

Government and other Obstacles to Food Security: A Tale of Leadership and Cooperation

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**Public Keynote Address, Sixth McGill Conference on Global Food Security
Montreal, October 8, 2013**

Ladies and Gentlemen:

It is a privilege to be present as we open the Sixth McGill Conference on Global Food Security here in Moyses Hall tonight. The Conference has become a highly regarded element of the global annual calendar of top-level, action- and learning-oriented reflections on mankind's arguably most pressing challenge as we look to the future, namely, how to achieve sustainable food security for all. I am honored to be part of the process of the Conference and what it seeks to achieve. I would like to thank Dean Madramootoo and Professor Melgar-Quinones for inviting me to speak.

Sustainable food security for all is attained when everyone has permanent access to a healthy diet of their choice, produced and traded in ways that respect nature with its biophysical and human possibilities and limitations.

The biophysical aspects include land and water use, biodiversity, nitrogen and nutrient balances, and climate change.

The human factor has, at a minimum, to do with the welfare of the farm population and consumers, the functioning of food supply chains from production to retail, and how the transformation of the economy plays out over time. I am referring here to the process of economic diversification, the migration of farm labor away from primary production, the rise of productivity and income differentials across economic sectors, and how societies deal with the ramifications of this – including the food security implications – in the long term.

The human factor – which I find useful to consider in the dynamic context of the economic transformation over time – is as much part of the natural world (and thus the sustainability equation) as the biophysical or environmental aspects. The state of the environment is linked to that of human contentment. A degree of serenity and satisfaction is needed for humans to be good stewards of the environment. Applied to agriculture and farming, this suggests the need for enabling services, skills and incentives for farmers such that they can pursue production and livelihoods in environmentally responsible ways.

I want to talk about this tonight, focusing specifically on empowering farmers so that sustainable food security for all can be brought within reach. As you can imagine, empowering farmers (specifically small-scale, resource-poor farmers in developing countries and emerging markets where food demand growth is

high) can be a complex and challenging task. It is a task that calls for contributions from many, in addition to good management and coordination. This makes it a tale of leadership and cooperation across a wide range of partners. Government and markets, in particular, play critical roles to create the right conditions and, respectively, develop and deliver the resources and solutions that farmers need.

I propose to start this presentation by clarifying what it is, then, that these farmers want and need. With reference to current and projected food supply challenges I will, secondly, explain why it is imperative to develop and deliver the needed means to them. I will, thirdly, point to some good news: expanding markets and breakthrough technologies create historic opportunities for action, even as organizational and managerial challenges abound, as well as governance issues at the more macro level. It is to the latter topic that I will then turn, devoting, fourthly, the remainder of my presentation to a discussion of institutional aspects and the role of leadership and governance to enable markets to function, science to come to fruition, and agriculture, farmers and food security to thrive.

I am aware that food security is about more than agriculture and the supply side of things. Still, I propose to focus on this aspect, for good reasons that will become apparent as I proceed.

Agriculture and the way we farm must change. We need to achieve much more with much less in the form of physical resources such as water and land. We need to intensify, and do so sustainably – that’s the paradigm to be followed – by substituting smart alternatives for environmental degradation, the destruction of forests and high-carbon methods of farming.

I think we can get there as a global community and believe that we will – *if* we drop conventional approaches, embrace the urgency of the matter as underscored by the most recent IPCC report, get practical, and allow common sense to prevail, as opposed to ideology and fear.

What farmers want

What do all farmers as growers and therefore entrepreneurs want and need, irrespective of gender, age, farm size or other characteristics? If you ask them, their usual answer is what in my language amounts to



“technology, services and access to markets” – and if you think about it, this is really what counts.¹

Technology comes in the form of inputs that embody science, techniques and engineering in the areas that have in the past and will in the future make agriculture advance: genetics and plant breeding, soil fertility solutions, crop protection, irrigation, labor-saving devices, connectivity and post-harvest technology and skills.

¹ See my article *Private-sector R&D, Supply Chains and the Small Farmer* in Heap, R.B. and Bennett, D.J. (eds) 2013. *Insights: Africa’s Future – Can Biosciences Contribute?* Banson/B4FA.

Services cover a range of resources, including knowledge services and advice (often referred to as agricultural extension), better organization of farmers to increase their political and market clout, land rights (a major government failure where they do not exist or cannot be trusted), information on markets and the weather, crop disease forecasts, soil analysis, and financial services, in particular crop insurance and credit.

Access to markets, finally, is about the ability to buy inputs and sell produce and crops. In good measure, this is conditioned by transport and storage infrastructure, prices, procurement policies and the contracts by which farmers may be linked to markets.

There is good news here in the sense that smallholder farmers occupy an increasingly important segment of the national and global agricultural value chain² for two reasons: (i) their contribution to market supply is needed in the face of growing demand and (ii) there is increasing interest in sustainable sourcing (not just in OECD countries, by the way), which may include sourcing from smallholders, if quality and traceability requirements can be met.

The task and opportunity in this space are huge: the private sector (initially with the help of government and non-profits) must provide for the processes, contracts and tools (including mobile phone-based applications and advantages such as cloud computing to support information systems) that are needed to create shared value by linking smallholders to remunerative markets on a massive scale.

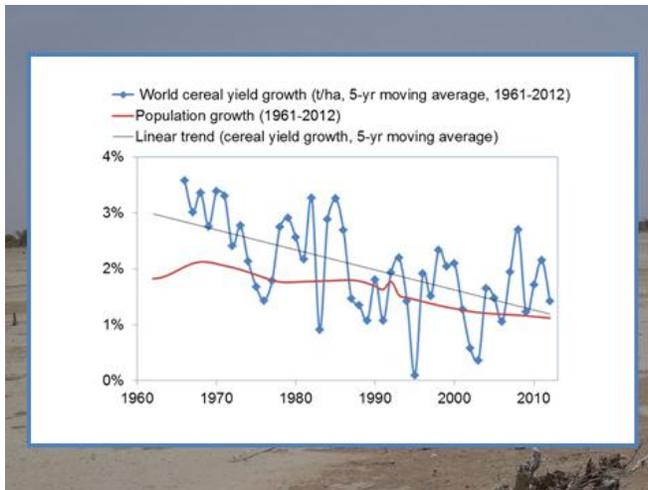
There cannot be rural development, environmental stewardship and food security at the different relevant levels without this – at least not on the desired territorial scale. The challenge is formidable because of the large number of small farmers thus to be reached, and it varies between different supply chains and segments (or capabilities) of farmers. We must act on it nevertheless to meet the growing demand for food. And by the way, smallholders themselves want action here, and progress that will enable them to run their farms as businesses – none of them *wants* to be a “subsistence” farmer!

The food supply squeeze: natural resource degradation and productivity fatigue in the face of unprecedented food demand growth

The world’s food security is under threat because the system is squeezed by unprecedented demand growth, a deteriorating natural resource base, which is increasingly unpredictable due to climate change, and a slow-down in global cereal productivity growth.

This puts pressure on the system, forces prices upwards, makes them volatile (among other reasons because of the export restrictions that countries sometimes impose), and reduces real purchasing power and therefore many people’s access to food.

² See Dalberg Global Development Advisors, *Catalyzing Smallholder Agricultural Finance*, 2012.



The average annual rate of growth of cereal yields has declined from 3 percent some decades ago to about 1.3 percent at present, as FAO data arranged in the form of multi-year moving averages show. We can debate why this is so; it does not mean that productive capacity is not there. But this level barely keeps up with population growth. It therefore leaves no slack in the system to absorb income growth-induced additions to demand or supply-shocks due to adverse weather.

In the past, income growth-induced additions to demand were not very important compared with the effects of population growth. With the advent of high rates of economic growth in key populous countries, including more recently in much of Africa, this has changed, and the forces in question can be expected to remain in place for a long time to come.

The effects of income growth on the demand for food are *mitigated* by what economists call Engel's law and *shaped* by what they know as Bennett's law – the tendency, respectively, for the proportion of income spent on food and the starchy staple ratio in the diet to decline as income grows. (Bennett's law thus governs the widely observed shift to diversified, more meat-based diets as incomes grow.)

So food demand growth induced by income growth will stabilize at some point in the future – this is what Engel's law says – just as population growth is expected by some projections to stabilize by the middle of this century.

But all of this is speculative. Depending on the sum of the actual experience in different countries, the point where the average global level of income is sufficiently high for the two laws to kick in fully and the effects of Engel's law to begin to prevail over Bennett's is, I would think, at least 100 years away.

In the meantime, the world must learn to produce the additional food that consumers demand, in ways that are compatible with long-term survival and thus the tenets of sustainability.

The opportunity for action: expanding markets, breakthrough technology

Looked at from a different angle, the demand growth and therefore expanding markets, coupled with breakthrough technology, can be seen as an opportunity to elicit the supply response of which farmers are capable with the right kind of support – particularly our smallholders with their currently very low yields.

The thought is this: The dynamic demand situation I have just described offers opportunity for the first time in history on a massive scale to unlock the productive potential of small farmers, and in the process produce rural development and enough food – *if* the technologies that are needed for sustainable productivity growth can be generated and disseminated in ways farmers can adopt and *if* farmers can be linked to value chains and consumers in mutually advantageous ways.

The technological possibilities are not going to stand in the way of this vision; they are numerous and exciting. Today we can see the contours of breakthroughs and progress across a wide range of applications allowing novel, integrated solutions.

Consider plant and animal breeding in the age of genomics, low-cost sequencing, bioinformatics, the platform of “-omic” sciences, and “translational research” to foster discovery and the identification of candidate genes.

Consider the acceleration of breeding programs now possible, and their particular value in uncertain times marked by climate change.

Consider, beyond plant breeding, the advances in biotechnology to develop agronomic and yield-enhancing characteristics, as well as developments in biologicals derived from natural sources to buttress plant health and protect against insects and disease.

Furthermore, consider advances in chemistry and seed treatment to convey advance vigor to plants and protect them against weeds, diseases, pests and abiotic stress.

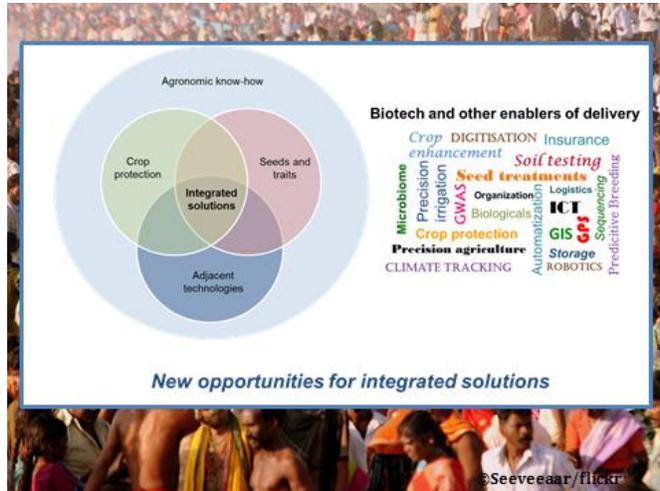
Consider digitization, geo-referencing, mechanization guided by mobile computing, micro-irrigation, safe effluent-using irrigation techniques and soil fertility solutions that make precision agriculture possible.

And finally, consider the advances in communication technology that lead to new value propositions and opportunities to engage farmers, offer agronomic and agriculture extension support, guide production methods to meet quality standards and certification requirements, and conduct numerous business transactions.

The new possibilities for synergies and integrated solutions seem endless. All of the new technologies (like older ones, too) have the advantage of being divisible, which means that they can be applied irrespective of farm size and are therefore relevant for small farms. If my vision of farmer empowerment fails, it will not have been for lack of technology. It will have been because of unsolved challenges related to institutional aspects, governance, delivery and implementation, and it is to this that I now turn.

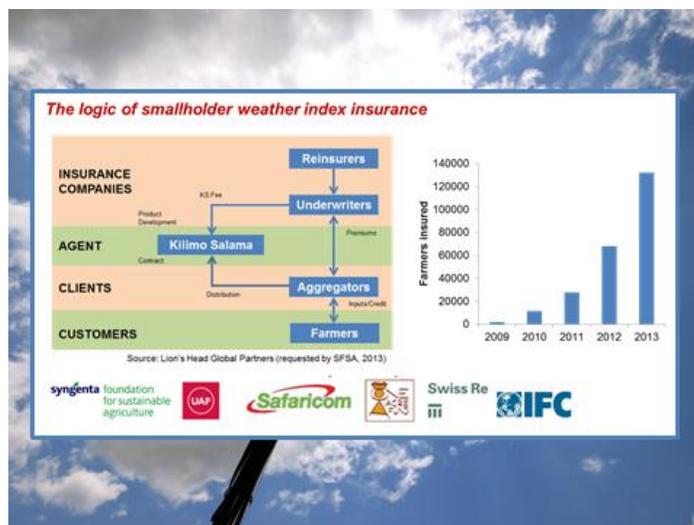
Institutional and implementation challenges that could interfere with the task

Farmer empowerment on the scale envisaged requires many contributions, from innovative ideas to social entrepreneurship and from proof of concept (for example, regarding methods of aggregation) all the way to points where “scaling up” through market mechanisms can take hold.



I am aware of many efforts along these lines in Africa, South and East Asia and Latin America. They organize and mentor farmers, intermediate financing, inputs and technical assistance, help create supply chains and link farmers to buyers.

Some design “market-enabling” solutions that reduce risk and uncertainty, create new standards and lower transaction costs. Advanced market commitments made to seed companies so they can extend their offer to what may initially be uncertain markets among small farmers are an example of controlling risk. Another one is the suite of agricultural index insurance products that the Syngenta Foundation and its partners have introduced and continue to develop and disseminate in East Africa.³



All of these efforts have one thing in common: partnership. Partnership is the means to combine the complementary strengths of public, private and voluntary actors to achieve desired, smallholder-relevant benefits that none of them could produce on their own. Partnership is of the essence in the unstable space of smallholder empowerment, and it is needed in two areas related to agriculture: (i) R&D and the delivery of research goods to farmers and (ii) bringing markets to life.

Partnership is the method by which to overcome the manifestations of government failure that so often appear to underpin the failure or, more precisely, the non-functioning of markets.

I am not using the terms “market failure” and “government failure” lightly here. I am aware that the very concepts can be controversial in theory and practice and the debate inconclusive. I support enlightened government action to supply public goods, avert undesirable externalities and guide distributional outcomes. But I also know that special interest politics, information asymmetries and poor governmental implementation and enforcement capacity can foil the best of intentions. Without going into the literature and theory of this, I think partnerships offer practical opportunities to address constraints that seem to derive from institutional, or government, failure. To see this, let us look at public agricultural research on the one hand, and seed systems in Africa on the other.

The world needs public national and international agricultural R&D, just as it needs all of the crop improvement research carried out in universities and the private sector. But public research is not, or no longer, delivering, perhaps with such exceptions as China and Brazil. Adoption rates by smallholders are too low and too slow to meet the productivity and sustainability challenges they face.⁴

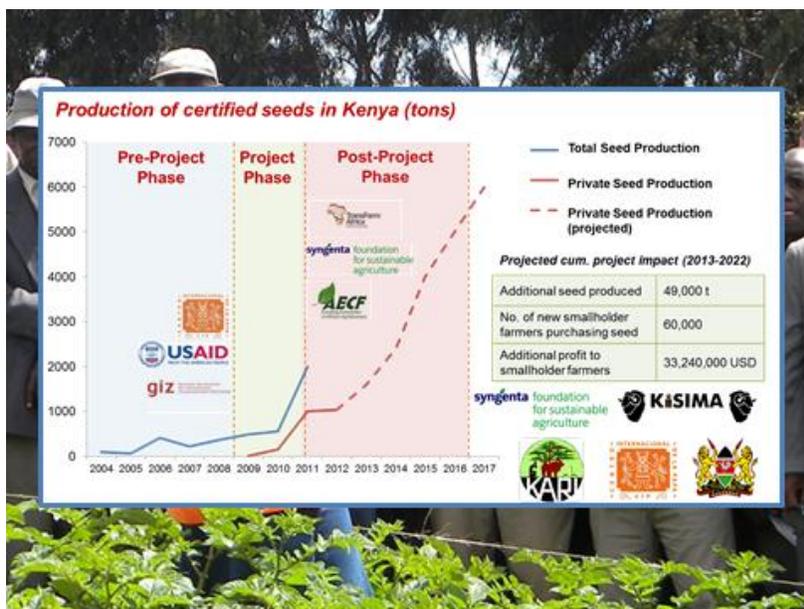
³ See www.syngentafoundation.org/index.cfm?pageID=562.

⁴ See Walker, T. et al., *Measuring the Effectiveness of Crop Improvement Research in Sub-Saharan Africa from the Perspectives of Varietal Output, Adoption, and Change: 20 Crops, 30 Countries, and 1150 Cultivars in Farmers' Fields*, Diffusion and Impact of Improved Varieties in Africa (DIIVA) Project; Draft May 31, 2013.

The research goods available to farmers may not meet their needs, in part because the public sector may have prioritized work according to science or public policy-derived criteria other than “demand-pull”.

Public institutions do not have a good record of progressing R&D from the “R” stage to that of “D”, i.e., the development and delivery of products into seed and other distribution channels. Partnerships with the private sector, which brings a different business orientation to the table as well as valuable advanced research skills, might help. Examples exist. But even they will not help if variety testing and release and registration regulations are not improved.⁵

The goal of public breeding programs is ultimately to see improved germplasm become widely available to smallholder farmers as seed or planting material of improved varieties. While informal seed systems and public providers have a role to play, delivering technology on a large scale requires commercial solutions. These are unlikely to come about by themselves in strongly governance-deficient settings. They need to be nurtured into existence by measures in the public interest that mitigate risk and may include funding and other catalytic support.



Partnerships between the seed industry, public regulatory entities, non-profits such as NGOs or Foundations, and funding agencies, can kick-start commercial seed multiplication. Examples exist. India developed its seed industry in this way. The Syngenta Foundation and its partners are helping to make this happen in Africa, along with others. Government failure in the form of inefficient seed laws in many countries is among the aspects being addressed.

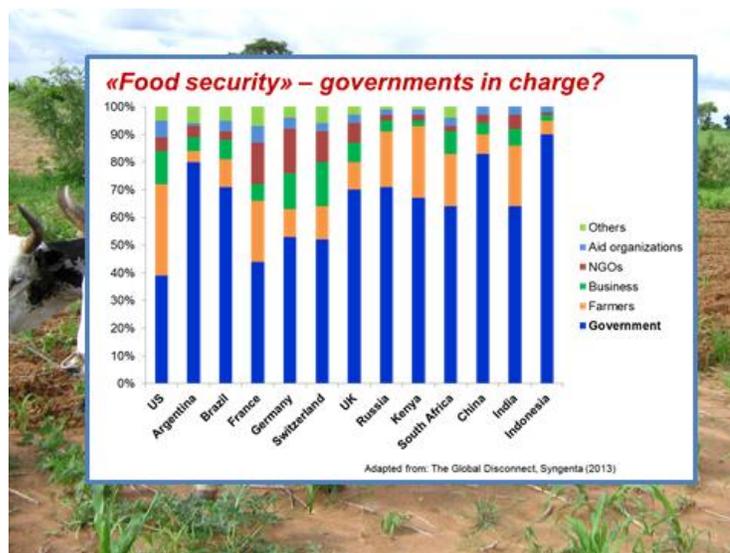
Potatoes are a crucial food and cash crop for Kenyan smallholders. Certified potato seed can greatly increase yields, but in the past very little was available. A public-private partnership is now rapidly increasing production.

⁵ See Setimela, P.S., B. Badu-Apraku and W. Mangi, *Impediments to New Improved Maize Variety Testing and Release in Selected Countries in Sub-Saharan Africa*, Journal of Agricultural Science and Technology 4:6, December 2010.

Designing and implementing the right public policies, investments and regulations to promote food security is not a trivial task. The scope for errors of omission and commission in complicated political economies and policy spaces is large. This is why I was surprised the other day to see the results of a public opinion survey on agriculture and food, in which people from 13 countries across the globe ranked government first as the entity they trust to “fix” food security.⁶

Farmers were seen as *somewhat* important in the US, France, Russia, Kenya and India only. The role of the business sector was seen as negligible, with a bit of an exception in Switzerland and Germany. These two, however, are also the countries, together with France, that (according to the survey) attach some importance to NGOs as putative bearers of answers to food security.

My own view is different. We live in a world of market-based approaches to economic development and growth. Farmers large and small (obviously) and,



as markets develop, the business sector that supports them play fundamental roles in agriculture. NGOs and civil society play fundamental roles. Governments play, or should play, fundamental roles in at least five areas: infrastructure, human capital development, R&D, the rule of law, and the cultivation of expectations and measures to foster accountability and eradicate the burden of corruption.

The state of achievement in these “government fundamentals” is often parlous in agriculture-based states, with adverse effects on farming, sustainability and the scope for agribusiness development, compared with what could be.

Policy consistency is in this context an aspect to mention before I close. New research in West Africa documents how policy *inconsistency* and reversals make the private sector reluctant to invest in agriculture and food value chains. Government then views this reluctance as a market failure, emits yet further policy changes, and generates a vicious cycle of instability. In their study, soon to be published by the FAO, the researchers argue that policy constancy in “government fundamentals” is needed to break these public-private *deadlocks* and create the conditions for public-private *partnerships* to arise.⁷

⁶ See Syngenta International AG, *The Agricultural Disconnect Global Report*, September 2013 (www.syngenta.com).

⁷ See Hollinger, F. and J. Staatz, *Agricultural Growth in West Africa (AGWA): Market and Policy Drivers*, FAO, Forthcoming.

Perspective

The scope for improved governmental action to benefit agriculture and the development of supply chains is clearly considerable. The farmers are not the problem; they are eager to work and improve their situation. The demand for their products is there. Science and technology are evolving towards “sweet spots” where innovations that were previously unheard of become possible.

We need to deliver these innovations, relevant services and access to markets to the farm population as we build agri-food value chains. We need to combine the motivations and skills of different stakeholders and work together, incubating solutions and approaches, and scaling them up.

I view this as the answer to food supply, sustainability and rural development challenges in a long view of economic development where agriculture is eventually modernized, more consolidated and highly productive, and the bulk of employment shifts from primary production to other pursuits that create enough value to ensure food security for all.

Thank you for your attention.