigenous and scientific knowledge and successful adaptation models; how to identify maladaptation early on and deal with trade-offs; and, examine opportunities for livelihood enhancement under climate change and understand the role of networks.

The second discussion session, focused on partnerships, identified a number of general lessons and factors that influence success from CCAFS's regional work. In her presentation on partnerships in Latin America, Loboguerrero emphasized that science is only a small part of the decision-making process, and processes are not linear in nature. She also spoke to the importance of communication (translating messages), trust and incentives. The consensus after group discussions was that while partnerships are universally recognized as important, ones that actually develop are far from ideal. Hence, finding complementarities among partners is key, along with incentives that can drive the partnership. In identifying partners for scaling up, multi-stakeholder platforms are useful to engage different actors and a good understanding of the context for the partnership together with a clear conceptual framework is important: for instance, one could use a value chain approach to identify key actors. CCAFS also emphasized investment in communication and the role of communicators in developing and maintaining partnerships.

d) Understanding Impact Delivery from Agricultural Research

Session coordinator: *CGIAR Independent Science and Partnership Council (ISPC)*

Understanding innovation 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. The CGIAR is tasked with generating development impacts at scale, and this session aimed 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.

During the first half of the session, two case studies of impact at scale were presented. Melissa Wood, Australian Center for International Agricultural Research (ACIAR), talked about an ACIAR funded intervention (development of a vaccine) to control Newcastle disease in poultry in Tanzania. There was initially rejection/disbelief at the government level. The Australian Agency for International Development (AusAID) invested in a distribution strategy for the vaccine, which eventually led to major and successful upscaling. The evidence base of vaccination effectiveness was produced in the 90's and in 2005, vaccination of chickens became policy in Tanzania. The second speaker, Maya Takagi, FAO, shared lessons from an Embrapa intervention for poverty eradication in NE Brasil, in the context of the Zero hunger program which linked social protection, income generation and capacity building. The methodological innovation was going to communities of the extreme poor to define constraints/solutions, i.e. horizontal rather than vertical. The project outcomes included increased income of rural families, improved livelihoods, and food security among farmers.

From the two case studies, it emerged that the key elements of innovation success included evidence of technology effectiveness (output of research); extensive time/effort to identify business case applicable at the local level; supportive government policy (but not at the beginning); gender positive impacts/involvement, capacity building, flexibility and the time frame.

During the second part of the session, participants discussed the elements of an analytical framework to guide scientific enquiry on relationships, institutions and policies that enable innovation and poverty impact in dynamic contexts. Several core elements of this framework were identified:

- Impact setting typologies
 - » Farm; Local; National; Global
- Innovation environment typologies
 - » Orchestrated; Responsive / gradual; Disruptive / revolutionary

- Innovation decision domains
 - » Partnership; Actor roles and modalities; Institutional arrangements; Support services; M&E: Metrics, processes, and indicators; Benchmarking; Systemic change / Scaling; Financing / Investment
- Development impact typologies
 - » Enduring / systemic change; SDG contribution (quantitative-qualitative); Scale

PLENARY: CAPACITY DEVELOPMENT FOR POVERTY REDUCTION

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

a) Capacity Development for Poverty Reduction

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

Gebisa Ejeta opened the session by stating that although capacity building is an old concept, it is again the new agenda in research for development. Research for development makes sense but uncoordinated linkages are a source of worry. The pathway for mobilizing science is to first of all improve linkages between the CGIAR and advanced research institutions, then to promote linkages between CGIAR and institutions involved in product development and deployment and finally to hold a science forum to increase visibility of science for development with donors, policy makers and other stakeholders.

If mobilizing science is indeed a mandate for the CGIAR, then the research that it conducts is with a mandate for research for development (R4D), whereby partnerships are paramount. The following observations can be made about R4D impact:

- Enormous resources have been invested in AR4D in Africa since independence.
- AR4D has been characterized by foreign aid, equipment, education and research investments.
- AR4D has not been successful because investments have not hit the fundamental problem, namely the cultural and behavioral cord.
- Human and institutional strengthening efforts have been more *ad hoc*.
- The health sector has been very effective; we need to ask ourselves if we can learn how to mobilize more effectively.
- There has been limited drive to excellence due to a lack of models, this is a catch 22 for African institutions – governments have not been investing in institutions because they have not seen successful examples.
- We need to systematically build strong institutions; it is perhaps slow but it is the surest path.

Human and Institutional Capacity Development (HICD) is necessary because technical assistance à la disaster assistance cannot be continued as it is simply not sustainable. Mobile telephone technology is encouraging but it is not a good model for agricultural development; a different approach is needed. Furthermore, the private sector works better if complemented by strong and functional PPPs. Ejeta stated that HICD is a real concern and agenda for poor nations although they might not be aware of this. There has been a general decline in the human capital base and a failure to build local institutions which may be one of the biggest threats to the gains that have been made in the poor nations. HICD is vital to the many programs that governments, foundations and international agencies conduct. It is a way to ensure sustainability and in poor nations nothing can be done, let alone sustained, without local capacity.

With regards to human and institutional capacity needs, the goal is science based agricultural development whereby the capacity of individual programs, institutions, communities and national needs to be built up in areas like education, research, production systems, delivery systems, markets, policy-making, governance, etc. The problems that limit capacity building in poor nations are:

- Only very limited tertiary education scholarships are available for students from Africa.
- The CGIAR programs link with NARS only as rare grant opportunities allow, mostly on IPG mode.

- Few if any CGIAR and other development projects are embedded within NARS.
- Current AR4D efforts can be seen more in projects rather than in programs.
- Major donors fund CGIAR and NGOs directly, but they rarely fund NARS.

HICD successes can be seen in Brazil, China and India where capabilities have been built over time, using different strategies. Ejeta upheld that there is a decline in investments for capacity building due to the following: it is too costly for an agency to sponsor capacity building programs; it is handled as a supplement to multi-year AR4D programming; and likening HICD to conducting workshops or virtual networks. The 21st century has seen an expansion in higher education in Africa, with many new universities built in a short period of time. Students have come in large numbers, also due to the fact that only limited scholarships are available at western universities. African universities are hard-pressed to provide basic knowledge and some technical skills, so now is a good time to partner with African universities and governments.

The three R's of capacity building are recruitment, retention and reward - human beings respond to incentives. Education that leads to high skills leads to economic opportunities and excellence in higher education leads a country to be technologically innovative and economically competitive. While reducing poverty in poor nations is the responsibility of the countries themselves, due to the mutual benefit of both rich and poor countries, a concerted action is advisable. To this end, a more functional alignment is needed for AR4D:

- The CGIAR operates with IPGs as a research outcome so the question is who is responsible for the next steps.
- Most NARS lack the capacity to develop locally adapted products and technologies.
- Extension services lack the capacity to deliver products and services to farmers.
- The private sector and SMEs are not strong enough to step in and to deliver.
- Donor agencies continue to fund the CGIAR, unlinked to a specific path.

- CGIAR accountability is measured by IPGs and not by the desired results.

Ejeta provided two key messages for the way forward. The first is that institutions (donors, CGIAR, ARIs, NARS, private sector) are indeed vital but need to be interconnected and to start a new dialogue to revisit the IPG mandate of the CGIAR and their implications on developmental impact. The second is that an impact pathway vision is great, but for greater success AR4D professionals and their institutions need to think of the next steps in the discovery to delivery continuum to generate success.

b) Plenary Panel Discussion

Chair: *Gebisa Ejeta, Purdue University*

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

The plenary talk was followed by a panel discussion on the topic.

Carl Erik Schou Larsen stated it is difficult to improve the impact of capacity building. On the human side, it is about having the people and their capacity; on the institution side, it is about performing and enhancing capacity building. A misconception is that if you capacitate the human, you capacitate the institution. The CGIAR has a mandate to do capacity building - capacity building is being done, yet research is not being taken up. One may actually brain drain the institutions when trying to enhance them. The CGIAR's mandate is to provide IPGs but success is then measured by the number of publications in high ranking journals; there is no link or causality - if you are a scientist, capacity building is a distraction on a good day and an obstruction on a bad day. There needs to be a reward system for doing capacity building. With regards to the donors, research must have an impact. Capacity building takes time and has a cost and is thus in contrast to what the donors are requesting. When looking at universities the logic is the same. They are not geared to deliver quality graduates. They have to

use as little resources as possible and get the students out again because they are evaluated against their student numbers. We thus need a system of rewarding the enhancement of capacity building.

In **Suresh Babu's** opinion, one can go a long way by connecting one CGIAR scientist per year as a mentor to a young scientist. There needs to be a momentum for building capacity. We all work on capacity building but are fragmented and uncoordinated and cannot bring it to the ground. Capacity building is not about money but about coordination. Training people is only one element of capacity building; it goes well beyond individuals and training them. There is a need to mainstream the strategy with the CGIAR. We need to identify gaps and it has to be context specific as each country has a different level of development and capacity has to be built at all levels. All this requires not only money but commitment, coordination (at CRP level) and leadership (development partnership level).

Solange Uwituze looked at capacity building from a regional perspective. She pointed out that agriculture is the future of Africa, which is the fastest growing continent in the world with a high proportion of the world's arable land. The need to invest in people and institutions is in the midst of all challenges and drivers. She challenged the CGIAR to start thinking of how to be involved with other players, such as NGOs. USD 300 million of funding has been provided to African centers of excellence; there is room for everybody, including the CGIAR, to help build capacity. The challenge is how we institutionalize all the interventions that take place in a coordinated manner.

Karen Duca explained that USAID is thinking around HICD and that now is the right time to do capacity building. Development is capacity and USAID's vision is "it's about them not us; let's get out of their way and work our way out of a job". Reports have shown that not much has been done in the past decade; recommendations made in 2004 were not taken up. One has to have the expertise to do capacity building and one has to be motivated. Scientists have not gone beyond mentoring and coaching because this is what they know how to

do. What it takes, however, is an integrated process across the knowledge chain from discovery to take up. This goes over many years and has to be locally driven and owned.

Following the panel presentation, the audience was asked to reflect on the following questions:

- What capacities are needed to: a) interconnect our institutions to deliver rural prosperity; and, b) be two steps ahead in the agricultural research discovery to delivery continuum?
- What critical capacity development dimension does the panel still need to address?

Questions from the participants included how to address the missing dimension of gender; how can we motivate national institutions to do capacity building from within rather than from outside; how can we have more advanced facilities in the country, i.e. generate national programs; how can we handle the role of the private sector in capacity building; and how can the quality of capacity building be improved? **Duca** indicated that gender is a cross cutting issue, and must always be included in capacity building. **Larsen** specified that for national institutes to be motivated, good leadership and governance is essential. **Duca** added that a useful model to adopt would be what business leaders do – when they decide to make a change, they bring their people together and make them see the need. **Uwituze** provided the example of the IL-RI-BecA Lab where a model program was set up for providing research students with mentoring from the staff. There is a high CGIAR presence in Africa with 11 centers. It is a good opportunity to have regional centers where scientists can be brought in and their professional capabilities strengthened. She also suggested that capacity building could be improved by introducing a new way of teaching – e-learning. **Babu** pointed out that universities do not have expertise in all sectors, but proposed that they could group together and collaborate to create synergies.



DAY 3

Synthesis and Way Forward: Identify Key Topics and Pathways within the Overall Context that Merit Further Discussion

PLENARY: SYNTHESIS AND REFLECTIONS

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

Synthesis and Reflections on SF16: Learning from Experience

Brhane Gebrekidan, Vice President and Fellow, Ethiopian Academy of Sciences

Brhane Gebrekidan synthesized the key messages from the Day 1 discussions, i.e. the three plenary talks, the panel discussion and the four breakout sessions. These included:

- Rural poverty across the world is higher than urban poverty and smallholders are dominant in African agriculture but is targeting smallholders the best agricultural developmental pathway? Can Africa emulate the Asian experience adapting it to its own context?
- Poverty reduction and gender considerations are interrelated. Agricultural research and development can build assets, close critical gender gaps, and promote gendered distribution of assets for lasting development outcomes.
- Impacts of climate change on crop production are generally well documented but impact on livestock, on minor and “orphan” crops, on nutrition and quality aspects, on value chains and generally on social norms and institutional arrangements are not well advanced. A significant challenge is to develop practical, cost-effective

and verifiable options to reduce net emissions that are also climate-adaptive.

- An interdisciplinary approach for enhancing productivity at the farm level is needed, and success in improved productivity needs to be accompanied by complete value chain activities including strengthened marketing drives.
- Growth in agricultural productivity and increase in farmers’ income are the two major pathways that link research to food security, poverty reduction, and environmental sustainability.
- “Future/orphan crops” have the potential to contribute significantly to poverty reduction and food security and they should receive high priority research attention.
- It is necessary to better define the pathways in animal research and recognize that they are interlinked and at different levels (household, national).
- While agricultural growth can be a major driver for poverty reduction, it is not the only one.

The overarching message, Gebrekidan stated was that investment in agricultural research has a high payoff and is a judicious strategy for attaining food security and reducing poverty.

Synthesis and Reflections

Keiji Otsuka, Professor, Kobe University

Keiji Otsuka synthesized and reflected on the key messages from the Day 2 discussions. He started by saying that there are similar drivers of change

across the regions that include urbanization/middle income class, changing preferences, climate change, ICT transition, regional integration, etc. He then went on to reflect on what should the CGIAR's role be.

In the context of climate change and resilience, the CGIAR should be focusing on stress-tolerant varieties (drought, submergence, salinity, heat), water-use efficiency (water pricing, drip-irrigation, alternate wetting and drying), organic farming, mixed crop-livestock farming with legumes, and using not just scientific but also indigenous knowledge. Diversification to High Value Products (HVPs) is profitable with increasing demand so should the CGIAR undertake research on HVPs other than livestock and fish? High value-crop farming requires marketing knowledge, technical knowledge, and access to inputs - is the CG System willing to support nurturing of entrepreneurs for farmers in collaboration with NGOs and farmers' groups?

While the effects on poverty are not linear, productivity improvement is essential for poverty reduction (high productivity in the grain sector and low grain price are a prerequisite for diversification). What should the CGIAR do for non-farm sector development - help develop agro-processing clusters or train processing companies and input suppliers? There is weak evidence for impacts together with weak analytical capacity in the CGIAR, particularly in the social sciences.

Otsuka then went on to elaborate on unique regional issues. Firstly, the increasing inefficiency of labor-intensive small-scale farming in Asia. Land consolidation is needed but land markets often do not work. It is also politically difficult to facilitate transfer of land from small to large farmers. CGIAR Centers working in Asia should develop labor-saving technologies. Secondly, why didn't the Green Revolution take place in sub-Saharan Africa? Actually, a Green Revolution is taking place in selected rice growing areas and high population-density maize growing areas in SSA without sufficient support from the outside. But the point is that not only seeds and fertilizer, but also improved agronomic practices are needed. In particular, the CGIAR should support

mixed farming systems for higher efficiency of maize farming and high climate resilience in SSA.

He concluded his talk by emphasizing that in spite of massive investment and efforts in AR4D, the fundamental problem has not been hit - there is clear underinvestment in NARS, and partnerships among donors, ARIs, CGIAR, NARS, NGOs, and the private sector is key.

PLENARY: RESEARCH PERSPECTIVES – PATHWAYS TO PROSPERITY

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; 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.*

The panelists were first asked to reflect on research priorities for development outcomes.

Jimmy Smith reminded the participants that the CGIAR has already set its main priorities and already determined the outputs on which it promises to deliver, the SLOs. Within this broad agricultural space, we need to prioritize. The CGIAR is relatively small in relation to what needs to be done, and also in relation to some national systems. Therefore the CGIAR needs to size itself and be strategic, which can be done in three ways: (1) we should design our work to be catalytic; (2) we must also be facilitatory; and, (3) we must be selective about who we partner with. Much more is expected from us than our size will allow us to accomplish. We must be selective in building enduring partnerships - where there are real consequences for both partners if a project succeeds or fails. We need to be aligned with national systems and global priorities. But we cannot align with every national system and the CGIAR needs to deliver IPGs as well.

Oscar Ortiz articulated that we have not been addressing the prospective and predictive nature of research. We need to understand trends and emerging constraints, to help decision makers to address these issues. Although this kind of research may not be compelling to donors (it does not show impacts over the short to medium terms), it is significant nonetheless. This kind of work can help reduce or prevent disasters from occurring or reduce their effects, as we face new challenges. The CGIAR should pay more attention to climate change. The approach needs to be multidisciplinary. We need to understand the pathways to prosperity better, which is related to the limited understanding of the complexity of innovation systems and dynamics – this is required for prioritization and identification of entry points for scientific research results. We need to revisit our concepts, expand to multi-stakeholder participation, and try to respond to the demands that can be responded to from the research angle. For example, we need to link stakeholder demands with traits in crops through genetics and genomics information, to speed up the process to ensure the release of new varieties responding to their demands. To accomplish our goals, we need to invest in combining knowledge from a wide array of disciplines and fields - behavioral, biological and socioeconomic. We need “convergence”.

Florence Wambugu reflected on the pathways that could contribute - having the right expectations of what they can and cannot do. What can we learn from the private sector? Private sector research, aims to deliver and to make money. They look to the market, and what the market needs. They strategize monthly, on what to deliver, and they churn out products that people want. Research needs to start with farmer demand. What is the market opportunity? How will it happen? How will things go to scale? This requires partnership along the value chain that needs to be thought through with all partners, including the private sector. How will it be delivered and produced? There is a need to breed with an eye for the market. The CGIAR has done excellent research to increase productivity, but investors are needed to scale up to and exploit that productivity. Unlocking the potential of

genetics requires a concurrent focus on fertilizers, irrigation and agricultural mechanization. African governments must invest in these as well to unlock this genetic productivity.

Victor Manyong challenged the participants by asking if we have the same understanding of the pathways. Prosperity is a multi-dimensional concept - economic, environmental, and social. A focus on six areas will help agricultural research contribute to prosperity by increasing agricultural productivity: (1) focus on whole farm families rather than just smallholder farmers; (2) address biotic stresses, such as the new diseases that have arisen in the last decade attacking East Africa’s three staple crops - maize, cassava and banana; (3) address abiotic stresses, such as climate change and soil quality; (4) support enabling markets, policies and institutions; (5) focus on enhancing nutrition; and, (6) keep a gender focus.

Peter Carberry stressed that we must address the arguments made in the Day 1 plenary by Stefan Dercon and Mark Howden - science is about questioning. Is there enough evidence to support links between agricultural productivity and rural prosperity? And is there enough credible information to inform best practices to adapt to, and mitigate, climate change? We must question and try to falsify our assumptions. We need to continuously challenge our pathways and focus on our beneficiaries. We are responsible for future food crops. We need to facilitate integration. How do the crops and croplands benefit the beneficiaries in their diverse environments? We need to understand the different drivers of change, understand the impact pathways, learn and plan and have an interpretive view of how things happen. Agricultural research is a pathway, but has to be broad, to cover all aspects. There is a need to concentrate on commodities and on integrating programmes to deliver.

Following the first round of comments, the panel chair **Doug Gollin** asked the panel: What should the CGIAR do more off, what should the CGIAR be doing less off?

Smith indicated that complexity is internal to the

CGIAR. We need to learn how best to navigate how we do research in an increasingly complex institutional setting, proliferation of frameworks, projects, etc. and try and simplify the institutional environment. **Ortiz** supported Smith saying that the CGIAR needs to do less of what others can do better - conduct fewer micro-diagnostic studies, develop fewer site-specific solutions and drop technologies with no or little impact potential. **Wambugu** stated that the CGIAR should stay in its own lane, which is research, while building productive partnerships with others to do what CGIAR does less well. **Manyong** asserted that the frequency of CGIAR reform should be reduced. The CGIAR should do less basic, blue-sky research, and do more development-oriented research instead. **Carberry** advised that the CGIAR does less of what the donors will not fund; do less work with small farmers, more with change agents who affect small farming, and look for opportunities to go to scale.

Comments and questions from the audience included: we need to develop a theory of change at the CGIAR portfolio level. If agricultural research is not increasing agricultural productivity, what research are we going to do within our value chains? The CGIAR may have a stronger impact on nutrition and other outcomes than on rural prosperity. What do we mean when we say “agricultural research”? Do we need to redefine it? New farming systems are emerging in the highlands of Kenya, with more and more smallholders keeping cross-bred dairy cows - growing, cutting and carrying Napier grass to their stall-kept cows; and planting trees whose foliage can be used as fodder to supplement dairy feed. Does any CGIAR research program cover this system? It is time to bring agroforestry back to Africa’s farming systems. How is CGIAR going to integrate its research? Are social sciences missing in CGIAR research? We need to predict needs for agricultural research before there is demand for it. We have not heard much about soil science; we need human capacity building in this field. Are there any IPGs that could be transformed into national- or regional-specific solutions? We might consider rights and rights frameworks, particularly the right to food, and look through a rights-based lens.

Thoughts/responses from the panelists:

Smith: It is inescapable that we deal with small-holder farmers, or, if you like, family farmers. Some 75% of those who are hungry are involved in agriculture. If we are going to address hunger and poverty, we are going to have to address small-scale agriculture. That is not to say that we should not deal also with other scales. But we cannot ignore smallholders. Capitalizing on the synergies among cows, crops and trees - that research work has been done and is now ready for scaling. The highlands dairy-Napier-fodder tree story is an agricultural research-for-development success story now being scaled up by many partners. ILRI has 25–30 economists of different stripes. We do not ignore the social aspects of our research, particularly as we work to strengthen the resilience, and reduce the vulnerability, inherent in pastoral systems.

Ortiz: There is a need to reconcile and revisit concepts, particularly those related to agri-food systems. The CGIAR contributes to IPGs, reaching millions of households. This can be facilitated when technologies are adapted to different value chains. For example, drought resistance is clearly an IPG technology and can contribute to value chains of dry agroecosystems.

Wambugu: Value chains and sustainability are part and parcel of achieving pathways to prosperity. This can be addressed through the CRPs that are looking at the gaps and determining who should do what aspect of the work.

Manyong: The CGIAR is weak in soft social science, and more expertise is needed. And sustainability should be the feature strategy. Let us forget the green revolution for Africa -agriculture is much broader than just productivity. The spectrum of intervention along the value chain requires a systems approach.

Carberry: The CGIAR aims to cover all those dimensions - from hard to soft sciences. There are plenty of examples, including institutional arrangements that work towards greater equity in value chains. It is necessary to understand the political economy.

Gollin, in wrapping up the discussion, asserted that the issues raised by Dercon in his presentation are intimately linked to the System level theory of change. We should take these on as deep intellectual challenges. Who are we targeting? Which poor? Where are the opportunities? There are examples where smallholders are the key, but equally many others where this is not the case. We need to think about development processes outside the CGIAR, and about combining with partners outside the sector. What can the CGIAR deliver that others cannot?

PLENARY SESSION: POLICY PERSPECTIVES – PATHWAYS TO PROSPERITY

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*

The focus of the session was on how policy makers access evidence, what sort of evidence is useful and what sort of evidence they would like to have in the future from (agricultural) research with respect to poverty alleviation. The session commenced with the panelists commenting on what they saw as key role/issues of agricultural research for achieving rural prosperity.

Shantanu Mathur pointed out that IFAD needs to see clear and unambiguous impact of interventions on poverty reduction. Value for money is also an important parameter, i.e. to what extent the financing generates impact.

Sara Simons highlighted that the last two days of Science Forum had indicated that business as usual for agricultural research (broadly defined) is not an option – much more focus on development outcomes of CGIAR research is required. That means it is time to evolve. Key pathways from a policy perspective are: a) catalyzing the private sector; b) improving value chain; c) addressing malnutrition

in food and agriculture systems; and, d) climate resilience. The CGIAR must do better at communication – it is often not clear what key messages we are trying to get out. Agriculture alone cannot do the job - a multi-sector/multi-discipline approach is essential. What approach is useful for impact of AR4D? The CGIAR site integration process is a key platform for agricultural research. Some issues remain such as lack of trust of NARS, lack of representation from the private sector, but overall it is a key development for the CGIAR way forward.

Maya Takagi emphasized that FAO sees this Forum as important and with high relevance for the new FAO strategic objectives. One of these five objectives is to reduce rural poverty. It is also good that the discussion is linked to the SDG process and global goals. But it is important to be context specific. How can we better link agricultural research to poverty reduction? One way is to get better involved with the discussions around poverty trends. While poverty has diminished in many areas, inequality is increasing and the poorest are being left behind. Evidence shows economic growth is key but not sufficient. Agricultural growth is then important – both macro and micro. Agricultural research that focusses on how public policy can stimulate poverty reduction is an important area for research – more emphasis here is a must and understanding linkages with major poverty reduction programs such as safety nets is essential. How can agricultural research be more effective? It needs to be more context oriented, with local constraints (barriers such as lack of access to land, assets, food, etc.) taken into account.

Berhanu Abegaz underscored that the African Academy of Sciences works very much on this issue in an African context and should be part of this conversation. One function of the Academy is to act as a think tank – which is cross-cutting in nature and thus relevant to this panel. The Academy has 330 members including Nobel Prize winners, heads of state and ex –heads of state. In terms of pathways to prosperity, he raised three points:

- Integrated approach - need to include traditional and non-traditional partners. Poverty re-

duction or wealth creation is the goal and this goal should be an explicit policy focus.

- Shifting the center of gravity to areas where problems are greatest and where research can maximize the poverty reduction results.
- Need coordination between all relevant policies for poverty reduction.

In response to the questions from the audience, the panelists provided the following reactions:

What can CGIAR do to better get its message across? **Simons** underlined the need to be clear that everyone in the System identifies as CGIAR, hence better communication is crucial. The World Bank was not aware of the major technologies/impacts of CGIAR research that were presented at a recent meeting in Washington – and it made a huge impact.

What are gaps you see in translating research to development? **Mathur** focused on the idea of the “missing middle”, for example extension, enterprise, etc. IFAD provides loan and grants and loan finance is about USD 1 billion for rural poverty reduction. IFAD is trying to build coherence between grant finance and research within the context of loan financed projects.

What is critical about policy for poverty reduction? **Abegaz** drew attention to the fact that no policy makers came to this session – why did they not come? This is an important issue to consider. The absence of policy makers can be understood as the fact that policy makers have many other priorities – but also should be criticized. It is very important that early career scientists are present – critical to build a community of future agricultural scientists. Research organizations should make themselves better understood by policy-makers. But often if funding is coming from out of the country, it is not clear if there is much interest in linking to local policy-makers. With regards to interacting with policy-makers, in major international and regional fora, the CGIAR is often absent and not engaged. The CGIAR is not very linked to CAADP for example.

There is a lack of CGIAR presence in meetings of agricultural ministers too. Local columns in newspapers, radio interviews are important.

What about nutrition and its links to poverty reduction? The focus has been on providing cheap food for the majority of population. Now we have to think about how to produce more with less resources. It is also important to think about diversification for climate change and how that may be linked to dietary diversity. In some cases, traditional diets are being lost and we are seeing greater problems with obesity/overweight because of shifts from traditional diets to processed food. Therefore agricultural research should have a role in changing mindsets about what it will take for agriculture to support healthy diets - a systemic approach that considers sustainability and diversity.

Audience members commented that there is a fundamental problem with making the evidence of CGIAR impacts available and known, but it is not just an issue of communication. There is already a lot of focus on communications/newsletters, etc. But still donors are still not translating this information into funding more work. So what are the real barriers to scaling up the good work? For IFAD, scaling up has become mission critical. If we move from AR4D to AR IN D – e.g. embedding agricultural research in development, you are already in scaling up mode.



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