

# Ex-Post Evaluation Study of IFPRI's Research on High-Value Agriculture, 1994–2010

Jonathan Kydd



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The Impact Assessment Discussion Paper (IADP) series has been renamed "Independent Impact Assessment Report" beginning with report #36, and the numbering for this series will continue from the IADP series.

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**Jonathan Kydd**

**Independent Impact Assessment Report No. 39  
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International Food Policy Research Institute  
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## LIST OF ACRONYMS

|           |                                                                                                    |
|-----------|----------------------------------------------------------------------------------------------------|
| ACDI/VOCA | Agricultural Cooperative Development International / Volunteers in Overseas Cooperative Assistance |
| AGRA      | Alliance for a Green Revolution in Africa                                                          |
| ASTI      | Agricultural Science and Technology Indicators                                                     |
| CAPRI     | System-wide Program on Collective Action and Property Rights                                       |
| CEO       | Chief Executive Officer                                                                            |
| CIAT      | International Center for Tropical Agriculture                                                      |
| CSFs      | Cold storage facilities                                                                            |
| DFID      | Department for International Development                                                           |
| DSGD      | Development Strategy and Governance Division                                                       |
| EU        | European Union                                                                                     |
| FAO       | Food and Agriculture Organization of the United Nations                                            |
| GIZ       | Deutsche Gesellschaft fuer Internationale Zusammenarbeit, GmbH                                     |
| GRP       | global research program                                                                            |
| HVA       | High-Value Agriculture                                                                             |
| HVA AF    | high-value agriculture Africa                                                                      |
| HVC       | high-value crops                                                                                   |
| ICRISAT   | International Crops Research Institute for the Semi-Arid Tropics                                   |
| ICTs      | information and communication technologies                                                         |
| IDRC      | International Development Research Centre                                                          |
| IFC       | International Finance Corporation                                                                  |
| IFPRI     | International Food Policy Research Institute                                                       |
| IIMA      | Indian Institute of Management, Ahmedabad                                                          |
| ILRI      | International Livestock Research Institute                                                         |
| ISI       | Institute for Scientific Information                                                               |
| KARI      | Kenya Agricultural Research Institute                                                              |
| KAVES     | Kenya Agriculture Value Chain Enterprises                                                          |
| KCC       | Kenya Co-operative Creameries                                                                      |
| kg        | Kilogram                                                                                           |
| MozSSP    | Mozambique Strategy Support Program                                                                |
| MP        | multi-country program                                                                              |
| MTID      | Markets, Trade and Institutions Division                                                           |
| NDO       | New Delhi Office                                                                                   |
| NGOs      | Nongovernmental organizations                                                                      |
| Np        | number of papers                                                                                   |
| PAANSA    | Policy Analysis and Advisory Network for South Asia                                                |
| R&D       | research and development                                                                           |
| REF       | Research Excellence Framework                                                                      |

|        |                                                                            |
|--------|----------------------------------------------------------------------------|
| RePEc  | Research Papers in Economics                                               |
| SAI    | South Asia Initiative                                                      |
| SNV    | Stichting Nederlandse Vrijwilligers (Foundation of Netherlands Volunteers) |
| TORs   | terms of references                                                        |
| UK     | United Kingdom                                                             |
| USAID  | United States Agency for International Development                         |
| VC JNU | Vice Chancellor, Jawaharlal Nehru University                               |

## EXECUTIVE SUMMARY

This paper reports on an ex-post assessment of IFPRI's research on High-Value Agriculture (HVA) over 1994–2010. HVA is defined to include *perishable agricultural commodities produced for the market that yield high returns to land, labor, or both*. IFPRI's research on HVA has been housed mainly in GRP27 (Participation in high value agricultural markets). Questions for the study included whether IFPRI had the right research strategy for this topic; was focused on the right issues; was a leader in the field; used the most relevant approaches and methods; and was successful in sensitizing/influencing the policies of governments, agribusiness, academia, civil society, and the international donor community. Finally, what has been the impact of the HVA policies that IFPRI influenced?

The organizing principle of the study is the “*user encounter*.” This directs us to *users*: who they are, their influence over policy, and their ability to absorb and use research findings. The *encounter* directs us to consider how they engaged with IFPRI.

Subtle and nuanced research findings tend not to have much influence on policy. Therefore, this evaluation looked for the creation by researchers of relatively straightforward narratives that are powerful—because they are evidence-based—but also general. The objective is what might be described as a “*narratives of integrity*,” so-called to distinguish these from narratives that are partisan and not based on careful appraisal of evidence.

At its outset, GRP27 had three pillars: (i) forward-looking global studies of structural change in high-value markets and such change's implications for poverty reduction and sustainability; (ii) in-depth quantitative research on forces that promote the scaling up of livestock production; and (iii) quantitative research on determinants of smallholder participation in high-value markets. When the research program began, outreach was conceived of as presentations at major meetings for agricultural economists and more general non-specialist briefings. The overall aim was “*intellectual leadership*,” achieved by opening up questions and demonstrating how high-quality work might be undertaken. There is little evidence of an ambition to reach beyond research communities. In 2006, there was a shift in thinking and “*policy relevance*” became an explicit criterion, but in the main GRP27, researchers expected other agencies and individuals to make the link between IFPRI's work and policy impact.

Geographically, the outputs of GRP27 fall into three categories: India, Africa (specifically Africa south of the Sahara), and the “rest of the world.” An indication of these regions' relative weight is the number of refereed journal articles published for which high-value agriculture was the central theme: 14 for India, 12 for Africa, and 4 for the “rest of the world.” Within the Africa category, the majority of studies are on Kenya and Ethiopia.

This impact assessment had resources for two field visits, so India was an unavoidable choice. For Africa, Kenya was selected, partly due to the hypothesis that its success in smallholder HVA would mean that there would be more engaged constituencies to interrogate.

Conventionally, refereed journal articles are the most prestigious and influential outlets for research. For this study, three categories of metric (or research productivity algorithms) were taken into account: Google Scholar, ISI, and RePEc. Books are generally less prestigious, and most of the books and book chapters produced by IFPRI on HVA receive low impact scores. Reasons include the

fact that the rigor of the editing and refereeing is less certain (though it was found to be exemplary for IFPRI research reports) and it is more difficult to access the work, as it may not be included in scientific databases accessible from researchers' desks.

However, some books do prove to be deeply influential. These include widely used textbooks and also what might be thought of "breakthrough books" that cover important new research paradigms or approaches to research at a length not possible in a journal article. The reception by experts of the 2012 book *The Quiet Revolution in Staple Food Value Chains* by Reardon, Chen, Minten, and Adriano suggests that this may turn out to have the qualities of a "breakthrough book." Working papers and briefs are the third category of output. They are perhaps the least prestigious because they are only internally reviewed. But they do have the important advantage of immediacy.

To report on the India case study: there can be no doubt about the salience of policy issues connected to HVA. Indian agriculture is dominated by smallholders and although there has been a secular decline in the share of the labor force in agriculture, this share was nevertheless estimated at 57 percent in 2004/05. India-wide, consumption patterns have diversified from cereals to HVAs. Over time this diversification of diets has been profound: from 1977 to 1999, per capital cereals consumption fell from 192 to 152 kg/annum in rural areas and from 147 to 125 kg/annum in urban areas. Over the same period, in rural areas, increases in consumption of HVA products have been found to be very large. HVA products have a higher employment elasticity. So the structural shift towards production of HVAs has created additional employment through the labor market. It is also thought that HVAs are often suitable for production by poorer farmers.

Market structures for HVA are changing. Long established protected arrangements are no longer effective in serving the needs of producers and consumers. New developments include modern retail (supermarkets) and intermediaries who aggregate and supply to modern retail. Other new market participants include contract farming companies; investors in infrastructures (such as cold storage); and "producer companies" (an institutional development to overcome very restrictive regulations suffered by cooperatives in India).

In India, IFPRI was focused on what were generally the right issues. A possible criticism is that there was too much focus on the export sector, given its limited role relative to the domestic market. IFPRI's quantitative work was undertaken well, using appropriate methods. The numbers of journal publications on HVA with an empirical component is testament to this. If a criticism were to be made of IFPRI's empirical research, it might be that it has emphasized case studies at the expense of meta-studies.

Assessing the impact of policies that IFPRI influenced is very difficult. Various levels of government in India have reacted to the marked diversification of production and consumption that includes increased HVA. For example, the rapid development of modern retail is underway. Without having much enthusiasm for this, government has not killed it.

Some value chains have evolved fast, with rapid removal of disintermediate actors, and IFPRI's studies of potato value chains provide the key example. HVA development might be proceeding because of its fundamental economic logic and without much government enthusiasm.

In summary, IFPRI's research on HVAs has been helpful to thinking about how to manage the evolution of a smallholder-dominated agricultural sector responding to changes in demand and supply. IFPRI papers have argued that these developments need not be anti-poor: there is scope for

a model of modernization that benefits poorer producers and low-income consumers, as well as other actors. But, on balance, government policies have been reactive there is a critical task of modernization, which requires different policies. The opportunity for IFPRI is to continue to develop evidence-based narratives of integrity to help policymakers understand and then support needed reform.

The précis of IFPRI research on smallholder production of HVA in Africa is that “it is an important channel for poverty reduction, which is challenging but certainly can achieve sustained success.” This is in line with current thinking in Kenya by people working in public agencies, NGOs, and research organizations. Although this evaluation did not find evidence of IFPRI work influencing strategic thinking about HVA in Kenya, this does not prove an absence of influence.

The body of IFPRI African HVA work reviewed displays a solid integrity, an IFPRI “signature.” Research designs are well considered; data collection methods are suitable; quantitative methods are appropriate; and the conclusions are measured and not overstated. IFPRI research is careful, not polemical, and therefore must be among the most reliable sources of information and advice available to policy makers and advisers.

This should be a strong base from which to influence policy, but in Kenya there was little evidence of the relevant communities being aware of IFPRI’s work. The following factors are likely to be explanatory: failure to achieve “critical mass;” failure to synthesize guidance on policy and organizational design; and weaknesses in the communications approach, resulting in a failure to make much impression on public officials, NGOs, or the private sector.

The GRP27 documentation for about the first half of the time-span studied shows scant evidence of management instructions to researchers to indicate uptake pathways—other than workshops and publications—for their research. The challenge emerging from this is directed more to IFPRI’s management and Board of Trustees: for what purposes was this work commissioned? What did IFPRI believe it was achieving and what evidence did it have about possible achievements?

A distinction stands out as between IFPRI GRP27’s work in India on the one hand and Africa and the “rest of the world” on the other. In India, the IFPRI brand has a strong reputation going back over 35 years. IFPRI has a substantial office in New Delhi and this facilitates links to Indian policy advisers and keeps IFPRI staff up-to-date on developments and policy debates in the sector.

Turning to Africa and the “rest of the world,” the GRP27 work seems to have been too scattered to afford IFPRI “field leadership” or to have much policy impact on the development of HVA. Furthermore, the work on Africa appears to have a somewhat “probing” and “experimental character,” along the lines of “let us see what we can do to open up this topic and then move on.” There was not a consistent focus on a topic for a sufficient period to engage policy advisers and policymakers and shift policy. There is little evidence of a rationalized evolution of priorities within GRP27—an evolution along the lines of “now we have established X we will move on to Y.”

Regarding influence on government, civil society, international funding agencies, and academia, a distinction can be made between academia and all the other ones. Academic influence is easier to trace by using the bibliometric methods discussed, and the findings here are broadly satisfactory. GRP27 work did get into the appropriate refereed journals in the field and often attracted creditable numbers of citations. This evaluation could not detect any impact on the other institutions.

Finally, we offer some suggestions for IFPRI to consider as to what might have been done differently to achieve greater impact:

- Be more selective in countries and topics to study, aiming for fewer research projects that would be sustained for longer periods of time.
- Give research a higher profile, from inception to the final write-up and publication of findings, to ensure that relevant government departments, NGOs, and international and local researchers remain interested and connected while the work is on-going.
- Link research projects, where feasible, to national or sectoral strategic policies and present them as contributions to these.
- Seek as many national and local contributions as possible in the early stage design of research projects, with such design including project objectives, methods, and communications
- Rethink communications—for example, the IFPRI website was a useful resource on HVA for full-time researchers, but not very helpful for government, NGO, or private business personnel looking for accessible briefings
- The emphasis on refereed journal output has advantages including: external refereeing and quality discipline; attracting leading academics to work for or in collaboration with IFPRI; and the possibility of widespread of attention to path-breaking work. However, most refereed journals lack immediacy, and the outputs of most use to practitioners tend not to be academically prestigious.

# 1. CONCEPTUAL APPROACH AND METHODS

## Conceptual Approach

IFPRI's social science research serves to generate and disseminate evidence-based findings about global, regional, and national challenges to agriculture, food, and poverty reduction. IFPRI aims to conduct its work according to the highest standards, to be credible with users, and to provide a benchmark for research communities, particularly those in the regions of the world where IFPRI works.

IFPRI intends its research findings and their dissemination to have impact by leading to better policies, which in turn lead to better outcomes. Assessing research findings' impact on policy is notoriously problematic. Policies are, of course, influenced by vested interests, as these interests play out through a country's constitutional and other decisionmaking procedures. But policies are also influenced by the ideas and perceptions held by decisionmakers and those who advise and lobby them. It is in the realm of ideas and perceptions, often packaged in communicable "narratives" but based on solid research, that IFPRI has the potential for impact on policies and subsequent outcomes.

An evaluation study which aims to identify the influence of ideas and evidence on policies, and behind this the influence of IFPRI research on these ideas and evidence, has to accept at the outset that evidence will be, at best, sketchy. There is likely to be a negative bias in the various methods which might be deployed, because it is easier to find evidence "of no impact" than of a positive effect. Examples of "no impact" would be where there was no policy change, or perhaps the research was not timely or relevant, or its results were not accessible to policymakers and advisers (perhaps due to inadequate publication/communication).

On the other hand, in the case of positive impact, those who implemented the change may be unaware of the extent to which IFPRI work may have shaped the narratives which contributed to persuading policymakers to implement reforms. In summary, an evaluation study of research's policy impact is fraught with difficulties, and its findings should be advanced with due caution.

In seeking a framework for this evaluation study, a useful organizing principle is to think about what might be considered the "user encounter" with IFPRI outputs. The phrase directs us to think about the *users*: who they are, their influence over policy, and their ability to absorb and make use of research findings. The *encounter* directs us to consider how the users engaged with IFPRI.

For professional researchers, the encounter might have involved reading research briefs, attending symposia, undertaking joint research, or undertaking research independent of IFPRI that was guided or stimulated by IFPRI work. For policy advisers, those independent and within government, the questions are where they got their ideas from and what are their notions of what constitutes "evidence"? Do policy advisers encounter IFPRI outputs directly or are these meditated (and possibly distorted) by reading print and web media and policy summaries prepared by professional researchers?

In practice, the evaluator will collect only a smattering of direct evidence about user impact, this being through interviews with policymakers and advisers and other

close observers of policy processes. Most of the evidence has to be provided through inferences about user impact that are in turn derived from intermediate conclusions. This approach is implied by the terms of references (TORs) of this study. Was IFPRI research focused on the right issues at the right time? Was IFPRI a leader in the field? Did the research team(s) use the most relevant approaches and methods? How successful has IFPRI been in building national capacity?

This report analyzes the *user encounter with IFPRI research on High-Value Agriculture (HVA), with particular reference to smallholder farmers and poorer consumers, and the possible impacts of this.* “Users” to consider in this analysis include the following:

- a. Policymakers and advisers in central and state governments. In democracies, such as India and Kenya, where political parties move in and out of power, “would-be policymakers,” currently in opposition parties, can also be considered users of research.
- b. Operators of agricultural services (for example, cooperatives, nongovernmental organizations [NGOs], and larger private businesses connected to smallholder producers of HVAs, either upstream or downstream).
- c. International development agencies that may have some influence on agricultural and rural policies. Here, for the Indian case study, it is important to note that in recent years India has not been aid dependent, but two multilateral agencies, the World Bank and the Asian Development Bank, have financed projects with tangential relevance to HVA. In general, countries in Africa south of the Sahara are more aid dependent and major multilateral funding agencies can be presumed to have more influence over policy.
- d. NGOs that are influential in policy advocacy, as in India, and or provide important front-line services to farmers, as in Africa south of the Sahara. This work is funded by international agencies and national and local governments, as well as charitable donations and user charges. Thus, both “advocacy” and “service provision” NGOs have become important targets for policy research. A further reason for the importance of NGOs as a target for research outputs is that they are likely to be more open-minded and experimental than the government departments that they cooperate with. Thus, NGOs can be a powerful channel of transmission for policy ideas and evidence into government.
- e. National and international non-IFPRI researchers who are working on the same or closely related challenges and who may be influenced by IFPRI’s contribution to the development of
  - research questions;
  - conceptual frameworks;
  - research methods; and
  - research findings; as well as
  - direct contact with IFPRI staff through joint working.
- f. Researchers, especially those based within a country with access to policy advisers and policymakers. When IFPRI findings reach these researchers, IFPRI can stimulate a larger body of high quality and policy-relevant research. In this way, IFPRI can have influence through the channels indicated in (a) to (c) above. Influencing researchers can also involve the development of national research capacity.

- g. Writers of research summaries and serious journalism, who may notice and decide to highlight and comment on research. This might also give IFPRI influence through the channels indicated in (a) to (c) above.

Users of IFPRI research will have a variety of motives, including intellectual curiosity; the desire to develop their own research skills and to make progress in a research career; the search for evidence to defend or attack a political position; and, finally, a genuine and dispassionate (that is, technocratic) desire to inform policies to improve the welfare of poorer farmers and consumers through evidence-based research.

Against this background, subtle and nuanced research findings tend not to have much influence on policy. The evaluator has to look for the creation by researchers of relatively straightforward narratives which are powerful—because they are evidence-based—but also general. The objective is what might be described as a “narratives of integrity,” so-called to distinguish these from narratives which are partisan and not based on careful and balanced appraisal of evidence.

Some academic researchers may recoil from what they would regard as excessively simplified narratives. But, to refer to the Indian case study in this evaluation report, IFPRI has been notably successful in past and on-going policy debates in creating and disseminating persuasive “narratives of integrity.” An example is the question of returns, as measured by growth and poverty reduction, of investment in rural physical infrastructure and agricultural R&D versus subsidies to fertilizer, water, and electricity. Thus, questions that arise in assessing user encounters include

- a. whether the user encounter with IFPRI work contributed, through various mechanisms, to the development of one or more powerful “narratives of integrity”; and
- b. what appear to be the influence of these narratives?

## Methods

A “user encounter” approach does not focus primarily on IFPRI’s internal organization, as relevant research could originate from different research programs and divisions. Nevertheless, the internal organization and procedures of IFPRI are matters to consider in this evaluation. IFPRI requires insights into the effectiveness of specific research themes and programs and whether these were well designed and their objectives were achieved. The approach taken in this evaluation is to work back from the primary focus on the user encounter to derive insights into the effectiveness of IFPRI’s approach to HVA research.

The user encounter has been surveyed in the following ways:

- a. We surveyed all literature from IFPRI’s database relevant to HVA in India, Africa south of the Sahara, and the “rest of the world.” This literature was mainly from a research program entitled GRP27, but the literature was selected for the relevance of its title and abstract rather than the program from which it originated. Nevertheless, the great majority of the literature discussed here results from GRP27. The literature was considered in three categories: refereed journal articles; books and chapters in books; working papers; and briefs. During fieldwork some relevant working papers and briefs were found that had not been

centrally documented, perhaps because these had been published by other organizations.

- b. Geographically the outputs of GRP27 fall into three categories: India, Africa (specifically Africa south of the Sahara), and the “rest of the world.” A rough indication of these three categories’ weight is the number of refereed journal articles published for which high-value agriculture was the central theme: 14 for India, 12 for Africa south of the Sahara, and 4 for the “rest of the world.” Within the Africa south of the Sahara category, the majority of studies are on the neighboring countries of Kenya and Ethiopia. In addition to journal literature, there are books, research reports, and articles in the media.
- c. Given that the impact assessment had resources for two field visits, India was an unavoidable choice. For Africa, Kenya or Ethiopia could have been defensible choices, but the former was selected. This selection was partly due to the hypothesis that its success in agribusiness, including smallholder HVA, would mean that there would be more engaged constituencies to interrogate: private firms, cooperatives, government agencies, service-providing NGOs, and local researchers. As IFPRI program GRP27 (and of course other IFPRI programs) had been active in Kenya, there were prospects for finding organizations and influential individuals who might have been influenced by IFPRI outputs.
- d. The approach to the fieldwork for this study differed between India and Kenya. In India, IFPRI has a local office and, as became evident to this evaluator, is generally regarded as the premier foreign research organization in agriculture and food policies. IFPRI has strong connections to government, including former IFPRI staff who hold senior advisory positions in government, and also good links with Indian academia. By contrast, IFPRI does not have a local office in Kenya (it does in Ethiopia), and its connections to Kenyan policymaking circles appear distinctly less strong than in India. Of course, Kenya has been included in a range of IFPRI research programs, and IFPRI has cooperated with prominent Kenyan academics. In practice, these differences meant that during the Indian case study connections to influential persons in government and academia were made by IFPRI and a senior Indian agricultural economist and former civil servant. In contrast, the evaluator in the Kenyan case was assisted by a consulting firm to reach private sector and NGO organizations and by a prominent Kenyan academic to reach government, academia, and some NGOs.
- e. For the Indian case study, interviews were carried out mainly in India and were with IFPRI research staff and IFPRI-linked researchers; senior staff in public and independent research organizations; and senior policy advisers within central government. These were supplemented by telephone interviews with staff and former staff of the World Bank and the Asian Development Bank. Field visits were undertaken to three organizations providing services to farmers: first, a very large poultry producer operating on a national scale, where most production is under contract farming arrangements with smallholders; second, a supplier of grapes to high-value export markets that works closely with farmer cooperatives and has been the subject of IFPRI research; third, a cooperative with “Fair Trade” accreditation that was working with smallholders producing basmati rice by organic methods and exporting this rice and rice-based packaged noodles to EU markets.

## **Approaches to Assessing Different Categories of Output from IFPRI's Contribution to Policy Relevant Research for High Value Agriculture**

IFPRI's contributions to policies for HVA can be divided into two broad categories, which are not neatly divisible. First is published work and second, is the influence of IFPRI staff and of others who may have used IFPRI arguments and research findings in advocacy. The distinction between the two categories is fuzzy because the latter work is dependent on the credibility of the former. Another aspect of the interaction is that excellent published policy research may have modest, or delayed, impact if it is not linked to and enhanced by communications activities. A benefit of researchers handling the communication of their findings is that it is possible to have more influence over what might be termed the complete narrative.

To take an example not directly about HVA: during fieldwork in India, this evaluator observed a heated political debate concerning policies of extending government grain procurement and linked consumer subsidies in which both advocates and opponents cited IFPRI's work. In fact, IFPRI research findings would imply strong skepticism of these policies. This presents IFPRI with a delicate problem, however, as there are dangers in being seen to take sides in political debate. Probably the best approach is for IFPRI to energetically communicate its complete research findings. This allows IFPRI to shape the narrative but to avoid endorsing a particular political platform.

The assessment of published work in the social sciences is a familiar task, if very challenging. Reasonably objective metric-based findings can be arrived at concerning peer influence and esteem. Appraisal of the wider impact of research on society, culture, and the economy is much harder.

One approach is that applied by the UK's Higher Education Funding Council to the 2014 Research Excellence Framework (REF)<sup>1</sup>. This arrives at an overall judgement of "quality" by summing scores given to three sub-profiles: "outputs" (65 percent); "impact" (20 percent); and "the research environment" (15 percent). Outputs are largely assessed by the volume of journal articles and the prestige and relevance to the field of the journal which published them. Impact is mainly assessed through the submission of case studies. It may be surprising that a public funding agency weighs impact at only 20 percent. This is partly because influential sections of the academic profession are strongly resistant to the notion that research should be undertaken with impact in mind. But another probable reason is simply the difficulties of assessing research's impact, especially over relatively short time periods. In other words, those politicians and officials who would wish to see greater impact from publicly funded research are thwarted by the absence of methods to produce confident assessments of impact.

Turning to indicators of peer esteem and of influence in the wider research community, a general issue arises from the observation that scores on these indicators vary wildly between fields, reflecting the magnitude of financial outlays and research effort. Research outlays are substantially influenced by the concerns of public, charitable, and private funders in wealthier countries. This seems to explain why the impact factors of peer reviewed journals devoted to research on the problems of poorer countries tend to be low relative to the share of the global population whose problems are the focus of the work. Some academics reject this view and argue that prestigious journals, which

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<sup>1</sup> REF 2014 website is <http://www.ref.ac.uk/panels/assessmentcriteriaandleveldefinitions>.

focus on advances in theory and methods (especially quantitative methods), are geographically neutral. However, this evaluator (a former Editor-in-Chief of *Food Policy*) tends to the view that the relatively low impact scores of research on food policy in poorer countries reflects the modest funding of research in this field relative to the importance to humanity of improved performance by the food systems of poorer countries.

Turning to the evaluation of the literature, **refereed journal articles** are conventionally considered to be the most prestigious and influential outlets for research. The work has been refereed, a process that confers a sense of having achieved a quality threshold and provides authors with rounds of critical comments to respond to. There is a hierarchy of journals, based on metrics discussed below and a tendency to attach more prestige to work published in journals with high impact factors as these are more competitive.

For this study, three categories of metric (or research productivity algorithms) are reported for IFPRI journal outputs: Google Scholar; ISI; and RePEc. To comment briefly on these:

- a. **Google:** Describing Google Scholar as a research algorithm, Wikipedia states “most academic databases and search engines allow users to select one factor (e.g., relevance, citation counts, or publication date) to rank results, Google Scholar ranks results with a combined ranking algorithm in a ‘way researchers do, weighing the full text of each article, the author, the publication in which the article appears, and how often the piece has been cited in other scholarly literature.’ Research has shown that Google Scholar puts high weight especially on citation counts and words included in a document’s title.” In assessing the analytics from Google, Wikipedia reports that “some searchers consider Google Scholar of comparable quality and utility to commercial databases. The reviews recognize that its ‘cited by’ feature in particular poses serious competition to... *ISI Web of Knowledge*.” But an important issue is that the relative coverage of Google Scholar varies by “discipline compared to other general databases” and some publishers do not “allow Scholar to crawl their journals... Google Scholar does not publish a list of scientific journals crawled, and the frequency of its updates is unknown.” Additionally there are concerns about possible “incorrect field detection” and “vulnerability to spam.” Finally, Wikipedia reports that analytics derived from Google Scholar strengthen the *Matthew effect* by placing “high weight on citation counts in its ranking algorithm” with the consequence that, “as highly cited papers appear in top positions they gain more citations while new papers hardly appear in top positions and therefore get less attention by the users of Google Scholar and hence fewer citations” (Wikipedia 2015a).
- b. **ISI** belongs to the “Intellectual Property & Science” branch of Thomson Reuters. “This database allows a researcher to identify which articles have been cited most frequently, and who has cited them.” ISI “maintains citation databases covering... over 14,000 academic journals... The ISI also publishes the annual *Journal Citation Reports* which list an impact factor for each of the journals that it tracks” (Wikipedia 2015b). The impact factor for individual scientific journals is calculated as “the ratio of the number of citations to the previous 2 years of the journal divided by the number of articles in those years—this is essentially the average number of recent citations per article” (Wikipedia 2015c). Two indicators

are reported in this evaluation study of IFPRI publications: the *number of citations* and the *H-Index*.

ISI, among other publishers of research analytics, provide an H-index named after Jorge E. Hirsch. “Hirsch, Professor of Physics at the University of California, San Diego, published an article describing the **h-index**, which, he called ‘a useful index to characterize the scientific output of a researcher’” (Thomson Reuters Community 2008, emphasis added). As text provided on the ISI website explains, “Hirsch describes the h-index as follows: ‘A scientist has an index h if h of his or her  $N_p$  papers have at least h citations each and the other  $(N_p - h)$  papers have less than or equal to h citations each.’  $N_p$  is the number of papers published over n years. He found that among physicists he surveyed, Edward Witten, a mathematical physicist at the Institute for Advanced Study in Princeton, New Jersey, and pioneer in the field of string theory and related areas, had the highest h-index: 110. ‘That is,’ Hirsch explained, ‘Witten has written 110 papers with at least 110 citations each.’” Hirsch said, though, “that the h-index ‘should only be used as one measure, not as the primary basis for evaluating people for awards or promotion’” (Thomson Reuters Community 2008).

- c. **RePEc** (Research Papers in Economics) (<http://repec.org>) “is a collaborative effort of hundreds of volunteers in 84 countries to enhance the dissemination of research in Economics and related sciences. The heart of the project is a decentralized bibliographic database of working papers, journal articles, books, book chapters and software components, all maintained by volunteers. The collected data is then used in various services... So far, over 1,750 archives from 84 countries have contributed about 1.7 million research pieces from 2,100 journals and 4,000 working paper series. About 45,000 authors have registered and 75,000 email subscriptions are served every week” (RePEc 2015).

**Books and book chapters** are generally somewhat less prestigious. The analysis later in this evaluation study shows that most of the books and book chapters produced by IFPRI on HVA pick up low impact scores. Reasons for the somewhat lower prestige attached to most books include the fact that the extent and rigor of the editing and refereeing is less certain (though it can often be very good and was found by this evaluator to be exemplary for IFPRI research reports). Also, it is more difficult to access the work as it is often not included in scientific databases accessible from researchers’ desks. However, some books do prove to be deeply influential. These include widely used textbooks and also what might be thought of as “breakthrough books” that cover important new research paradigms or approaches to research at a length not possible in a journal article. To anticipate a finding discussed later in this report, the reception by experts of the 2012 book *The Quiet Revolution in Staple Food Value Chains* by Reardon, Chen, Minten, and Adriano suggests that this may turn out to have the qualities of “breakthrough book” (although, as is discussed later, the impact scores are, so far, quite modest). Some of the preceding journal literature published by IFPRI authors, as well as research reports, can be thought of as staging posts on the way to producing this book.

**Working papers and briefs** are the third category of output. They are perhaps the least prestigious because they are only internally reviewed. But they do have the important advantage of immediacy. It is reasonable to suppose that interesting research output posted on the IFPRI website will be picked up by other researchers and perhaps occasionally by policy advisers. Briefs can be very effective, especially if featured on an

interesting website and combined with a communications approach that might incorporate briefing of print, radio, and TV journalists.

## **The Development over Time of High-Value Agriculture in IFPRI's Research Portfolio**

IFPRI manages its activities as a group of programs and sub-programs. In 2014, IFPRI's activities were organized under the following research themes and programs.

### IFPRI's Research Themes and Programs as of February 2014

#### *Transforming Agriculture*

- [Country Development Strategy](#)
- [Pro-Poor Public Investment](#)
- [Rural-Urban Linkages](#)
- [Facilitating Evidence and Outcome Based Policy Planning and Implementation in Africa](#)

#### *Strengthening Institutions and Governance*

- [CAPRI](#)
- [Gender and Assets](#)
- [Governance](#)

#### *Ensuring Sustainable Food Production*

- [Land Resource Management for Poverty Reduction](#)
- [Water Resource Allocation](#)
- [Program for Biosafety Systems](#)
- [Genetic Resource Policies for the Poor](#)
- [Global Food and Natural Resources](#)
- [Agricultural Science, Technology, and Innovation Policy](#)
- [Agricultural Science and Technology Indicators \(ASTI\)](#)

#### *Building Resilience*

- [Rebuilding after Emergencies and Crises](#)
- [Social Protection, Livelihoods and Asset Building](#)
- [Climate Change](#)

#### *Promoting Healthy Food Systems*

- [Diet Quality and Health of the Poor](#)
- [Food and Water Safety](#)

#### *Improving Markets and Trade*

- [Institutions and Infrastructure for Market Development](#)
- [Globalization and Markets](#)
- [Participation in High-Value Agricultural Markets](#)

#### *Policy Communications*

- [2020 Vision](#)
- [Policy Communications](#)

#### *Capacity Strengthening*

- [Learning and Capacity Strengthening](#)

## Country and Regional Programs

### *Africa*

[Ethiopia Strategy Support Program](#)  
[Ghana Strategy Support Program](#)  
[Nigeria Strategy Support Program](#)  
[Uganda Strategy Support Program](#)  
[Malawi Strategy Support Program](#)  
[Mozambique Strategy Support Program \(MozSSP\)](#)

### *Asia*

[China Strategy Support Program](#)  
[Bangladesh Policy Research and Strategy Support Program](#)  
[Pakistan Strategy Support Program](#)

IFPRI's research portfolio appears over the years covered by this study to have experienced incremental evolution in emphasis rather than radical changes of direction. Within this a constant has been the research program on **Participation in High-Value Markets**, located within the theme of **Improving Markets and Trade**. Participation in High-Value Markets is known as GRP27. In 2014, GRP27 was described on IFPRI's website as follows:

An important strategy for increasing the incomes of small-scale farmers in developing countries is to help them diversify from low-value staple food commodities into higher-value commodities, such as livestock, dairy products, fish, fruits, vegetables, and spices. The demand for these products in both developed and developing countries is rising rapidly as incomes increase and consumers adopt more diverse diets. These products are typically perishable, they are increasingly sold through specialized markets, and the product price is highly sensitive to variations in quality. Because of these characteristics, the marketing channels for high-value agricultural commodities are often characterized by various forms of vertical coordination, such as cooperatives, contract farming, and vertical integration.

The specific objectives of this program are:

- To identify bottlenecks and constraints faced by small farmers and other poor households in their attempts to raise income by participating in supply chains for high-value agricultural commodities;
- To analyze alternative policies, regulations, investments (public, private or mixed), and institutional arrangements that alleviate the identified bottlenecks and constraints;
- To disseminate information on constraints and policy options to researchers and policymakers, and international organizations in developing countries; and
- To strengthen the capacity of policymakers and researchers in targeted countries to undertake policy research concerning the role of diversification and high-value agricultural commodities in raising the incomes of small farmers and other poor households (IFPRI 2014).

GRP27 was formed at the end of 2002, out of a merger of MP7 “Agricultural diversification into high value commodities” and MP20 “Adding value through post-harvest activities.” At its outset, GRP27 had three pillars:

- a. Forward-looking global studies of structural change in high-value markets and such change’s implications for poverty reduction and sustainability. There was a cooperative program for livestock and dairy (outputs of which are covered in this evaluation) that was conducted jointly with ILRI and FAO.
- b. In-depth quantitative research on forces that promote the scaling up of livestock production.
- c. Quantitative research on determinants of smallholder participation in high-value markets: in essence, such research explains why some smallholders participate successfully in high-value markets and others do not.

About five to six years on from inception, in 2008, GRP27 had reformulated its purpose and research foci. In particular, there was now a focus on perishable products:

Smallholder farmers can increase their incomes through greater sales of high-value commodities. Livestock, dairy products, fish, fruits, and vegetables are of high value, typically perishable, and increasingly sold through specialized markets. This part of world agriculture is growing rapidly and is becoming increasingly capital intensive and vertically integrated. This growth is mainly driven by rising incomes, falling trade barriers, and greater openness toward foreign direct investment.

Our research focuses on: (1) opportunities for sustained commercialization of high-value agricultural commodities; (2) reducing policy and transaction-cost barriers for smallholders, the rural poor, and women in high-value commodity export markets; and (3) encouraging smallholders in high-value markets to promote environmental sustainability and lower health risks (IFPRI 2007).

The program also included measures to translate research into impact. At its commencement, GRP27 included outreach activities in the form of presentations at major professional meetings for agricultural economists and more general non-specialist briefings at organizations such as other CGIAR Centers and FAO.

Reading the self-evaluations in the research program documentation, it is clear that the overall aim at the beginning of GRP27 was “intellectual leadership.” This was conceived of as opening up questions and demonstrating to others how high-quality work on these questions might be undertaken. There is little evidence of an ambition to reach beyond research communities. Perhaps, it was implicitly thought that national researchers would follow IFPRI research lines and also communicate the results of their nationally-focused research to policymakers? It is possible that on occasions IFPRI has had influence through such channels, as in India some academics mentioned being inspired to take a certain approach as a consequence of pioneering work by IFPRI (reference was made to John Mellor and to work on agricultural linkages).

Four years later, in 2006, there is evidence of some shift in thinking about impact. The “policy relevance of research” was an explicit criterion and was subdivided into discussion of the following:

- a. Influences and impact on the research agenda: this was discussed in general terms as influence on development agencies, notably the World Bank.
- a. Influences or impacts on international public opinion: this was a relatively thin list of citations in newspapers and websites.
- b. Influences or impacts on developing countries: this was discussed in terms of the learning benefits to local researchers of collaboration with IFPRI scientists.

However, reviewing project documentation (especially completion reports) this evaluator is left with the impression that GRP27 researchers mainly expected other agencies and individuals to make the link from IFPRI work to policy impact, with these other agencies and individuals specified only in quite general terms. There are one or two notable exceptions to this, which display evidence of the GRP27 researchers being strongly engaged with policy processes. For example, commenting in 2007 on the policy relevance of a research project on *Agricultural Diversification in Punjab and Andhra Pradesh*, the team reports:

This study is particularly relevant to the current policy debate on agriculture in India. During the study period and thereafter, the IFPRI team has been interacting with stakeholders at all levels ranging from the concerned ministries at the center (Ministry of Agriculture and Finance Ministry), respective state governments (Chief Ministers of Punjab and Andhra Pradesh), Planning Commission of India and state planning boards to major private players in the retail and food processing sectors and also farmer groups. There have been several meetings and brainstorming sessions with the Secretary of Agriculture, Chair of Punjab Planning Board, the Chief Minister of Punjab to discuss key issues and concerns relating to the opportunities and challenges involved in agricultural diversification, contract farming and more recently private retailing and processing in the fresh and processed food segments. In addition IFPRI has been in the thick of debate on rationalising input subsidies and has had the opportunity to discuss this with the Finance Minister during recent pre-budget consultation on agriculture. (Cummings et al. 2007)

In 2014, the IFPRI website page for GRP27 featured three examples of outputs. First is a 2009 study by Minot and Benson of fertilizer subsidies in Africa—a questionable choice as an exemplar of GRP27, as much of the fertilizer used by smallholders is applied to grains and the debate is mainly framed in terms of the impact on food production (Minot and Benson 2009). In contrast, the second and the third outputs cited are clearly relevant to the research program. They relate well to the broad scope of GRP27 and have the merit of providing clear policy-relevant findings and conclusions.

The second was a case study by BIRTHAL et al. (2008) on contract farming in smallholder dairying in India. This study is summarized on the GRP27 website, which reports findings of clear relevance to policy for HVA in India. The study's overall message for policy is to encourage contract dairy farming because it is effective in promoting smallholder participation and the income benefits that result from it. While this is a rather general message, as is explained later in this evaluation report, it is important in the context of political and technical debates in India. There is a powerful tradition of skepticism about private businesses providing services to smallholders, based on a presumption that they will act exploitatively. Thus, the sceptics would tend to look for solutions through a major role for the state in direct provision of marketing services or heavy regulation of cooperatives or private trade.

Contract farming is emerging as an important form of vertical coordination in the agrifood supply chain in India, and its socioeconomic consequences are attracting considerable attention in public policy debates.

This study is an empirical assessment of the costs and benefits of contract farming in milk using information generated through field surveys in the western state of Rajasthan.

Contract farming is found to be more profitable than independent production. Its major benefits come from

- a reduction in marketing and transaction costs, which are otherwise much higher in the open markets;
- modestly improved milk yield and reduced production costs, and
- provision of services and technical advice by integrators/firms who secure milk supplies from farmers through contract.

The benefits of contract farming vary by scale of operation. Economies of scale are important determinants of competitiveness: large farms (both contract and independent) have lower per unit costs because they buy inputs in bulk and have greater access to markets. Smallholders, on the other hand, derive significant benefits from a reduction in marketing and transaction costs due to their participation in contract farming.

The third case study cited was of very recent paper by Birthal et al. (2014) on sources of growth in Indian agriculture. This was a revisiting of earlier work, which placed HVA in the wider context of a clear long-term trend in which HVA accounts for an increasing share of total agricultural output in India. This paper provides a useful evidence-based framework for thinking about Indian agricultural policies. Perhaps its most important finding is that the trend toward increased production of HVAs is poor. The paper emphasizes the importance of technological research, and, by implication but not explicitly, argues for more research resources to be focused on HVA. It also highlights the diverse trajectories of agriculture, with some areas intensifying production of cereals and others diversifying into HVA.

Indian agriculture was transforming during the 1990s from a cereal-based production system to one that produced more high-value crops (HVC). However, food security concerns resurfaced during the first decade of the 21st century, and the policy environment tilted in favor of cereal-based production systems, especially rice and wheat.

This paper revisits an earlier study to evaluate how the policy shift influences the patterns and the sources of agricultural growth in India and assesses their implications for regional priorities for higher, more sustainable, and more inclusive agricultural growth.

The paper also found the following:

- Technology has remained the most important source of agricultural growth due to a policy emphasis on cereal-based food security.

- Agricultural diversification toward HVCs, driven partly by a sustained rise in per capita income and urbanization, nevertheless has emerged as the next most important source of agricultural growth.
- The growth in high-value agriculture has come largely from farming areas being reallocated from less profitable coarse cereals, mainly millets and sorghum.
- The contributions of area expansion and commodity prices to agricultural growth have been erratic and small, suggesting that these cannot be sustainable sources of agricultural growth.
- Sources of agricultural growth have varied widely across the regions; while the irrigated northern region followed a technology-led growth trajectory, the rainfed western and southern regions followed diversification toward HVCs as the main strategy to enhance and sustain agricultural growth.
- Agricultural diversification toward HVCs was found to exhibit a pro-poor bias and thus can serve as an important pathway for smallholders to move out of poverty.

In the long run, growth in agriculture must come from technological change and diversification toward HVCs. To sustain agricultural growth

- investment in agricultural research must be increased;
- the agricultural research agenda must be revisited in view of the emerging challenges and market opportunities in agriculture and the agrifood industry; and
- enabling policies, institutions, and infrastructure must promote high-value agriculture by facilitating farmers' access to remunerative markets.

## 2. THE INDIA CASE STUDY

### **The Backdrop: The Increasing Importance of High-Value Agricultural Products in Production, Processing, and Consumption in India**

The terms of reference (TORs) of this study include the question as to whether IFPRI's research on HVA in India "was focused on the right issues at the right time?" To throw light on this question, it is necessary to first set out the background, which is one of an increasing share of HVA within total agricultural output. This section sets out some of the basic changes that have been underway and highlights some connected policy issues. The subsequent section distills from this discussion a list of the strategic issues arising from HVA which need to be illuminated by policy research.

There is a substantial literature noting the growing importance of HVA in production, processing, trade, and consumption. The strategic issues requiring research, policy development, and advocacy for HVA in India are well summarized in two documents. The first of these is a short *Strategy Paper Prepared by IFPRI's Senior Management Team for Consideration by the Policymakers of the Government of India* (von Braun et al. 2005) and the second a case study prepared for teaching at Cornell University (Birthal and Joshi 2007). The comments below draw background points from these summaries and add some additional points from more recent literature.

There can be no doubt about the salience of policy issues connected to HVA. Indian agriculture is dominated by smallholders: in 2002/03 out of 101 million farm households, 86 percent had landholdings of 2 hectares or less, with the average household holding being 0.53 hectares. Although smallholders control 44 percent of arable land, they are estimated to account for 61 percent of the total area planted with vegetables and 52 percent of the area planted with fruits, respectively. There is a secular decline in the share of the labor force in agriculture, but nevertheless this share was estimated at 57 percent in 2004/05 (Birthal and Joshi 2007). Clearly developments in smallholder production and associated activities in processing and marketing continue to be critical drivers of the extent and pace of poverty reduction and consumption.

India-wide, consumption patterns have diversified from cereals to HVAs, this move toward diversification being driven by sustained increases in real per capita incomes, which were running at about 4 percent per annum over the 20 years prior to 2005. Over time this diversification of diets has been profound: from 1977 to 1999, per capita cereal consumption fell from 192 to 152 kg/annum in rural areas and 147 to 125 kg/annum in urban areas. Over the same period, increases in consumption of HVA products in rural areas were estimated at respectively: fruits—553 percent; vegetables—167 percent; milk—105 percent; meat, eggs, and fish—85 percent. Similar patterns were observed in urban areas.

HVA products have higher employment elasticity than cereals. So the structural shift towards production of HVAs has created additional employment through the labor market. HVAs may also frequently be suitable for production by poorer and marginal farmers, providing they can obtain market access for products and inputs.

Birthal and Joshi (2007) note that the share of female labor in cereals production has been estimated at 37 percent while the female labor shares for the HVA products of

dairy, poultry, and horticulture are, 76 percent, 62 percent, and 44 percent, respectively. While this data do not indicate how income from HVA enterprises is distributed within the household, they suggest that increased smallholder production of HVAs could be of particular benefit to women and children.

Diversification from cereals to HVAs could potentially ameliorate the acute environmental problems plaguing Indian agriculture: water scarcity; water pollution; and land degradation and deforestation. This is because many of the HVA products require less water and provide higher returns to land, thereby reducing pressure on over-exploited soils. But Birthal and Joshi (2007) note that there is not a scientific consensus: some researchers are concerned that intensive production of HVAs could have serious environmental impacts.

Market structures for HVA are changing. Long established and legally sanctioned and protected market arrangements may no longer be adequate in serving the needs of producers. Likewise, traditional categories of market agent (for example, commission agents) may be seen as failing to serve the needs of consumers and producers well and may be in decline.

Some of the new developments are spontaneous, that is, market-led. Other developments, such as producer companies, rural business hubs, and some types of contract-farming organizations have been encouraged by government, development banks, and NGOs through measures such as enabling legislation, technical assistance, and capital investment.

New developments include modern retail (supermarkets) and the intermediaries who aggregate and supply to modern retail. Other new market participants include contract-farming companies; investors in new infrastructures (such as cold storage); and “producer companies” (an institutional development to overcome very restrictive regulations suffered by cooperatives in India).

New export opportunities for Indian HVA products have emerged as a result of trade liberalization, although this is a relatively minor development given the existing size and potential of India’s domestic market.

The development of information and communication technologies (ICTs) and their spread into rural areas is enabling access to and reducing the costs of price information and other market information as well as technical information. There is massive potential for reducing the transactions costs required to achieve market coordination.

Finally, it is essential to keep in mind that in the Constitution of India agriculture is a “State Matter” over which the central government has only indirect influence. States differ in their regulation of agricultural marketing, even to the extent that one state imposes export tariffs on grains transported to the rest of India. Two important implications of this legal situation are as follows:

- a. Research on agricultural policy and institutions has to take account of state-level specificities. There is scope for fascinating research on the possible effects of inter-jurisdictional competition for the models for improved supply of public goods, as well as the state-level specifics constraining the quantity and quality of public goods.

- b. A rigorous assessment of the impact of policy research needs to encompass state governments (although this is beyond the scope of this study). How were state-level politicians and their advisers influenced by research findings? What were the influences of state level research institutions and universities?

## **Strategic Issues Requiring Research to Inform Policy Development for HVA in India**

This section continues the task of determining whether IFPRI HVA research was “focused on the right issues at the right time” by selecting a number of high priority issues connected to HVA requiring research. (This selection has come from literature reviews and fieldwork in India). It is clear that the structural shift to HVA, when aggregated across the very large numbers of poor farmers, has the potential to create large pro-poor benefits. Debatably, these benefits may have some bias toward women farmers, a valuable benefit if found to be true.

Strategic issues requiring research to inform policy development include market access for poorer farmers who produce HVA products. This is a challenge requiring research to stimulate and inform experimentation with different policies, regulations, and institutional arrangements. Will poorer and marginal farmers fail to capture the full benefits potentially available? Factors bearing on the possible inclusion or exclusion of poorer farmers include the extent to which there may be barriers to entry, barriers to scaling up, or both. Will smallholders who produce HVA products be able to play a major role in supplying these products to more quality- and safety-conscious market segments—and to reap the resulting financial rewards?

The literature highlights areas of concern about smallholders’ access to markets, which require research:

- a. Inability to satisfactorily access input markets, perhaps due to lack of suitable loan finance (for example, for tree crops), inadequacy in the numbers or quality of local input suppliers, or both.
- b. Deficiencies in output market systems, a subject comprising a list of perceptions and hypotheses, some of which are contradictory. Traditionally there has been a concern about exploitative middle-men and hence a perceived need for intense regulation, covering the roles of different categories of market agent, the margins (commissions) they are permitted, and the designation of locations at which produce should be delivered, stored, and sold.

More recently, there has been concern that these intensively regulated markets serve farmers and consumers badly, squeezing consumer and producer surpluses. It is argued that insufficient and poor quality physical capacity (inadequate quantity and quality of storage), together with licensing of traders, creates rents for intermediaries and that these characteristics make it hard for markets to reward attributes of quality and safety.

Questions arise about how poorer farmers can acquire technical knowledge, with debate about whether they are better served by local private shops, cooperatives, rural business hubs or large Indian corporations and subsidiaries of multinational companies.

It has been observed that prices of most HVA products are more volatile than for cereals. Research is needed to determine whether and to what extent this inhibits smallholders from participating in producing HVA products and the extent to which a diversified cropping pattern can reduce the impact of price risks on the magnitude and volatility of smallholders' income.

There is concern about smallholders' ability to meet standards of food safety and traceability. These quality and safety issues are major concerns in high-income export markets and will likely become domestic market concerns as well, as consumers become more aware of issues related to HVA products such as pesticide residues and bacterial contamination. The development of modern retail likely contributes to awareness of quality and safety issues in HVA products, and modern retail normally responds to these challenges with more branding. If, in the future, a growing share of the value of HVA products purchased by consumers is branded, this will raise the question of whether and how smallholders can participate in the supply of such branded products.

As an alternative, can the pro-poor potential in at least some HVA products be harnessed to promote income growth and poverty reduction? The pro-poor potential results mainly from some HVAs requiring less water, land, and purchased inputs (for example, fertilizer) than cereal crops. Additionally, vegetable production often has a shorter and more variable production cycle than grains, allowing for faster returns to land and labor. Vegetables are also better adapted to the financial pressures experienced by the poor.

The work of Reardon and his co-authors, such as Reardon et al. (2012), discussed in more detail later, has identified an under-emphasis in research on the "midstream" for Indian agriculture—that is, the productivity of processing, storage, and distribution—as opposed to the "upstream" of production and the "downstream" of consumption. There is a shortage of hard and generalizable information about changes in market structure and conduct and about investments in processing and storage.

Reardon et al. (2012) compare the picture of the midstream painted by "expert informants" with realities documented in their subsequent field research. Generally the expert view is found to be woefully out of date, and this matters considerably to the extent expert views inform policymakers. To take two examples,

- a. "experts" described tied credit as a major issue in zones where research showed it to have faded fast; and
- b. most "experts" seemed to be unaware of the extent of disintermediation in transforming marketing chains. (This means that the entry of larger and more vertically integrated marketing players tends to reduce the number of direct transactions between farmgate and consumer and formerly dominant categories of market agent.)

Finally, to return to the "big picture," agricultural policies should be reconsidered so as to strike an appropriate balance between continued support to the cereals sectors and support for the fast developing HVA sectors. There are strong grounds for anticipating that alternative policies could be developed and implemented to provide substantial welfare gains for farmers (including poorer and marginal farmers); for consumers (including low-income consumers) and for the rural environment and its sustainability. Some of the matters in focus here are

- a. subsidies to water, fertilizer, and rural electricity;
- b. the extent, methods of operation, and efficiency of public procurement of grains; and
- c. the need to reorder priorities within publicly-funded agricultural research to ensure sufficient technological support for HVAs.

### **The IFPRI-Refereed Journal Literature on High-Value Agriculture in India**

A list is shown below of 14 journal articles by IFPRI authors, representing a complete subset drawn from IFPRI's database, which covers all publications relevant to HVA in India (Table 1).

A number of themes can be identified in this body of work:

- a. Agricultural diversification and its policy implications
- b. The expansion of livestock production and certain related issues for India's dairy industry:
  - The industry's international competitiveness and the possible consequences for it of trade liberalization
  - the effects on dairy industry income and efficiency of private sector—and specifically multinational firms'— involvement in the dairy value chain
- c. Institutional arrangements or supply chain governance for vegetables and fruit: public-private partnerships, collective action, value chain structures, and governance
- d. Modern retail, its rapid emergence, and its consequences for poor urban consumers and for suppliers within the emerging value chains.

These themes account for 12 out the 14 refereed journal articles, and they are discussed below. Not discussed are two papers which are outliers in this group: one is concerned with issues in peri-urban vegetable production in Asian cities and the other with distance learning.

Two articles by overlapping teams (Joshi et al. 2004; Birthal et al. 2013) investigate agricultural diversification and its policy implications. The first appeared in the *Economic and Political Weekly* and, although brief, can be expected to have been widely noticed among relevant readerships in India. The second is a recent publication that challenges those who would argue that—because of diseconomies of scale and lack of access to inputs such as capital and information—participation in HVA cannot raise smallholder incomes.

Contrary to such skepticism, the paper presents evidence that in India diversification toward high-value crops exhibits a pro-smallholder bias. Moreover, smallholders play a proportionally larger role in production of vegetables rather than fruits. These patterns are consistent with simple comparative advantage-based production choices. Even with small landholdings, if labor endowments are high, such farmers diversify toward HVA. Available indicators show that this very recent paper has so far had only modest impact indicators, but it provides a clearly argued and supported case and so has prospects to generate more evidence of interest in the years ahead.

Two articles (Delgado, Crosson, and Courbois 1997; Narrod, Tiongco, and Scott 2011) provide estimates of the expansion of production and consumption of livestock and fish. The articles' scope is global, but the relevance to India is that India will account for an increasingly large share of global consumption. To the extent that India can produce livestock products with adequate efficiency, livestock producers in India face a favorable outlook for demand. The first paper has only modest impact scores, possibly because it is now over 15 years old. The second paper also has modest impact scores and perhaps contributing reasons are that it is recent and in French.

**Table 1. Characteristics of referred journal papers on HVA in India**

| IFPRI Refereed Journal Publications on High Value Agriculture in India or Relevant to India |                             |                                                                                                                     |                                                                                                               |                                                                                                       |                                                                                                                                                                                                                           |                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                                                                                                                                 |                                                                                                                                                     |                                                                                                          |                                                                                                                                                     |                                                                                                                                             |                                                                                                                                                     |                                                                                                      |                                                                                                                                                       |
|---------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Authors                                                                                     |                             | Birthal et al.                                                                                                      | Delgado, Crosson, and Courbois                                                                                | Gupta and Roy                                                                                         | Joshi et al.                                                                                                                                                                                                              | Midmore and Jansen                                                                                                                                  | Minten                                                                                                                                              | Minten et al.                                                                                                                                                                                                                                                                   | Narrod et al.                                                                                                                                       | Narrod, Tiongco, and Scott                                                                               | Rakotoarisoa and Gulati                                                                                                                             | Reardon and Minten                                                                                                                          | Roy and Thorat                                                                                                                                      | Sasidhar et al.                                                                                      | Vandeplas, Minten, and Swinnen                                                                                                                        |
| Title                                                                                       |                             | Diversification in Indian Agriculture toward High-Value Crops: The Role of Small Farmers                            | The Impact of Livestock and Fisheries on Food Availability and Demand in 2020                                 | Gains from Coordination in Milk-Fed Dairy in Punjab                                                   | Agriculture Diversification in South Asia: Patterns, Determinants and Policy Implications                                                                                                                                 | Supplying Vegetables to Asian Cities: Is There a Case for Peri-urban Production?                                                                    | Food prices and Modern Retail: The Case of Delhi                                                                                                    | Horticulture Wholesale Trade and Governance in India: Evidence from Uttarakhnad                                                                                                                                                                                                 | Public-Private Partnerships and Collective Action in High-Value Fruit and Vegetable Supply Chains                                                   | Current and Predicted Trends in the Production, Consumption and Trade of Live Animals and Their Products | Competitiveness and Trade Potential of India's Dairy Industry                                                                                       | Surprised by Supermarkets: Diffusion of Modern Food Retail in India                                                                         | Success in High Value Horticultural Export Markets for the Small Farmers: The Case of Mahagrapes in India                                           | Evaluation of a Distance Education Radio Farm School Programme in India: Implications for Scaling Up | Multinationals vs. Cooperatives: The Income and Efficiency Effects of Supply Chain Governance in India                                                |
| Year                                                                                        |                             | 2013                                                                                                                | 1997                                                                                                          | 2012                                                                                                  | 2004                                                                                                                                                                                                                      | 2003                                                                                                                                                | 2010                                                                                                                                                | 2010                                                                                                                                                                                                                                                                            | 2009                                                                                                                                                | 2011                                                                                                     | 2006                                                                                                                                                | 2011                                                                                                                                        | 2008                                                                                                                                                | 2011                                                                                                 | 2013                                                                                                                                                  |
| URL                                                                                         |                             | <a href="http://dx.doi.org/10.1111/j.1744-2976.2012.01258.x">http://dx.doi.org/10.1111/j.1744-2976.2012.01258.x</a> | <a href="http://oxfordindex.oup.com/view/10.2307/1244364">http://oxfordindex.oup.com/view/10.2307/1244364</a> | <a href="http://dx.doi.org/10.1108/20440831211272571">http://dx.doi.org/10.1108/20440831211272571</a> | <a href="http://www.jstor.org/discover/10.2307/4415148?uid=3739256&amp;uid=28&amp;uid=4&amp;sid=21103160454541">http://www.jstor.org/discover/10.2307/4415148?uid=3739256&amp;uid=28&amp;uid=4&amp;sid=21103160454541</a> | <a href="http://www.sciencedirect.com/science/article/pii/S0306919202000672">http://www.sciencedirect.com/science/article/pii/S0306919202000672</a> | <a href="http://www.sciencedirect.com/science/article/pii/S0305750X10000884">http://www.sciencedirect.com/science/article/pii/S0305750X10000884</a> | <a href="http://www.researchgate.net/publication/247782449_Horticulture_Wholesale_Trade_and_Governance_in_India_Evidence_from_Uttarakhand">http://www.researchgate.net/publication/247782449_Horticulture_Wholesale_Trade_and_Governance_in_India_Evidence_from_Uttarakhand</a> | <a href="http://www.sciencedirect.com/science/article/pii/S0306919208000778">http://www.sciencedirect.com/science/article/pii/S0306919208000778</a> | <a href="http://www.ncbi.nlm.nih.gov/pubmed/21809752">http://www.ncbi.nlm.nih.gov/pubmed/21809752</a>    | <a href="http://www.sciencedirect.com/science/article/pii/S0306919206000339">http://www.sciencedirect.com/science/article/pii/S0306919206000339</a> | <a href="http://www.emeraldinsight.com/doi/abs/10.1108/2044083111167155">http://www.emeraldinsight.com/doi/abs/10.1108/2044083111167155</a> | <a href="http://www.sciencedirect.com/science/article/pii/S0305750X08001095">http://www.sciencedirect.com/science/article/pii/S0305750X08001095</a> | <a href="http://dx.doi.org/10.5367/0a.2011.0033">http://dx.doi.org/10.5367/0a.2011.0033</a>          | <a href="http://onlinelibrary.wiley.com/doi/10.1111/1477-9552.12004/abstract">http://onlinelibrary.wiley.com/doi/10.1111/1477-9552.12004/abstract</a> |
| IFPRI Division                                                                              |                             | MTID/NDO                                                                                                            | MTID                                                                                                          |                                                                                                       |                                                                                                                                                                                                                           |                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                                                                                                                                 | MTID                                                                                                                                                |                                                                                                          |                                                                                                                                                     | DSGD                                                                                                                                        |                                                                                                                                                     |                                                                                                      |                                                                                                                                                       |
| Type of Publication                                                                         |                             | Journal Article                                                                                                     | Journal Article                                                                                               | Journal Article                                                                                       | Journal Article                                                                                                                                                                                                           | Journal Article                                                                                                                                     | Journal Article                                                                                                                                     | Journal Article                                                                                                                                                                                                                                                                 | Journal Article                                                                                                                                     | Journal Article                                                                                          | Journal Article                                                                                                                                     | Journal Article                                                                                                                             | Journal Article                                                                                                                                     | Journal Article                                                                                      | Journal Article                                                                                                                                       |
| Journal/Source of Publication                                                               |                             | Canadian Journal of Agricultural Economics/Revue Canadienne d'Agroéconomie 61 (1): 61–91                            | American Journal of Agricultural Economics 79 (5): 1471–1475                                                  | Journal of Agribusiness in Developing and Emerging Economies 2 (2): 92–114                            | Economic and Political Weekly 39 (4): 2457–2467                                                                                                                                                                           | Food Policy 28 (1): 13–27                                                                                                                           | World Development 38 (12): 1775–1787                                                                                                                | Journal of South-Asian Development 5 (1): 113–136                                                                                                                                                                                                                               | Food Policy 34 (1): 8–15                                                                                                                            | Revue Scientifique et Technique – Office International des Epizooties 30 (1): 31–49                      | Food Policy 31 (3): 216–227                                                                                                                         | Journal of Agribusiness in Developing and Emerging Economies 1 (2): 134–161                                                                 | World Development 36 (10): 1874–1890                                                                                                                | Outlook on Agriculture 40 (1): 89–96                                                                 | Journal of Agricultural Economics 64 (1): 217–244                                                                                                     |
|                                                                                             | Google Scholar              | 1                                                                                                                   | 11                                                                                                            | NA                                                                                                    | 122                                                                                                                                                                                                                       | 78                                                                                                                                                  | 28                                                                                                                                                  | 0                                                                                                                                                                                                                                                                               | 92                                                                                                                                                  | 3                                                                                                        | 15                                                                                                                                                  | 7                                                                                                                                           | 41                                                                                                                                                  | 0                                                                                                    | 2                                                                                                                                                     |
|                                                                                             | Page views Google Analytics | 37                                                                                                                  | 0                                                                                                             | NA                                                                                                    | NA                                                                                                                                                                                                                        | 4                                                                                                                                                   | NA                                                                                                                                                  | NA                                                                                                                                                                                                                                                                              | NA                                                                                                                                                  | NA                                                                                                       | 16                                                                                                                                                  | 37                                                                                                                                          | NA                                                                                                                                                  | 39                                                                                                   | 36                                                                                                                                                    |
| ISI                                                                                         | ISI number of citations     | 0                                                                                                                   | 3                                                                                                             | NA                                                                                                    | NA                                                                                                                                                                                                                        | NA                                                                                                                                                  | 9                                                                                                                                                   | 0                                                                                                                                                                                                                                                                               | 31                                                                                                                                                  | 2                                                                                                        | 2                                                                                                                                                   | NA                                                                                                                                          | 10                                                                                                                                                  | 0                                                                                                    | 0                                                                                                                                                     |
|                                                                                             | H index from the ISI Report | 0                                                                                                                   | 1                                                                                                             | NA                                                                                                    | NA                                                                                                                                                                                                                        | NA                                                                                                                                                  | 1                                                                                                                                                   | 0                                                                                                                                                                                                                                                                               | 1                                                                                                                                                   | 1                                                                                                        | 1                                                                                                                                                   | NA                                                                                                                                          | 1                                                                                                                                                   | 0                                                                                                    | 0                                                                                                                                                     |
|                                                                                             | Number of citations         | 0                                                                                                                   | 0                                                                                                             | 0                                                                                                     | NA                                                                                                                                                                                                                        | 4                                                                                                                                                   | 5                                                                                                                                                   | NA                                                                                                                                                                                                                                                                              | 16                                                                                                                                                  | NA                                                                                                       | 0                                                                                                                                                   | 0                                                                                                                                           | 10                                                                                                                                                  | NA                                                                                                   | 0                                                                                                                                                     |
| RePEC                                                                                       | RePEC downloads             | 5                                                                                                                   | 1                                                                                                             | 5                                                                                                     | NA                                                                                                                                                                                                                        | 25                                                                                                                                                  | 44                                                                                                                                                  | NA                                                                                                                                                                                                                                                                              | 103                                                                                                                                                 | NA                                                                                                       | 173                                                                                                                                                 | 12                                                                                                                                          | 82                                                                                                                                                  | NA                                                                                                   | 3                                                                                                                                                     |
|                                                                                             | RePEC abstract views        | 17                                                                                                                  | 4                                                                                                             | 25                                                                                                    | NA                                                                                                                                                                                                                        | 82                                                                                                                                                  | 124                                                                                                                                                 | NA                                                                                                                                                                                                                                                                              | 296                                                                                                                                                 | NA                                                                                                       | 403                                                                                                                                                 | 85                                                                                                                                          | 203                                                                                                                                                 | NA                                                                                                   | 9                                                                                                                                                     |

A further two articles look specifically at India's dairy industry. First, Rakotoarisoa and Gulati (2006) investigate how world dairy policy reforms (trade liberalization) would affect dairy production and trade in India and the competitiveness of its dairy industry. India has become the world largest milk producer but its dairy industry lacks world market access. The work shows that that India's dairy products lack export competitiveness, but with less distorted world dairy markets, India could be competitive and could emerge as a net exporter of whole milk powder, benefiting dairy industries and milk producers in India. The implications are primarily for trade policy: India's dairy industry could benefit from trade liberalization.

The second paper (Gupta and Roy 2012) provides an assessment of benefits to farmers from different models of vertical coordination in dairy. The authors document the functioning of cooperatives and changes resulting from increased competition. A field survey of two districts in Punjab provided data to quantify the benefits. The selection and participation of farmers was analyzed.

Key findings are that public sector enterprise has been surprisingly dynamic, as competition from the private sector has brought favorable changes. There is evidence of negative selection of farmers, implying that those who join dairy cooperatives would experience inferior outcomes outside a cooperative. There is no evidence of bias against small farmers by their herd size. The overriding policy implication is that the benefits from coordination should motivate policies. Additionally Gupta and Roy's finding that increased competition has fostered dynamism in the public sector has implications far beyond the dairy industry.

The first paper, published in *Food Policy*, has good impact indicators, particularly from Google and RePEc. The second paper, published in 2012, has yet to elicit much of a response as measured in research impact indicators.

Four papers focus on the interlinked areas of public-private partnerships, collective action, value chain structures and governance, and the income and efficiency effects when supply chain governance is operated by cooperatives or multinational companies. These papers fall into two sub-groups, the first of which is concerned with smallholder access to export markets:

Narrod et al. (2009) address in a multi-country study, which included India, the challenge of access to developed country food markets. As part of this study, they compare ways in which smallholder producers of fruits and vegetables in Kenya and India have coped with increased demands for food safety from their main export markets, which entails meeting stringent food safety requirements. The paper argues that innovative institutional arrangements are required to enable smallholders to remain competitive in such a system. In particular, public-private partnerships can play a key role in creating "farm to fork" linkages that can satisfy market demands for food safety while retaining smallholders in the supply chain. Further, organized producer groups monitoring their own food safety standards through collective action often become attractive to buyers who are looking for ways to ensure traceability and reduce transaction costs. Roy and Thorat (2008) look at a particular Indian case. They argue that, in spite of being the second largest horticultural producer in the world, India is a failed exporter mainly because of an inability to meet the food safety standards. They study a success story which they characterize as unique, *Mahagrapes*, a marketing partner to farmer cooperatives. Its success is attributed to a combination of collective

action and public-private partnerships. The results indicate that farmers who use *Mahagrapes* earn significantly higher income than they would with an alternative marketing option and also that smallholders face no bias in selection. The authors also conclude that the model can be scaled up.

Both papers have good impact indicators, this being indicative of a relatively high level of interest in the challenges of smallholder access to high-income markets. But two notes of caution are in order here: first, smallholder exports continue to be only a small part of the Indian HVA story, as the big picture is supplying the world's second largest domestic market, which is expanding. Second, this evaluator visited *Mahagrapes* and found an organization which could be better characterized as “hanging-in” rather than optimistically expanding. This casts some doubt on Roy and Thorat's conclusions concerning the longer-term sustainability of the *Mahagrapes* model. A senior private-sector observer interviewed in India thought that an alternative and more sustainable solution might lie in the involvement of India's corporate sector, perhaps supplying to both export and high-end modern retail in India.

The second sub-group comprises studies on supply chain governance by Minten et al. (2010) and Vandeplas, Minten, and Swinnen (2013). The 2010 piece reports on a case study of traditional wholesale markets for vegetables in the state of Uttarakhand. The study finds major governance problems and entrenched vested interests blocking needed reforms. It also finds that for horticulture wholesale markets marketing regulations are ineffective; there is widespread confusion on the roles of brokers and wholesalers; and very limited services are delivered in return for the money paid to brokers and wholesale market authorities. Licensing schemes and political muscle ensure that the system continues in its current form.

The authors argue that reform would require the development of closer vertical coordination that would bypass brokers. The 2013 piece examines the impact of multinational firms on the domestic agricultural sector by studying the operations of the biggest dairy company in the world (Nestlé) in India. Farmers who supply Nestle are compared with farmers who supply dairy products to other market channels: the informal sector and cooperatives. The authors find that farmers that supply informal channels are less efficient and earn lower profits per dairy animal than farmers supplying the cooperatives and Nestlé. Furthermore, farmers using the multinational channel are more efficient than farmers in the cooperative channel but equally profitable. Thus, there is no evidence that supplying the cooperative channel is more beneficial for local dairy farmers than supplying the multinational channel.

A final finding is that, overall, dairy productivity and profitability levels are low, with substantial scope for dairy development. The 2010 piece scores very low on impact, which is disappointing as this evaluator found that it presented a compelling argument. It could be that the difficulty is that it is in *The Journal of South-Asian Development*, a recent journal currently ranked 55/55 in its field. It is possible that it is not being picked up by some of the major databases. The second piece, published in 2013, appears on preliminary evidence to be attracting interest.

Two papers by Minten (2010) and Reardon and Minten (2011) are concerned with the development of modern retail in India, which is highly controversial.

- a. The 2010 paper is concerned with the impact of modern retail on basic food prices facing urban consumers, a matter presently not well understood. In a detailed case study of Delhi, modern retail is shown to emerge quickly, offering more labelled and branded food products and more choice than traditional markets. They find that modern retail sells basic foods mostly at the same or lower prices than traditional retail and might become an important contributor to improved urban food security.
- b. The 2011 article presents three “surprises” concerning modern food retail diffusion in India. First, modern retail has developed in three “waves,” with the first wave, government retail chains, starting in the 1960s/1970s; the second wave, cooperative retail chains, starting in the 1970s/1980s; and the third wave, private retail chains, starting in the 1990s/2000s. All three continue to coexist in the 2000s as segments of modern retail. Second, the rise of modern private retail in India in the past six years has been among the fastest in the world, growing at an annual average rate of 49 percent over that period and bouncing back to continued growth after a dip from the recent recession. The great majority of modern private retail has arisen in 2007–2010. Third, Indian private retail chain development has unique characteristics, being
  - driven by domestic capital investment;
  - “early” (measured by the usual international patterns) in its diversification into small formats; and
  - “early” in its penetration of small cities and even rural towns, of the food markets of the poor and lower-middle class, and of fresh produce retail.
 These unique factors have enabled the very rapid expansion of modern retail.
- c. The 2010 piece has good impact scores for the sub-field and was published in *World Development*. The second piece attracted good interest according to Google and RePEc but is invisible in ISI. The invisibility in ISI may be related to the status of the very new *Journal of Agribusiness in Developing and Emerging Economies*.

## Books and Chapters in Books

The list shown here has 14 entries (Table 2), but seven of these are contributions to a single collection: Joshi, Gulati, and Cummings’ 2007 edited collection: *Agricultural Diversification and Smallholders in South Asia*. This book contains 18 chapters, mainly case studies of countries or particular value chains. The material is predominantly about India, but also incorporates studies from Bangladesh, Nepal, Pakistan, and Sri Lanka. The final section of the book focuses on policy issues.

A clear “narrative of integrity” emerges from these book chapters, based on premises explored in the discussion of the journal literature. Within this narrative, the following two propositions have near-axiomatic status: first, diversification to HVA is a long-term trend which is likely to continue; and second, smallholders are playing a (or the) leading role in this diversification process and can be expected to continue to play this role if policies are supportive.

Some important details of this narrative are as follows:

- a. The Green Revolution was led by the “Three Is,”—Incentives, Institutions, and Investment—with the government playing the lead role in Investment and also

shaping and regulating Institutions. For smallholder-led HVA expansion the “Three Is” continue to be necessary, but most of the investment will be private and there will be a much larger role for private business in undertaking marketing services. The key question has changed from what it was in the days of the Green Revolution—*what should be done by the government?*—to *what should not be done by the government?*

- b. The institutional reform agenda breaks down into four areas:
  - building marketing institutions that promote vertical coordination, thereby lowering transactions costs and mitigating market risks for HVA;
  - opening the land market (lease markets should be freed) and providing credit;
  - reinvigoration of public-sector agricultural research; and
  - promotion of institutions to regulate food safety and quality.
- c. More broadly, and in line with other IFPRI work on India, the government should continue to develop the road network; reform the electric power sector; and continue to promote ICTs.

This compilation is an enormously helpful resource for researchers studying HVA in South Asia. The policy advice is somewhat general and is constrained by the need to be relevant to all South Asian countries, but undoubtedly there are elements of a narrative of integrity, which is key for policy influence. It seems reasonable to characterize this work as a solid resource for a researcher embarking on the development of policy advice, spiced with hints as to how a narrative for a particular country or sector might be developed.

The second major book, published in 2012, is *The Quiet Revolution in Staple Food Value Chains: Enter the Dragon, the Elephant, and the Tiger* by Reardon, Chen, Minten, and Adriano. This book has, as yet, received only modest interest according to Google and RePEc, and this is probably a function of it having been published only recently.<sup>2</sup> However, the book sets out to be provocative and “paradigm shifting” and in the opinion of this reviewer it is likely over time to attract considerable attention. This was also the view of a number of senior technical staff from international agencies who were interviewed for this study.

Some of the journal literature discussed earlier can be seen as contributing to the thinking of *The Quiet Revolution*. The account of the book below selects points from the Executive Summary, with a bias to findings about potatoes while filtering out some findings about the rice value chain. *The Quiet Revolution* is a study of changes in the structure and performance of domestic value chains in China, India, and Bangladesh. Modern and traditional retailers of rice and potato value chains were surveyed in key rural producing centers that serve the large urban centers: Beijing, Dhaka, and New Delhi. Rice is the main grain and potatoes the main vegetable staple. Fieldwork was undertaken after the food price hike of 2007–2008 and covered farmers, traders, millers, and cold storage facilities (CSFs). The study aimed to answer four questions:

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<sup>2</sup> Recent communication from the lead author confirms that recently there have been very large numbers of download directly from the IFPRI website.

**Table 2. Characteristics of referred books and chapters on HVA in India**

| IPFRI Referred Journal Publications on High Value Agriculture on India or Relevant to India |                             |                                                                                                                             |                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                                                                                                                                       |                                                                                                                                                                           |                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                                                                                           |                                                                                                                                                                                                                                                                                                                             |                                                                                                                   |                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Authors                                                                                     |                             | Joshi et al.                                                                                                                | Chadha and Gulati                                                                                                                                                                                 | Gulati, Joshi, and Cummings                                                                                                                                                                       | Gulati et al.                                                                                                                                                                         | Joshi and Gulati                                                                                                                                                          | Joshi, Gulati, and Cummings, eds                                                                                                                                                                  | Joshi, Gulati, and Cummings                                                                                                                                                                       | Joshi, Gulati, and BIRTHAL                                                                                                                                                                        | Rao et al.                                                                                                                                                                                        | BIRTHAL, Joshi, and Gulati                                                                                                                                                                        | Rashid, Gulati, and Cummings                                                                                                              | BIRTHAL, Joshi, and Narayanan                                                                                                                                                                                                                                                                                               | Kumar, Joshi, and Jongeneel                                                                                       | Reardon et al.                                                                                                                                                      |
| Title                                                                                       |                             | Agriculture Diversification in South Asia: Patterns, Determinants, and Policy Implications                                  | Performance of Agro-industry in India: Emerging Issues and Prospects                                                                                                                              | The Way Forward: Towards Accelerated Agricultural Diversification and Greater Participation of Smallholders                                                                                       | Growth in High-value Agriculture in Asia and the Emergence of Vertical Links with Farmers                                                                                             | From Plate to Plow: Agricultural Diversification in India                                                                                                                 | Agricultural Diversification and Smallholders in South Asia                                                                                                                                       | Agricultural Diversification in South Asia: Beyond Food Security                                                                                                                                  | Agricultural Diversification in India: Status, Nature and Pattern                                                                                                                                 | Agriculture Diversification towards High-value commodities and Role of Urbanisation in India                                                                                                      | Vertical Coordination in High-value Food Commodities: Implications for Smallholders                                                                                                               | From Parastatals to Private Trade: Lessons from Asian Agriculture                                                                         | Agricultural Diversification in India: Trends, Contribution to Growth, and Small Farmers' Participation                                                                                                                                                                                                                     | Structural Changes in the Indian Dairy Sector                                                                     | The Quiet Revolution in Staple Food Value Chains: Enter the Dragon, the Elephant, and the Tiger                                                                     |
| Year                                                                                        |                             | 2005                                                                                                                        | 2007                                                                                                                                                                                              | 2007                                                                                                                                                                                              | 2007                                                                                                                                                                                  | 2007                                                                                                                                                                      | 2007                                                                                                                                                                                              | 2007                                                                                                                                                                                              | 2007                                                                                                                                                                                              | 2007                                                                                                                                                                                              | 2007                                                                                                                                                                                              | 2008                                                                                                                                      | 2012                                                                                                                                                                                                                                                                                                                        | 2013                                                                                                              | 2012                                                                                                                                                                |
| URL                                                                                         |                             | <a href="http://www.ccrpr.ess.com/product/shn/978156022576">http://www.ccrpr.ess.com/product/shn/978156022576</a>           | <a href="http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia">http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia</a> | <a href="http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia">http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia</a> | <a href="http://www.cabi.org/cabebooks/ebook/20073072368">http://www.cabi.org/cabebooks/ebook/20073072368</a>                                                                         | <a href="http://www.ifpri.org/publication/dragon-and-elephant">http://www.ifpri.org/publication/dragon-and-elephant</a>                                                   | <a href="http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia">http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia</a> | <a href="http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia">http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia</a> | <a href="http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia">http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia</a> | <a href="http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia">http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia</a> | <a href="http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia">http://www.ifpri.org/publication/agricultural-diversification-and-smallholders-south-asia</a> | <a href="http://www.ifpri.org/sites/default/files/publications/bso.pdf">http://www.ifpri.org/sites/default/files/publications/bso.pdf</a> | <a href="http://www.worldcat.org/title/transforming-indian-agriculture-india-2040-productivity-markets-and-institutions/odc/812122315&amp;referer=brief_results">http://www.worldcat.org/title/transforming-indian-agriculture-india-2040-productivity-markets-and-institutions/odc/812122315&amp;referer=brief_results</a> | <a href="http://www.fao.org/docrep/012/i3166e/i3166e00.pdf">http://www.fao.org/docrep/012/i3166e/i3166e00.pdf</a> | <a href="http://www.ifpri.org/publication/quiet-revolution-staple-food-value-chains">http://www.ifpri.org/publication/quiet-revolution-staple-food-value-chains</a> |
| Type of Publication                                                                         |                             | Book Chapter                                                                                                                | Book Chapter                                                                                                                                                                                      | Book Chapter                                                                                                                                                                                      | Book Chapter                                                                                                                                                                          | Book Chapter                                                                                                                                                              | Book                                                                                                                                                                                              | Book Chapter                                                                                                                                                                                      | Book Chapter                                                                                                                                                                                      | Book Chapter                                                                                                                                                                                      | Book Chapter                                                                                                                                                                                      | Brief                                                                                                                                     | Book Chapter                                                                                                                                                                                                                                                                                                                | Book Chapter                                                                                                      | Book                                                                                                                                                                |
| Journal/ Source of Publication                                                              |                             | In Economic reforms and food security: The impact of trade and technology in South Asia, Babu and Gulati (eds), pp. 259-287 | In Agricultural diversification and smallholders in South Asia, Joshi, Gulati, and Cummings (eds), ch.12, pp. 349-384. New Delhi, India: Academic Foundation.                                     | In Agricultural diversification and smallholders in South Asia, Joshi, Gulati, and Cummings (eds), ch.20, pp. 603-621. New Delhi, India: Academic Foundation.                                     | In Global supply chains, standards and the poor: how the globalization of food systems and standards affects rural development and poverty, Swinnen (ed), 91-108, London: CABI Press. | In The dragon and the elephant: Agricultural and rural reforms in China and India, Gulati and Fan (eds), ch.18, pp.384-402. Baltimore, MD: Johns Hopkins University Press | New Delhi, India: Academic Foundation                                                                                                                                                             | In Agricultural diversification and smallholders in South Asia, Joshi, Gulati, and Cummings (eds), ch.2, pp. 47-86. New Delhi, India: Academic Foundation.                                        | In Agricultural diversification and smallholders in South Asia, Joshi, Gulati, and Cummings (eds), ch.7, pp. 219-242. New Delhi, India: Academic Foundation.                                      | In Agricultural diversification and smallholders in South Asia, Joshi, Gulati, and Cummings (eds), ch.8, pp. 243-270. New Delhi, India: Academic Foundation.                                      | In Agricultural diversification and smallholders in South Asia, Joshi, Gulati, and Cummings (eds), ch.14, pp. 405-440. New Delhi, India: Academic Foundation.                                     | Issue Brief 50. Washington, DC: IFPRI                                                                                                     | In Transforming Indian agriculture-India 2040: Productivity, markets, and institutions, Ferrel (ed), pp. 89-126. New Delhi, India: SAGE Publications                                                                                                                                                                        | In Asian livestock Challenges, opportunities and the response, Ahuja (ed), pp. 513-73. Rome, Italy: FAO           | Mandaluyong City, Philippines: Asian Development Bank                                                                                                               |
|                                                                                             | Google                      | 2                                                                                                                           | NA                                                                                                                                                                                                | 8                                                                                                                                                                                                 | 135                                                                                                                                                                                   | 0                                                                                                                                                                         | 2                                                                                                                                                                                                 | 8                                                                                                                                                                                                 | 7                                                                                                                                                                                                 | NA                                                                                                                                                                                                | 23                                                                                                                                                                                                | 24                                                                                                                                        | NA                                                                                                                                                                                                                                                                                                                          | 0                                                                                                                 | 16                                                                                                                                                                  |
|                                                                                             | Page views                  | 4                                                                                                                           | 0                                                                                                                                                                                                 | 1                                                                                                                                                                                                 | 13                                                                                                                                                                                    | 3                                                                                                                                                                         | 5                                                                                                                                                                                                 | 5                                                                                                                                                                                                 | 3                                                                                                                                                                                                 | NA                                                                                                                                                                                                | 7                                                                                                                                                                                                 | 10                                                                                                                                        | 35                                                                                                                                                                                                                                                                                                                          | 12                                                                                                                | 88                                                                                                                                                                  |
| ISI                                                                                         | ISI number of citations     | NA                                                                                                                          | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                    | NA                                                                                                                                                                        | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                        | NA                                                                                                                                                                                                                                                                                                                          | NA                                                                                                                | NA                                                                                                                                                                  |
|                                                                                             | H index from the ISI Report | NA                                                                                                                          | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                    | NA                                                                                                                                                                        | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                        | NA                                                                                                                                                                                                                                                                                                                          | NA                                                                                                                | NA                                                                                                                                                                  |
|                                                                                             | Number of citations         | NA                                                                                                                          | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                    | NA                                                                                                                                                                        | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | 9                                                                                                                                         | NA                                                                                                                                                                                                                                                                                                                          | NA                                                                                                                | NA                                                                                                                                                                  |
| RePEC                                                                                       | RePEC downloads             | NA                                                                                                                          | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                    | NA                                                                                                                                                                        | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | 72                                                                                                                                        | NA                                                                                                                                                                                                                                                                                                                          | NA                                                                                                                | NA                                                                                                                                                                  |
|                                                                                             | RePEC abstract views        | NA                                                                                                                          | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                    | NA                                                                                                                                                                        | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | NA                                                                                                                                                                                                | 151                                                                                                                                       | NA                                                                                                                                                                                                                                                                                                                          | NA                                                                                                                | NA                                                                                                                                                                  |

- a. Are staple value chains transforming structurally?
- b. Is the conduct of staple value chain actors transforming?
- c. Is the performance of staple value chains leading to the inclusion of small-scale farmers, small-scale midstream actors, and workers?
- d. Is the performance leading—all else being equal—to lower food costs for consumers?

The findings indicate that a transformational modernization is under way in these staple food chains, albeit at different speeds. In the rice value chain transformation, the leader is China, which appears to be changing faster or to have transformed further, especially in the remarkable development of its rice milling sector. In the potato value chain, India is taking the lead, with the spectacular rise of potato CSFs in Agra.

This transformation is a “quiet revolution,” as these changes are grassroots in nature. Important drivers of the transformation of rice and potato value chains have been the increase in scale and change in technology of rice milling and potato storage. On the demand side, there was a surge in the demand for potatoes and other vegetables with increases in incomes and in megacities’ populations. This created, in turn, demand for an off-season supply of potatoes and for higher-quality rice. On the supply side, the number of medium–large mills with modernized technologies and of modern CSFs has increased rapidly. Both the diffusion of CSFs and the modernization of mills have been favored by direct government subsidies as well as indirect government support through investments in road improvement and the installation of energy grids crucial to milling and cooling.

Specific features of the transformation, grouped by the relevant value-chain segment, are as follows:

- a. In the upstream segments of the value chains, although there is great heterogeneity in farm sizes and distribution of non-land assets, all farmers are commercializing as they engage in nonfarm labor markets and use more external inputs per hectare. Markets for farm machines, water, and land rental are vibrant. Armed with mobile phones, farmers are more informed of what, how, and to whom to sell.
- b. There has been a rapid spread of modern potato CSFs, especially in India, but also in Bangladesh. Farmers rapidly took up using cold storage and dropped their traditional storage methods. Massive investments went into CSFs of all sizes. The scale has been rising over time, and a process of consolidation is occurring. Investment in CSFs has been encouraged by partial government subsidies and by government investment in the electricity grid. Most of the trading has shifted to the CSFs from the government-mandated wholesale markets. Farmers, even small-scale ones, ubiquitously use the CSFs and have gained significant price advantages from storing in CSFs.
- c. Consumers have gained the advantage of greater year-round access to potatoes. The surveys found that two-thirds of the potatoes sold in Delhi and Dhaka had been cold stored.
- d. In the downstream segments, supermarkets have penetrated urban rice retail, most deeply and widely in Beijing, where they dominate about half the market. Delhi supermarkets have only started to penetrate the rice market, accounting

for about 7 percent of sales. In Bangladesh, supermarkets have barely started to enter the market. However, supermarkets have been slower to penetrate the urban market for potatoes, as well as for other fresh produce (a lag that follows international patterns).

Different government roles have been important in enabling and at times providing incentives for the transformation. The government has done this through research and development, distribution of seeds, and a variety of investments: in irrigation canal, road, and railway systems; rural wholesale markets; power grids; and mobile phone communication grids in the 1990s and 2000s, all being essential to the transformation in the midstream that the study observed. The government also invested in extension.

Government subsidies have had important effects, but evidence of accessibility to and the impact of the services is mixed. Results show that sometimes the subsidies were not going to the target beneficiaries. For example, tubewell, fertilizer, credit, and seed subsidies in India went mostly to medium and large farmers, with little going to marginal farmers.

The book urges that much more emphasis should be given to research on “the midstream,” pointing to the importance of farm input supply chains upstream from farmers and of midstream and downstream postharvest activities such as logistics and wholesale, cold storage and milling, and retailing. Little empirical research has been done on these areas but is needed for the policy debate and the systematic evaluation of policy impacts on food security. There needs to be a concerted public policy debate on how to enable and encourage input supply chains to modernize and on how to get midstream and downstream businesses to invest in upgrading equipment and expansion.

Turning to debates on strategies for growth and food security, the book again emphasizes the importance of the midstream. The off-farm components of the value chains are as important as what occurs on farms. Even for staples, they account for about 40 percent of the total margins in the rice chain and 36 percent in the potato chain. Debates in the Asian region tend to focus on farm yields. But the productivity of the midstream—processing, storage, and distribution—merits equal weight in research agendas with the productivity of smallholder farming.

Finally, a provocative and salutary aspect of the research approach for *The Quiet Revolution* was the solicitation of “expert” opinion about the main problems of the rice and potato value chains and the comparison with the realities brought out by the research. In general, experts were woefully out of date; for example, they failed to comprehend the rapid decline of tied credit and long complex supply chains (disintermediation) and their replacement with arrangements that involved fewer actors between farmer and consumer.

## **Research Reports and Briefs**

Providing a survey of these research outputs risks repetition of the earlier discussion, as the research reports are frequently the basis for the journal articles and books reviewed earlier. However, this much can be said that about the research reports:

- a. They are presented in a consistent format, so the reader, almost certainly a fellow member of the research community, knows what to expect.
- b. As noted above, briefs can attract considerable attention, including in the research databases. It makes sense for IFPRI to consider carefully how to compress the time between the appearance of a research report and the brief that summarizes this research.

Finally, it is fascinating to note that by far the strongest impact scores were achieved by a short brief: *From Parastatals to Private Trade: Lessons from Asian Agriculture*. The relatively high RePEc score suggests significant interest in the work by economists. The conclusion here is that short “narratives of integrity” can have more impact than longer and more detailed pieces.

## Findings from Interviews

Views were solicited during interviews with senior government officials and advisors, national and international researchers in and on India, staff and former staff of international finance institutions, farmers involved in contract-farming arrangements, and senior staff of a range of both purely private and cooperative marketing companies. Local wholesale and retail markets were visited and this included discussions with commission agents.

There is little doubt that IFPRI is seen as the premier non-Indian foreign research institute working on problems of agriculture and food in India. Some interviewees referred to the “era of John Mellor” (an emphasis on cereals/food grains) and the recent era of “Ashok Gulati” (emphasis on high-value agriculture, agricultural diversification, dietary changes, poverty, nutrition, and so on).

In the case of HVA, informed participants in Indian policy debates thought that IFPRI’s work on diet diversification and the increasing importance of vegetables, fruits, and livestock products (especially milk) stimulated serious thinking about policies to promote HVA. The result of this thinking has been encouragement of new institutional arrangements, such as producer companies and contract farming undertaken by public and private organizations. It is possible to imagine a counter-factual scenario under which the private sector could have been excluded from contract farming. IFPRI research showed that the presence of the private sector appeared, through competition, to stimulate better performance from public and cooperative organizations.

All interviewees stressed the multiple influences on policies in India, including crude political economy and different philosophical traditions. For this reason the consensus of respondents can perhaps be best expressed by saying that IFPRI was a stimulating, forward-looking, and modernizing influence in Indian policy debates, but it is impossible to attribute any particular change in policy to IFPRI.

Earlier in this study the rapid growth of modern food retailing was discussed. This is a very controversial area in India because of worries that it will exclude small farmers and massively reduce employment in retail trade and connected market chains. Given India’s size and its economic and agroecological diversity, modern retail will likely evolve at varying speeds and formats in different regions. However, there seem to be large gaps

in understanding of what is actually happening. This an area in which a massive research effort is required.

The IFPRI studies reviewed earlier will help with concepts and evidence, but they are still case studies. It is heartening that IFPRI's India office is engaging doctoral students to assemble as much evidence as can be gleaned from across India to create a national picture of trends and their consequences. In summary, informants who knew about IFPRI's work on modern retail were favorably impressed. IFPRI is well positioned to have a positive influence on future debates.

There was discussion of IFPRI's influence on the national agricultural research system. The consensus view of interviewees was that IFPRI has helped provide the case for reform, one feature of which needs to be some switch of resources from grains to HVA. But the research system was thought to be unresponsive and also subject to political pressures to remain strongly focused on grains. One senior private-sector discussant found institutional support for HVA to be weak but remarked that good quality scientists in the public sector could be engaged in their private capacities to work on HVA technical problems.

### **Arriving at an Assessment of IFPRI's Work on HVA in India**

To recall some methodological points made earlier in this study: the user encounter is rarely observed and challenging to reconstruct. Further, many policymakers will not have an accurate understanding of the intellectual and institutional origins of those narratives that have shaped their outlook and actions. In any case, it is likely that there will have been multiple inputs into the formation of these narratives. Further, policymakers and senior advisers may feel inhibited in ascribing a strong role in shaping their thinking to an international organization. The result is that the evaluator may find it easier to come to a negative rather than a positive conclusion on policy impact, as the evidence for impact is rarely likely to be definitive.

With these points in mind, some responses to the questions posed in this study's TORs can be provided:

*Did IFPRI have the right research strategy for the period of study? Was it focused on the right issues at the right time?*

Issues studied included projections of HVA production and consumption; value chain performance and governance; institutional arrangements to support producers and marketing; a drive to collect and analyze empirical data concerning the extent of possible smallholder exclusion; food safety and traceability; the international competitiveness of dairy and the implications for trade liberalization; and the challenges of fruit exports to HVA markets; the importance of undertaking more research in "the midstream"; and emerging trends in modern retail and their consequences for producers, consumers, and actors in existing marketing chains.

The conclusion is that, for the most part, IFPRI was focused on the right issues. A possible criticism is that perhaps there was too much focus on the export sector, given its limited role relative to the domestic market. Additionally, IFPRI's studies

of modern food retail in India lead the field, but in retrospect it would have been helpful if they had been initiated some years earlier.

*Was IFPRI a leader in the field?*

The evidence from interviews and reviews of the volume and status of published output make it clear that IFPRI was a leader.

*Did the research team(s) use the most relevant approaches and methods?*

IFPRI's quantitative work is generally undertaken well, using appropriate methods. The numbers of journal publications on HVA with an empirical component is testament to this. If there is to be a criticism here, it might be that there has been too much focus on case studies with insufficient attention to meta-studies, so while IFPRI work is sometimes interesting and suggestive, the reader does not know how typical each case was.

*Has IFPRI been successful in sensitizing/influencing the policies of governments, agribusiness, academia, civil society, and the international donor community on HVA issues?<sup>3</sup>*

There is abundant evidence of IFPRI having some influence on most of these sectors, although, in the Indian case, agribusiness and perhaps civil society should arguably be excluded, for different reasons. The small number of major private businesses consulted for this study did not seem to be aware of IFPRI's work but agreed with the main (strategic) findings of IFPRI HVA work, when told of them.

*What has been the impact of the HVA policies that IFPRI influenced?*

This is a very difficult question to answer. What can be said is that at various levels of government in India, there has been a reaction to the marked diversification of production and consumption towards HVA. This reaction includes some elements of support: for example, the rapid development of modern retail is underway and—while not having much enthusiasm for this development—the government has not killed it. Some value chains have evolved fast, with rapid disintermediation, and IFPRI's studies of potatoes provide the key example of evolution. Nevertheless, HVA may be developing largely because of its fundamental economic logic and without much government enthusiasm. Government support appears at best slow and grudging: perhaps the potato market transformed because potatoes self-evidently needed cold storage and the government could not build enough cold storage facilities? In contrast to this largely autonomous development of the potato value chain, the government is currently extending its role in grain marketing and extending consumer subsidies for grain.

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<sup>3</sup> A reviewer of this report with strong India experience raised the point that there has been no discussion of the role of networks (for example, SAI and PAANSA) that link policy advisors, policymakers, private sector actors, and professionals. These are thought to have been important vehicles for dissemination of IFPRI findings. Unfortunately these networks were not mentioned to the author during fieldwork in India. Thus, in this evaluation report, the effectiveness of these networks is an open question.

Local marketing arrangements for fruits and vegetables remain in many cases highly unsatisfactory. Aspects of these unsatisfactory marketing arrangements include poor handling of produce and unjustified rents going to market intermediaries who have privileged positions in physical market places where infrastructure is often grossly inadequate. Put simply, these intermediaries control choke-points in a creaking government-regulated system and thereby gain effective margins that are much higher than regulated margins.

In summary, IFPRI's advice on HVAs has been consistent with smallholder-dominated agricultural sectors' ongoing responses to the evolution of consumer demand and to global trends in value chains. Further, IFPRI papers have argued that these ongoing responses are not anti-poor: there is scope for a modernization model that benefits poorer producers and low-income consumers, as well as other actors. But, on balance, government policies have worked against the actions of smallholder farmers. Smallholder agriculture faces a huge and critical task of modernization, which requires different policies. The opportunity for IFPRI is to continue to develop evidence-based narratives of integrity to help policy makers understand and then support needed reform. A challenge for IFPRI is to exercise ingenuity and imagination in the promotion of these narratives.

### **Suggestions for Improvement**

At this stage, a few policy recommendations can be offered. These recommendations can be further developed once other country case studies have been considered.

1. The emphasis by Reardon and his co-authors on making research on midstream developments a higher priority is highly persuasive.
2. More emphasis and thought needs to be put into communications. As noted earlier, IFPRI may have good reasons to avoid appearing as politically partisan. Nevertheless, the bulk of IFPRI's communications consists of research findings, which will be mainly of interest to other researchers. If it wants to have greater impact, IFPRI cannot assume that others will absorb its research findings and use these to construct narratives of integrity to influence policy. IFPRI should devote more resources to constructing and disseminating narratives that are absorbable by policymakers. Of course these must be evidence based and updated in line with the underlying research conducted by IFPRI and others.
3. The review of IFPRI research output in this paper suggested that there may be drawbacks to publishing in new and as yet not well recognized journals, although support for new journals may be generous and commendable. The implication is that IFPRI should make major efforts to get as many of its key research results into journals as possible with good impact factors relative to the field.
4. IFPRI should think about how to strengthen its links with the private sector. Of course, "private sector" could cover everything from smallholders to large Indian conglomerates and obviously each category requires a different approach. What can be seen in India is that segments of the value chain are being transformed by the actions of medium and large businesses. IFPRI needs to get closer to these, to understand them better and to persuade them to develop in directions that are pro-poor.

### **3. THE AFRICA CASE**

#### **Selection of Literature for Review**

IFPRI drew this reviewer's attention to 48 research outputs of potential relevance to HVA in Africa. All of these were surveyed, and about half were found to contain substantial relevant analysis. This is not to imply that the excluded work is not of merit: the excluded work included a collection of country and regional models of the possible impact of avian influenza; simulations of trade liberalizations; and development strategy studies in which the agricultural sector was hardly disaggregated.

Not excluded but given less emphasis in this evaluation study is IFPRI's work on the global "livestock revolution," undertaken as part of the "GRP27—ILRI joint program," that concerns modelling global demand. This demand modelling shows that policy advisers and policymakers should anticipate a strong increase in demand for animal protein as incomes rise, an increase with implications for domestic production and trade. This is an important contextual point for IFPRI work on smallholder dairy development in Africa south of the Sahara, which is a major theme examined in this evaluation study.

Of the 24 texts selected for appraisal, about half were research reports and the remainder journal articles that largely summarized the research reports. This eventually boiled down to a list of 12 journal articles, published between 1995 and 2012 and shown in Table 3. Generally, each journal piece had an associated research report, which had appeared about a year or so earlier.

This reviewer found the research report format more satisfying. The research reports were more timely; consistently well edited (with the result that large sections of text tended to reappear unaltered in the journal text); and longer, with more context and detail, which can be essential for appreciating the wider relevance of findings and policy recommendations. Nevertheless, the journal article is the prestige format, one which seems to offer an expert check on quality and relevance beyond IFPRI and increases the likelihood of the work being noticed and cited. For some readers who are involved in research, an initial reading of a journal piece might lead to the underlying research report.

#### **Summarizing the IFPRI Africa HVA Literature**

This section identifies key research themes, findings, and policy implications of this selection, from 1995 to 2012, of IFPRI literature on HVA in Africa south of the Sahara. Later in this evaluation study, these themes, findings, and policy implications are compared with the research and policy priorities that emerged from this reviewer's visit to Kenya in May 2014. It is worth noting that the countries which are most mentioned in the IFPRI literature on HVA in Africa south of the Sahara are Kenya, Ethiopia, and Madagascar.

Chronologically, the first five publications in the series are by Delgado and colleagues: two of these were authored by Delgado alone and three authored by Delgado and others (shown in Table 3). These five publications are HVA AF 1, HVA AF 2, HVA AF 3, HVA AF 6, and HVA AF 12.

**Table 3. IFPRI journal publications on high-value agriculture in Sub-Saharan Africa**

| Reference#                        | HVA AF 1                                                                                                            | HVA AF 2                                                                                                                                                               | HVA AF 3                                                                                                      | HVA AF 4                                                                                                                                            | HVA AF 5                                                                                                                                                                                                                                                                                                                                                                        | HVA AF 6                                                                                                                                            | HVA AF 7                                                                                                                                                                | HVA AF 8                                                                                                                                                                | HVA AF 9                                                                                                                                            | HVA AF 10                                                                                                                                           | HVA AF 11                                                                                                                                                         | HVA AF 12                                                                                                                                           |     |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Authors                           | Delgado                                                                                                             | Delgado                                                                                                                                                                | Delgado, Crosson, and Courbois                                                                                | Francesconi, Heerink, and D'Haese                                                                                                                   | Francesconi and Ruben                                                                                                                                                                                                                                                                                                                                                           | Holloway et al.                                                                                                                                     | Maertens, Minten, and Swinnen                                                                                                                                           | Minten, Randrianarison, and Swinnen                                                                                                                                     | Minten, Randrianarison, and Swinnen                                                                                                                 | Narrod et al.                                                                                                                                       | Okello, Narrod, and Roy                                                                                                                                           | Staal, Delgado, and Nicholson                                                                                                                       |     |
| Title                             | Agricultural Diversification and Export Promotion in Sub-Saharan Africa                                             | Sources of Growth in Smallholder Agriculture in Sub-Saharan Africa: The Role of Vertical Integration of Smallholders with Processors and Marketers of High-value Items | The Impact of Livestock and Fisheries on Food Availability and Demand in 2020                                 | Evolution and Challenges of Dairy Supply Chains: Evidence from Supermarkets, Industries and Consumers in Ethiopia                                   | The Hidden Impact of Cooperative Membership on Quality Management: A Case Study from the Dairy Belt of Addis Ababa                                                                                                                                                                                                                                                              | Agro-industrialization through Institutional Innovation: Transactions Costs, Cooperatives and Milk-Market Development in the East-African Highlands | Modern Food Supply Chains and Development: Evidence from Horticulture Export Sectors in Sub-Saharan Africa                                                              | Spillovers from High-Value Agriculture for Exports on Land Use in Developing Countries: Evidence from Madagascar                                                        | Global Retail Chains and Poor Farmers: Evidence from Madagascar                                                                                     | Public-Private Partnerships and Collective Action in High-Value Fruit and Vegetable Supply Chains                                                   | Export Standards, Market Institutions and Smallholder Farmer Exclusion from Fresh Export Vegetable High-Value Chains: Experiences from Ethiopia, Kenya and Zambia | Smallholder Dairying under Transactions Costs in East Africa                                                                                        |     |
| Year                              | 1995                                                                                                                | 1999                                                                                                                                                                   | 1997                                                                                                          | 2010                                                                                                                                                | 2012                                                                                                                                                                                                                                                                                                                                                                            | 2000                                                                                                                                                | 2012                                                                                                                                                                    | 2007                                                                                                                                                                    | 2009                                                                                                                                                | 2009                                                                                                                                                | 2011                                                                                                                                                              | 1997                                                                                                                                                |     |
| URL                               | <a href="ftp://ftp.cgiar.org/Ifpri/Karl/Delgado_FP_1995.pdf">ftp://ftp.cgiar.org/Ifpri/Karl/Delgado_FP_1995.pdf</a> | <a href="http://www.ifpri.org/sites/default/files/publications/delgado99_01.pdf">http://www.ifpri.org/sites/default/files/publications/delgado99_01.pdf</a>            | <a href="http://oxfordindex.oup.com/view/10.2307/1244364">http://oxfordindex.oup.com/view/10.2307/1244364</a> | <a href="http://www.sciencedirect.com/science/article/pii/S0306919209000578">http://www.sciencedirect.com/science/article/pii/S0306919209000578</a> | <a href="http://www.jeodonline.com/sites/jeodonline.com/files/articles/2012/h2/21/jeodfrancesconirubenthehiddenimpactofcooperativemembershiponqualitymanagementcasesstudyfromthedairy.pdf">http://www.jeodonline.com/sites/jeodonline.com/files/articles/2012/h2/21/jeodfrancesconirubenthehiddenimpactofcooperativemembershiponqualitymanagementcasesstudyfromthedairy.pdf</a> | <a href="http://dx.doi.org/10.1016/S0169-5150(00)00089-X">http://dx.doi.org/10.1016/S0169-5150(00)00089-X</a>                                       | <a href="http://onlinelibrary.wiley.com/doi/10.1111/j.1462-7679.2012.00585.x/abstract">http://onlinelibrary.wiley.com/doi/10.1111/j.1462-7679.2012.00585.x/abstract</a> | <a href="http://onlinelibrary.wiley.com/doi/10.1111/j.1574-0862.2007.00273.x/abstract">http://onlinelibrary.wiley.com/doi/10.1111/j.1574-0862.2007.00273.x/abstract</a> | <a href="http://www.sciencedirect.com/science/article/pii/S0305750X0900134X">http://www.sciencedirect.com/science/article/pii/S0305750X0900134X</a> | <a href="http://www.sciencedirect.com/science/article/pii/S0306919208000778">http://www.sciencedirect.com/science/article/pii/S0306919208000778</a> | <a href="http://dx.doi.org/10.5539/jas.v3n4p188">http://dx.doi.org/10.5539/jas.v3n4p188</a>                                                                       | <a href="http://www.sciencedirect.com/science/article/pii/S0305750X96001386">http://www.sciencedirect.com/science/article/pii/S0305750X96001386</a> |     |
| IFPRI Division                    | MTID                                                                                                                | MTID                                                                                                                                                                   | MTID                                                                                                          | DSGD                                                                                                                                                | DSGD                                                                                                                                                                                                                                                                                                                                                                            | MTID                                                                                                                                                | DSGD                                                                                                                                                                    | DSGD                                                                                                                                                                    | DSGD                                                                                                                                                | MTID                                                                                                                                                | MTID                                                                                                                                                              | MTID                                                                                                                                                |     |
| Type of Publication               | Journal Article                                                                                                     | Journal Article                                                                                                                                                        | Journal Article                                                                                               | Journal Article                                                                                                                                     | Journal Article                                                                                                                                                                                                                                                                                                                                                                 | Journal Article                                                                                                                                     | Journal Article                                                                                                                                                         | Journal Article                                                                                                                                                         | Journal Article                                                                                                                                     | Journal Article                                                                                                                                     | Journal Article                                                                                                                                                   | Journal Article                                                                                                                                     |     |
| Journal/<br>Source of Publication | <i>Food Policy</i> 20(3): 225–243                                                                                   | <i>Agrekon (Journal of the Agricultural Economics Association of South Africa)</i> 38 (Special Issue): 165–190                                                         | <i>American Journal of Agricultural Economics</i> 79 (5): 1471–1475                                           | <i>Food Policy</i> 35 (1): 60–68                                                                                                                    | <i>Journal of Entrepreneurial and Organizational Diversity</i> 1 (1): 85–103                                                                                                                                                                                                                                                                                                    | <i>Agricultural Economics</i> 23 (3): 279–288                                                                                                       | <i>Development Policy Review</i> 30 (4): 473–497                                                                                                                        | <i>Agricultural Economics</i> 37 (2–3): 265–275                                                                                                                         | <i>World Development</i> 37 (11): 1728–1741                                                                                                         | <i>Food Policy</i> 34 (1): 8–15                                                                                                                     | <i>Journal of Agricultural Science</i> 3 (4): 188–195                                                                                                             | <i>World Development</i> 25 (5): 779–794                                                                                                            |     |
| Google                            | Google Scholar                                                                                                      | 51                                                                                                                                                                     | 112                                                                                                           | 11                                                                                                                                                  | 13                                                                                                                                                                                                                                                                                                                                                                              | 0                                                                                                                                                   | 184                                                                                                                                                                     | 9                                                                                                                                                                       | 14                                                                                                                                                  | 206                                                                                                                                                 | 92                                                                                                                                                                | 5                                                                                                                                                   | 183 |
|                                   | Page views<br>Google Analytics                                                                                      | NA                                                                                                                                                                     | 3                                                                                                             | 0                                                                                                                                                   | 0                                                                                                                                                                                                                                                                                                                                                                               | 9                                                                                                                                                   | NA                                                                                                                                                                      | 23                                                                                                                                                                      | 6                                                                                                                                                   | 1                                                                                                                                                   | NA                                                                                                                                                                | NA                                                                                                                                                  | 0   |
| ISI                               | ISI number of Citations                                                                                             | 17                                                                                                                                                                     | NA                                                                                                            | 3                                                                                                                                                   | 4                                                                                                                                                                                                                                                                                                                                                                               | NA                                                                                                                                                  | NA                                                                                                                                                                      | 3                                                                                                                                                                       | 7                                                                                                                                                   | 47                                                                                                                                                  | 31                                                                                                                                                                | NA                                                                                                                                                  | 50  |
|                                   | H index from the ISI Report                                                                                         | 1                                                                                                                                                                      | NA                                                                                                            | 1                                                                                                                                                   | 1                                                                                                                                                                                                                                                                                                                                                                               | NA                                                                                                                                                  | NA                                                                                                                                                                      | 1                                                                                                                                                                       | 1                                                                                                                                                   | 1                                                                                                                                                   | 1                                                                                                                                                                 | NA                                                                                                                                                  | A   |
|                                   | Number of citations                                                                                                 | 12                                                                                                                                                                     | NA                                                                                                            | 0                                                                                                                                                   | 1                                                                                                                                                                                                                                                                                                                                                                               | 0                                                                                                                                                   | 42                                                                                                                                                                      | 1                                                                                                                                                                       | 6                                                                                                                                                   | 31                                                                                                                                                  | 16                                                                                                                                                                | NA                                                                                                                                                  | 20  |
| RePEc                             | RePEc down-loads                                                                                                    | 92                                                                                                                                                                     | NA                                                                                                            | 1                                                                                                                                                   | 28                                                                                                                                                                                                                                                                                                                                                                              | 4                                                                                                                                                   | 50                                                                                                                                                                      | 19                                                                                                                                                                      | 47                                                                                                                                                  | 92                                                                                                                                                  | 103                                                                                                                                                               | NA                                                                                                                                                  | 87  |
|                                   | RePEc abstract views                                                                                                | 253                                                                                                                                                                    | NA                                                                                                            | 4                                                                                                                                                   | 120                                                                                                                                                                                                                                                                                                                                                                             | 11                                                                                                                                                  | 119                                                                                                                                                                     | 31                                                                                                                                                                      | 127                                                                                                                                                 | 265                                                                                                                                                 | 296                                                                                                                                                               | NA                                                                                                                                                  | 175 |

HVA AF 1 (Delgado 1995) and HVA AF 2 (Delgado 1999) are concerned with agricultural diversification, sources of growth in smallholder agriculture, export promotion, and drivers of vertical integration. An understanding of issues related to vertical integration is important: all five publications seek to understand determinants of observed market structures in order to suggest reforms and interventions that might influence the development of more smallholder-inclusive value chains. The analytical framework in HVA AF 1 and HVA AF 2 consists of a focus on transactions costs, applying concepts from institutional economics. This is done with clarity, and so both pieces can be considered as early and convincing applications of institutional economics to problems of African smallholder development.

Delgado justified the focus on transactions costs because these are high for smallholders, who often face weak or missing markets. HVA AF 2 goes into more detail on the general and the commodity-specific transaction costs challenges, including the low bargaining power of farmers producing perishables; difficulties in labor supervision for commodities where skilled and well-motivated care is required to ensure quality; missing or weak markets for credit for inputs and investment; a perception that economies of scale in processing shift market power to processors; and asymmetry in information.

The papers point to the need for institutions to promote vertical integration to reduce costs. Examples of products for which this is appropriate include cocoa, coffee, cotton, cut flowers, dairy products, export quality green vegetables, sugarcane, and tea.

HVA AF 1 argues for a long-term strategy to develop traditional and non-traditional smallholder exports. Despite justified skepticism of government motivation and competence, it will be necessary to “pick winners.” Thus, commodity specific, zone specific, and sequenced production and marketing policies are necessary to speed the response of agricultural export supplies to market reforms.

In HVA AF 2, Delgado conveys a less optimistic view of the role of government and is doubtful that the public sector (local government or higher layers) will be effective in providing smallholders with access to assets, information, services, and markets. It is argued that this is due to government not having a direct stake in the economic activity: “Because of the high level of resources needed and the transactions costs inherent in having major actors without a direct economic stake in a business activity, public sectors are unlikely to be able to meet expectations.” Thoughts stemming from this comment are not further developed, although for this reviewer they suggest that the implications for Africa of a more “East Asian” model of development might be worth exploring.

Delgado concludes that a useful role for the public sector could be in regulating contract farming. Policymaker could “establish the conditions for good governance and fair representation of all stakeholders on governing boards, including farm labor of both genders.”

Smallholder dairy’s potential for poverty reduction and its development constraints make up a major theme in IFPRI work on HVA in Africa. Dairy is a component of the livestock sector and HVA AF 3 (Delgado with Crosson and Courbois 1997) provides strong evidence of long-term increases in demand for animal protein. By implication, policy advisers should think through the consequences of this growth in demand for animal protein and build this into their longer-term views.

HVA AF 12 (Staal, Delgado, and Nicholson 1997) applies transactions costs analysis to smallholder dairying. Key challenges for smallholder dairy farmers are that milk is highly perishable;

bulky (85 percent water) with high transport costs; and needs motor vehicles for distribution. Production is continuous, so farmers have to be concerned with maintaining market outlets and there are difficulties in measuring quality standards, creating scope for (different kinds) of opportunistic behavior by agents buying and selling.

Drawing on fieldwork in Kenya and Ethiopia, the paper finds that evidence on transactions costs is largely indirect and anecdotal, but some hypotheses are compelling:

- Transactions costs in East African smallholder dairy are high.
- Transactions costs increase rapidly with distance from urban markets. This is not simply the result of transport costs, but also reflects decreased information and increased risks of spoilage during the search for buyers.
- Small producers incur higher transactions costs per unit of output.
- Producers with higher capital intensity per cow secure better prices, probably because these producers have better access to information;
- When effectively managed, collective organizations can reduce transactions costs through economies of scale in transport and distribution, plus more widely dispersed information and
- Parastatals—for example, the New Kenya Co-operative Creameries (KCC)—can lower transactions costs during the start-up phase. But over time political pressures affect the pricing policies of parastatals, and KCC appears (at least at this point in its history) to have used political influence to limit competition.

Policy implications include the following:

- Governments should focus on an enabling environment for regulation and enforcement and on infrastructure for well-managed cooperatives, self-help groups, and private enterprises.
- In both Kenya and Ethiopia, creating the necessary enabling environment would involve reduction of bureaucratic obstacles to effective formation and management of cooperatives.
- Governments can intervene to support the flow of information (for example, about market opportunities and prices).
- Greater transparency and consistency of policies is needed (at the time of writing there was uncertainty about the extent of implementation of liberalization);
- Government actions can reduce costs of dairy inputs (here veterinary care is not mentioned explicitly).
- For the research community, more work is needed on conceptualization and measurement of transactions costs.

HVA AF 6 follows chronologically the work discussed above and is a further contribution to Ethiopia dairying research. It examines smallholder dairying for the local market and found that some smallholders can generate reliable and substantial incomes by selling into traditional markets. For others, a unique set of transaction costs inhibits market participation. Cooperatives are potential catalysts for mitigating these costs.

The thrust of the policy advice is that institutional innovations (such as producer cooperatives) on their own are not enough to promote a big increase in dairy production by smallholders. Other requirements are improved infrastructure, knowledge, and asset accumulation

by the household. The paper advocates investment in forming “milk groups,” which would be carefully located for spatial efficiency, with existing participants having a say in the selection of members. It is suggested that this approach may be applicable to other commodities, for example, to winter vegetables and to cut flowers.

Following on this work by Delgado and colleagues from the mid-1990s through to the early 2000s, two papers published in 2010 and 2012 focus on dairy cooperatives in Ethiopia:

HVA AF 4 (Francesconi, Heerink, and D’Haese 2010); and HVA AF 5 (Francesconi and Ruben 2012). HVA AF 4 concerns studies of peri-urban dairy producers in a context where supermarkets are just beginning to emerge as outlets for agricultural commodities. It concludes that there are opportunities for emerging dairy chains in selling to modern retail. It reinforces but does not expand on concerns raised by Delgado and colleagues about processing and retail services being concentrated in the hands of a few providers and government support for this concentration.

HVA AF 5 reports on research on dairy marketing co-ops in the vicinity of Addis Ababa. Co-op membership is found to be good for production but negative for quality. The main policy conclusion is that careful work needs to be undertaken in the design of partly vertically integrated chains to arrive at a satisfactory balance of incentives among consumers, processors, and producers. Third party certification of milk quality (at the point of supply from farmer to processor) could help. This is a proposal which was examined by a GRP27 research project in Vietnam—see the later discussion of GRP27 and the “Rest of the World.”

HVA AF 8 (Minten, Randrianarison, and Swinnen 2007) and HVA AF 9 (Minten, Randrianarison, and Swinnen 2009) extended IFPRI’s contribution to HVA debates, using evidence from smallholder contract farming in Madagascar. HVA AF 8 tackles the environmental impact of the expansion of HVA, and HVA AF 9 studies whether health and other standards in high-income markets tend to exclude small farmers.

HVA AF 8 contributes to the debate about the effects of globalization on the natural environment and natural resource use in developing countries through the analysis of primary data collected from small contract farmers in Madagascar producing vegetables for export to Europe. It finds strong spillover effects from these trade opportunities: the productivity of rice (the main domestically consumed staple) is two-thirds higher on those fields that were contracted during the off-season for the production of vegetables. This increase in yields is linked to an increase of soil fertility due to the application of fertilizer and compost, which farmers would not have used prior to the contracts. While agricultural output goes up significantly, labor productivity stays the same; this suggests that there is a greater opportunity for absorbing labor on existing farmland than through expanding farmland area. It also suggests that the diffusion of contract farming and the accompanying technology at a larger scale throughout Madagascar would substantially decrease incentives to deforest by raising wages and boosting productivity of existing lands relative to newly deforested ones.

The paper argues that as contract farming will become more important in the future this theme should be fertile ground for policy research. Such research could look at why contract farming of agricultural produce for exports is still rare in Madagascar or in Africa more widely. It will be useful to examine the reasons this type of contract succeeded while others failed; to consider to what extent the technology transfer for the production of compost proves to be sustainable; the effect of the contracts on welfare; and the spillover effects of this technology on non-contract farmers in the same or neighboring villages.

HVAF AF 9 reports on a Malagasy case study of the consequences of global retail companies' ("supermarkets") increasing their influence on developing countries, through foreign investments, the imposition of their private standards, or both. The impact on developing countries and poverty is often assessed as negative, but this paper shows the opposite by analyzing primary data collected to measure the impact of supermarkets on small contract farmers in Madagascar. Almost 10,000 farmers in the highlands of Madagascar produce vegetables for supermarkets in Europe. In this global supply chain, small farmers' micro-contracts are combined with extensive farm assistance and supervision programs to fulfil supermarkets' complex quality requirements and phyto-sanitary standards (that is, standards related to preventing the spread of crop diseases). Small farmers that participate in these contracts have higher welfare, more income stability, and shorter lean periods. The research finds significant effects on improved technology adoption, better resource management, and spillovers to the productivity of the staple crop rice. The small but emerging modern retail sector in Madagascar does not deliver these benefits to local consumers, as it does not (yet) request the same high standards from its suppliers.

These findings raise several issues for further analysis:

- Is Madagascar a highly unusual case and if so, how?
- Can the benefits of this model be extended to a larger share of poor farmers in Madagascar? It seems that the major constraints are the high transport and transaction costs. The firm thus has contracts only with farmers in a 120-km radius around the capital Antananarivo where its processing plant and export units are situated. Nevertheless, rural road improvement, a government priority, has allowed the firm to expand the number of contracting farmers by almost 1,000 in just one year. However, to allow the trucks to pass, the firm itself is obliged to continuously organize road maintenance;
- Another constraint is low human capital, which creates high costs for training the "assistants de culture," who organize and supervise the contracted farmers in the field.
- Transactions costs are large because of individual contracts. If farmers were able to constitute farmer groups, internalize the verification system, and thereby generate economies of scale, more firms might be attracted to invest in Madagascar.
- The study suggests that investments by global retailers in Malagasy supermarkets have not produced effects on the domestic supply chain. The expectation was that supermarkets' presence would create a domestic demand for high-quality and high-value vegetable production. However, local supermarkets seem to purchase mostly from local informal suppliers rather than from companies selling high standard vegetables. Local supermarkets do not value "modern" quality and standards sufficiently and are hesitant to engage in the contracts that are needed for meeting such standards.

The critical question of the extent of smallholder disadvantage (or exclusion) in accessing HVA markets is explored in HVA AF 10 (Narro et al. 2009) and HVA AF 11 (Okello, Narrod, and Roy 2011). HVA AF 10 includes case studies from Asia and Africa. The Kenyan case examined in HVA AF 10 concerns green beans and the difficulties smallholders have experienced in meeting tightening food safety requirements for exports to the EU. The thrust of the paper is that "While there is no denying that the short-term impact of food safety standards has been to exclude smallholders, cases exist where, given institutional support and sufficient time, some smallholder systems have been able to successfully participate in high-value markets." The paper considers the institutional mechanisms (collective action and public-private partnerships) that have helped smallholders retain some position in high value agriculture by addressing challenges of *scale*, *information*, and *reputation*.

- In the Kenyan green beans study, there were pre-existing farmer groups that had the functions of securing buyers and obtaining good prices. In the late 1990s, these groups were reorganized for compliance with safety standards, under pressure from exporters. This transformed the nature of collective action. Groups were reduced in size to facilitate third-party monitoring and had to do some of the monitoring work themselves, sharing these costs with buyers. Smaller, more concentrated groups were required for this. Because all members were liable if something went wrong, there had to be careful screening of new members. These reorganized groups were managed by elected committees with responsibility for enforcement. Groups were financed by members' contributions. Their cost-reducing strategies included bulk purchase of inputs and hiring of technical experts to facilitate compliance.
- This collective action was supplemented by public-private partnerships. These partnerships consisted of the following steps:
  - Formation of groups by the government, exporters, and NGOs.
  - The government established, with Japanese aid, a handling company for fresh produce.
  - The UK's DFID paid for training of a pool of service providers to help smallholders.
  - NGOs and donors jointly established a certification company.

Policy implications are as follows:

- With adequate institutional support, smallholders can cope with stringent food safety standards. Current pessimism concerning smallholders' participation in markets with high safety standards may be excessive and "may thus reflect the limitations of researchers and policy practitioners in identifying solutions."
- Collective action and public-private partnerships can play a significant role in ensuring smallholders are not excluded.
- Group size and composition might need to change and policies should support, or at least permit, such a reorganization.
- The government should help link farmer groups with private agents but should not protect the marketing chain itself, as this could encourage elite capture by groups with strong political affiliations.

HVA AF 11 covers broadly the same ground as the previous paper but contains only African case studies and has more detail on the agronomic side. It is distinctly less upbeat in its appraisal of the challenges facing smallholders in HVA. The paper starts from the observation that African countries are diversifying exports into fresh vegetables grown mainly by smallholders. However, markets for these new products have stringent safety standards.

The HVA chain for African green bean exports to Europe is studied to identify the critical points at which exporters strictly enforce buyers' quality requirements and the risk of excluding smallholders at these points. The paper then discusses the strategies African countries have used to manage these challenges and maintain participation by smallholders.

There are six critical points along the green bean chain at which exporters enforce strict compliance with standards to avoid contamination with pathogens and pesticide residue: pre-harvest field level activities; harvest; transport from the field to the collection center; the collection center; transport from the collection center to the pack-house; and the pack-house.

Among these, the control points at which smallholder farmers are most threatened with exclusion from the HVA chain are the pre-harvest field level and the collection center. At these points, the costs of investing in facilities needed to meet standards are too high for most smallholders. To overcome these barriers, study countries used two non-market strategies: collective action and public-private partnerships. These findings imply that the market, if left on its own, could adopt solutions that exclude smallholder farmers from the export HVA chain.

The implication is that government, private sector, and donor intervention in promoting smallholder participation in HVA should focus on constraints at the field and collection center control points. Thus, countries seeking to diversify exports to include fresh export vegetables (usually produced by smallholders), should be ready, on their own or jointly with the private sector, to invest in supporting smallholders at the two critical control points at which enforcement of standards poses the greatest challenge. In addition, the findings imply that governments should facilitate and, where necessary, support farmers to form producer organizations through which they can overcome the screening effects of standards. Obstacles such as long procedures and high fees for registering such organizations should be reviewed.

The final research output reviewed is HVA AF 7 (Martens, Minten, and Swinnen 2012). Not only is this the most recent publication but, for this reviewer, it is probably the culminating achievement of all IFPRI's work in this area. It widens the debate on HVA in Africa to connect to the Indian Green Revolution literature, thereby raising some broader systemic issues that have been largely absent from the literature reviewed above.

HVA AF 7 starts by noting that during the past decades the global food system changed dramatically with increased trade in high-value food products, increased exports from developing countries, increased consolidation and dominance of large multinational food companies, and increased proliferation of public and private food standards. As a consequence, global food trade is increasingly organized around vertically coordinated supply chains rather than spot markets—that is, markets where transactions are completed on the spot, with cash. The paper claims that in the case of poorer countries there is no consensus on the overall welfare implications of increased high-value food exports and related supply chain restructuring.

The paper discusses the income and poverty implications of expanded horticulture exports and changing supply chain structures for rural households in Sub-Saharan Africa. It puts together the economic arguments; distinguishes different channels through which rural households are affected; provides evidence from three comparative case studies on high-value horticulture exports; and derives implications for policymakers, private investors, and development assistance.

An important argument is that export market development tends to benefit the poorest households through labor markets rather than product markets. This implies that pro-poor export development strategies should pay attention to labor market and employment conditions. These matters have largely been underappreciated in the existing African HVA literature and comparison can be made with studies of the Green Revolution of the 1960s. The Green Revolution triggered major productivity growth and rural income rises in Southeast Asian countries but was at first believed to benefit only richer farmers while marginalizing poorer farmers because of the specific constraints they face in accessing and using Green Revolution inputs. However, David and Otsuka (1994) showed that poorer households did benefit from this technology-driven agricultural development because of labor market effects. The paper suggests that the same might hold for standards-driven (or supply chain-driven) agricultural development.

At the same time, Carter et al. (1996) have argued that in the case of exports from Latin America, that poverty effects might strongly depend on the nature of the commodities, with poverty-reducing benefits more likely in labor-intensive than in land-intensive production systems. Horticulture is generally a labor-intensive sector and the findings discussed validate the argument that labor-intensive export sectors may strongly benefit poverty alleviation.

Even if participation in high-value agri-food trade can be an engine of pro-poor growth, many countries face challenges in bringing this about. Yet, international competition is moving beyond simply the capacity to supply products at market prices. Agricultural products have to comply with food quality and safety requirements while many developing countries have substantial weaknesses in food safety capacity.

Increasing the supply capacity for high quality and safe fresh food and creating the capability to respond quickly to emerging food safety issues, as well as a variety of private standards, requires attention to key issues such as improvement in the administrative, technical, and scientific capacity for food safety; public-private sector cooperation; farm and business assistance programs; attracting foreign direct investment; and finally demonstrated capacity for producing high-standard food through labelling and certification.

The papers' conclusions and policy recommendations, include the following:

- Increased HVA trade can bring about important positive effects for rural development and poverty reduction.
- Even with the presence of stringent standards and with consolidation and vertical coordination in supply chains, positive welfare implications for poorer people can be found.
- These positive welfare implications partly result from product markets but employment and labor market effects are important also, particularly for the poorest rural households.
- This implies that strategies to improve the welfare effects of HVA need to include measures for creating chains from which smallholders are not completely excluded, as well as strategies for the development and improved performance of rural labor markets.

To stimulate the development of modern supply chains, to guarantee the participation of small farmers in the value chain, and to assure equitable distribution of rents there is a need to recognize the importance of

- private investment in agri-food supply chains (which entails creating the right conditions to encourage domestic and foreign investment in the agro-food industry);
- institutional changes to stimulate innovative vertical coordination schemes;
- improvement of juridical systems' functioning;
- support for contract-enforcement mechanisms; and
- integration of these developments into policy thinking and program strategies.

The paper finds that participation of poor farmers in the chains and an equitable distribution of the rents in the chains requires:

- policies to reduce transaction costs through, for example, investment in intermediary institutions, infrastructure, and farmers' associations; and

- better empowerment of farmers to improve their bargaining position in vertically coordinated food supply chains.

## Indicators of Peer Esteem and Impact of the Published Output Relevant to Africa

These comments refer to the indicators shown in Table 1. The import of each indicator has been discussed earlier in this report.

The papers single-authored by Delgado (HVA AF 1 and HVA AF 2):

- HVA AF 1 has generated good indicators for this fairly specialized applied field, and the third largest number of abstract views of the twelve journal publications summarized above. The journal *Food Policy* is picked up by ISI and RePEc.
- HVA AF 2 is, appropriately, published in a Southern African journal, which may facilitate a wider readership among the African policy community. It has attracted considerable interest on Google Scholar but the journal *AGREKON* does not get picked up by ISI or RePEc so its wider impact is not measured by these indicators but, nevertheless, may be substantial.

Of the papers authored by Delgado and co-researchers:

- HVA AF 3 came out in a publication of considerable repute, the *American Journal of Agricultural Economics*, but the impact indicators are modest. It may be speculated that because the demand and supply projections to 2020 had already been published in a working paper therefore interested researchers would have sourced from these.
- HVA AF 6 attracted a useful number downloads and citations, suggesting it is seen as a significant contribution to the literature in this area.
- HVA AF 12 has good peer esteem indicators

The two papers on dairy cooperatives by Francesconi and colleagues, HVA AF 4 and HVA AF 5, were published in 2010 and 2012. The first appears to be gaining traction satisfactorily, while for the second there is only moderate indication of interest, but its publication is recent and interest could pick up.

The two papers on Madagascar by Maertens, Minten, and Swinnen and Minten, Randrianarison, and Swinnen, HVA AF 8 and HVA AF 9, respectively, both have good indicators, particularly HVA AF 9.

HVA AF 10 (Narrod et al. 2009) and HVA AF 11 (Okello, Narrod, and Roy 2011) concerned with public-private partnerships, collective action, market institution and smallholder exclusion in Kenya and Ethiopia receive very different indicators, despite the overlap in subject and authorship. It may be speculated that this may have something to do with the status of the journals concerned and, possibly, that HVA AF 11 appeared in fairly recently in 2011.

Finally, HVA AF 7 (Martens, Minten, and Swinnen 2012), although praised in the earlier discussion has attracted, as yet, relatively limited interest. However, it was published in 2012.

## The Policy Content of the IFPRI Literature on HVA in Africa

The evaluator has had to construct—in the apparent absence of an overview summary or synthesis paper—what is implicitly the “IFPRI view” of the potential and way forward for HVA in Africa. It would have been useful if IFPRI had developed a “house view” capable of being communicated to stakeholders. This could have taken the form of a paper that summarizes IFPRI and others’ research on HVA; offers, where possible, actionable recommendations for policymakers; and points out to policymakers and researchers areas in which ways forward are obscure, perhaps due to insufficient research. (This point is explained in more detail in the final section of this evaluation report.)

In the absence of an overview paper, major themes in the literature summarized above are picked out and commented on. The aim is to draw from this literature views that IFPRI researchers offer in their publications or, in some cases, views that can be inferred from IFPRI research.

A strong theme introduced by Delgado and collaborators in IFPRI’s early research on HVA in Africa south of the Sahara is the centrality of transaction costs in shaping value chains and in determining the extent to which small farmers can participate in and benefit from HVA value chains. Delgado treats transactions costs using a conceptual framework derived from institutional economics. This important and early contribution to the application of institutional economics to African agriculture produces helpful insights.

One example is the insight that market liberalization may be necessary but not sufficient to induce a supply response from sectors of smallholder agriculture. Smallholder agriculture continues to require government support but support that is both “smarter” and less costly than what went before. “Smarter” support requires government to pick “winners,” that is, products that have prospects of strong demand and can be produced competitively.

Potential winners need to be supported with measures including publicly financed research; the encouragement of farmer organizations for the aggregation and sale of produce; inducements to the private sector to vertically integrate with farmer organizations; and, where needed, third-party quality certification. Private investment will be essential to establish sufficient capacity in facilities such as cold chains, pack houses, and trucks, although this can be pump-primed by initial investment by government. Finance for on-farm investment and for working capital is also likely to be important but receives light treatment in the IFPRI African HVA literature.

Most of the IFPRI HVA literature about Africa recommends actions which might be characterized as “government and NGO activism” but also expresses unease about this due to an awareness of how pervasive “government failures” can be. Government failure can refer to inadequacies in capacity and motivation and also concerns that government involvement in productive sectors leads to restrictions on competition and protection of politically connected organizations, which in turn leads to low efficiency and inhibition of private investment. However, this IFPRI literature does not tackle these issues systematically, and such issues tend to arise as a qualification to policy recommendations. It would have been useful if IFPRI could have provided a guide or framework to help policymakers and policy advisors think about these matters. As noted earlier, the goal must be “smart interventions.”

An essential point emerging from IFPRI HVA in Africa literature is that effective value chains tend to involve a substantial degree of vertical integration. This often requires investment at critical control points, with equipment or relatively complex management systems that may be beyond the

investment or organizational capacity of smallholders. This raises the question of smallholders being excluded or almost excluded from HVA value chains.

The IFPRI work on collective organizations (cooperatives) as a response to this challenge is intriguing. It shows that cooperatives have been able to improve the position of smallholder milk producers but also have serious governance challenges. Sometimes more informal “milk groups” organized by governments and NGOs have done better. Overall, this strand of IFPRI HVA literature provides interesting “food for thought” but not enough information or clarity to help policymakers. For example, if a policymaker was considering allowing formal milk producer cooperatives to be dismantled and replaced by smaller and more nimble “milk groups,” all they would gain from IFPRI research is that milk groups seem to be more effective but there are no guidelines as to how these newly formed groups might be governed and sustained.

With the exception of Madagascar, there is rather little work addressing contract farming as a system about which generalizable recommendations could be made, although some of the research findings (for example, on critical control points) could be seen as a pre-requisite for understanding how to optimize contract farming arrangements. In the same way, there is a modest amount of work on supermarkets and other modern approaches to milk retailing. The evaluator’s visit to Kenya found this to be a dynamic area, with some interesting changes underway: for instance, the sale of milk to lower-income consumers through vending machines that dispense into consumers’ own receptacles, thereby saving on packaging.

On contract farming, the Madagascar case study is interesting: off-season cultivation of export vegetables is found to be beneficial for farmers and the environment. More generally, it takes pressure away from forest resources, lowering pressure to clear forests. But the reader is left with the question as to what extent Madagascar is a special case and therefore whether its conclusions are relevant elsewhere in Africa south of the Sahara. The authors do not comment on this.

Phyto-sanitary controls for export chains are a major source of smallholder exclusion or disadvantage, and the IFPRI studies of these are undoubtedly a useful contribution to the HVA literature. Nevertheless, IFPRI findings about smallholder exclusion from HVA value chains are ambiguous. The research findings tend to show that smallholders can be involved in a sustainable way in HVA export value chains, provided the right collective action institutions are in place, government is supportive but not controlling, and good relations can be developed with private investors. This suggests a prize worth struggling for but far from a case of obvious smallholder comparative advantage. There is a sense that the “jury is still out.”

The recent (2012) publication by Martens, Minten, and Swinnen contains additional findings on how HVA value chains can benefit smallholders. HVA value chains should be examined in a wider systemic perspective because smallholder engagement in growing and processing on their farms is far from the only way in which poorer people can gain from working in HVA value chains. Experience from other continents shows that the expansion of labor-intensive activities, led by medium to larger producers, benefit some groups of poorer people through employment.

## **The Approach to the Kenya Fieldwork**

The evaluator spent two weeks in Kenya in May 2014 to gain insights into the relevance and possible impact of the IFPRI publications on HVA in Africa south of the Sahara. As noted earlier, Kenya, jointly with Ethiopia, is the country most frequently referred to in IFPRI’s work on Africa HVA. The evaluator met with government officials with relevant briefs, public-sector agencies, private businesses

including equity finance providers, the World Bank, the main public-sector agricultural research organization (KARI), industry associations, NGOs, and Kenyan academics. Most meetings were with people and organizations centrally involved in HVA, although there were some exceptions.

Of all the individuals and organizations consulted, only one—AGRA, which presently is not involved in HVA, although this might change—was aware of IFPRI research on HVA. Of course, this finding does not prove that IFPRI research on HVA has not had an impact in Kenya. Further, professionals working in international development are often not aware of the ultimate origins of the conceptual frameworks and the information that shapes their actions.

Having failed to find a direct connection to IFPRI HVA work, the approach taken here is to probe the work's relevance to issues and priorities reported by Kenyan interlocutors in May 2014. If IFPRI's work is mapped onto reported current priorities of organizations working on HVA in Kenya, it is possible to say something about its relevance. Where there were issues and priorities not covered by IFPRI work reviewed here, then some of these might be candidates for future research.

### **Kenyan Issues and Priorities covered by IFPRI HVA Research and Comments on the IFPRI Contribution**

The following topics were identified by Kenyan interlocutors as important challenges for HVA development and have been covered by IFPRI HVA research in Kenya or elsewhere in Africa south of the-Sahara.

*Smallholder milk production (dairy).* In Kenya this is important as part of the rural diet and a nearly continuous (except when animals are “dry” of calving), if modest, source of cash income for many smallholders in higher potential areas. Milk is widely consumed by the urban population, including slum-dwellers for whom milk-rich tea is an important source of animal protein. NGOs and one private investor working in the smallholder dairy sector reported a mixed picture. While demand for the product was strong, the smallholder sector was suffering from major problems including declining quality of veterinary services, an unsatisfactory supply system for veterinary drugs and for artificial insemination, and high feed costs (both the costs of purchased feed and the implicit costs of allocating owned farmland to animal feed crops).

Also, there was a worry about the operational efficiency and financial viability of some major processing companies and a perception that processing was becoming overly concentrated among a small number of companies—with the leading firm having strong political connections. A potential private investor's appraisal of the prospects for entering the processing industry was that the industry could be viable and vibrant but only if it focused on larger smallholder operations (say five cows minimum) and if the processing companies had expert private management.

The opinions received on smallholder dairy tended to be that the sector needed a rebalanced approach from government. Government needed to stay out of processing, wholesaling, and retail, where there was already evidence of innovation that could gain speed. Private-sector actors were keen to invest capital in these areas if they could see a clear way forward. The production base, smallholders, was struggling to get access to artificial insemination technology; veterinary drugs and veterinary care; and feedstuffs. Solutions to first-stage marketing were generally viewed as unstable: there were difficulties in dealing with marked seasonality of production, challenges in finding cost-effective means of measuring the quality of ongoing small deliveries (often 2 to 4 liters per day per farmer), and continuing challenges to the operational efficiency and governance of cooperatives.

IFPRI, to its credit, has devoted a substantial amount of its African HVA work to smallholder dairy production, which is undoubtedly an important development challenge. Progress in meeting this challenge could be positive for the welfare of large numbers of rural producers and urban low-income consumers. However, IFPRI's work is largely concerned with the marketing of milk, an important challenge, but only part of the story sketched above.

Further, judged from a contemporary Kenyan perspective, the policy conclusions of the IFPRI work are considered uncontroversial and obvious and therefore not very useful. In Kenya, there is a consensus that smallholder milk producers need assistance in marketing and that this could be done by cooperatives or by smaller informal groups linked directly to dairies.

What is currently needed in Kenya is clear guidance on how to provide the needed assistance to smallholder milk marketing. Reviving existing cooperatives, with their well-known governance problems, looks like an unattractive option, but it often has local political support which is an important consideration in the ongoing devolution of government responsibilities in the agriculture sector to county governments. Alternatives would be smaller and perhaps less formalized groups, organized by NGOs and/or private dairies.

IFPRI work here is no more than modestly suggestive: for example, IFPRI's research indicates that smaller, more focused groups may perform better in marketing smallholder dairy products and that quality certification of dairy products by a third party might be tried).

IFPRI research has little to say about the other reported key challenges of smallholder dairy: access to technology; worries about animal health; veterinary care; and an unsatisfactory supply chain for veterinary drugs (in which fake or counterfeit drugs are all too common).

Finally, Delgado and colleagues, as noted earlier, had been early participants in the application of institutional economics thinking to HVA challenges in Africa. There is considerable potential for applying this thinking to smallholder dairy value chains. Most literature on smallholder value chains tends to assume that all market power rests with the larger investors downstream, who have the benefits of economies of scale and access to marketing channels.

While these points are valid, institutional economics points to the vulnerability of investors who have committed to a "specific asset" (for example, a dairy processing plant). In Kenya, in the dry seasons, smallholders tend to sell raw milk locally to be consumed unprocessed, as prices are better, yet want the large or "institutional" buyer to be there for them when production is high. So there is a research question as to the cost investors in processing may have to pay to assure supplier loyalty and whether this undermines the viability of the investment.

Smallholder exclusion from HVA export chains (for example, for fresh vegetables, flowers, and fruit). This could be due to factors such as difficulties in complying consistently with food safety standards; difficulties in consistently achieving other quality attributes (such as size and freedom from blemishes); unstable marketing arrangements; fluctuating supply; and difficulties in acquiring technologies and technical information.

The broad conclusions of IFPRI research on this topic were described earlier as "ambiguous." This is not a critical comment but a good description of the situation in Kenya as described to this evaluator in May 2014. Kenyan smallholders continue to encounter major problems in supplying high-income markets with fresh vegetables; this is partly a result of tightening safety standards applied by the EU. In Kenya, a number of development agencies, the most notable of these being USAID, have

responded by financing innovative work to enable smallholder inclusion in the high-value export trade. The focus of innovation is largely on information and communications technology, which will allow for more detailed tracing of infected consignments and also for rapid transmission of information about best practices. However, it has to be said that none of the actors in smallholder HVA exports who were encountered by this reviewer knew of IFPRI work.

*Taking a broader view of the agricultural sector:* IFPRI's mandate requires a focus on poorer producers and consumers, as does the mandate of most NGOs working in agricultural development. However, it was noted earlier that one strength of recent work by Martens, Minten, and Swinnen (2012) has been to look at the systemic economic effects of expanding a highly labor-intensive activity dominated by large and medium farming firms. Referring to arguments about the South Asian Green Revolution, these authors point to the positive effects these large and medium farms can have on the poor through labor markets. However, their argument is at a level of abstraction that does not take into account Kenyan concerns about expanding labor-intensive activities in rural areas and the associated increases in intra-rural migration and social unrest. (Violence resulting from intra-rural migration is one of Kenya's most serious problems.) Kenyan interviewees stressed that is desirable for poorer farmers to intensify production on their own land rather than to have to migrate to other rural areas.

*Roles for government:* As the foregoing discussion has noted, IFPRI has had a fair amount to say about government roles in supporting HVA. The huge challenge, however, is how to persuade governments to change. On this point there is little guidance from IFPRI, simply remarks helping to define smarter government interventions and comments concerning the damaging effects of the government protecting special interests. There is an absence of political economy analysis explaining how better conditions might come about.

### **Some Kenyan Issues and Priorities Not Covered or Lightly Covered by IFPRI HVA Research**

No research organization can be expected to cover all conceivable topics; therefore, to note that a topic has not been covered by IFPRI HVA research in Africa is not necessarily to make a serious criticism. However, some topics are so central to smallholder HVA development that IFPRI would have to study them to make a substantial contribution to policy.

One such topic is *contract farming*. IFPRI work on Africa has emphasized that including smallholders will likely require vertical integration. Case studies of Madagascar by Minten, Randrianarison, and Swinnen (2007) are explicitly about contract farming. Also, Narrod et al. (2009), in their research on public-private partnerships document forms of contract farming in some detail and explain how these work.

Minten, Randrianarison, and Swinnen (2007) show that contract farming can work well for smallholders (and the physical environment), although whether this would work in the unusual circumstances of Madagascar is open to debate. With the benefit of hindsight, this evaluator found that the work by Narrod et al. (2009) was somewhat too optimistic about the prospects for both the Indian and the African cases. Possibly this is because, for the Indian case at least, important capital equipment (pack houses with chilling facilities) had received subsidised finance, so depreciation costs were not applied. As a result, Narrod et al. (2009) may have conveyed an overly flattering picture of commercial sustainability in the early years?

In June 2013, GIZ published, on behalf of Germany's Federal Ministry for Economic Cooperation and Development, a *Contract Farming Handbook* authored by Margaret Will. This

impressive work is described as a “practical guide for linking small-scale producers and buyers through business model innovation.” In a sense, the gap in provision of practical advice to government, private businesses, and NGOs has been filled. But it must be counted as disappointing that the extensive bibliography of the “practical guide” contained just one reference to work by a CGIAR organization, and this was to some work by CIAT.

Some other themes that arose from this evaluator’s Kenya visit but are not much covered in the IFPRI-published HVA literature on Africa include

- finance for smallholders;
- other animal products such as poultry and pigs;
- aquaculture;
- export-quality high-value nuts (for example, macadamia);
- fruits such as mangoes; and
- potatoes (for which the domestic market is not well organized).

Repeating the point that IFPRI cannot be expected to cover everything, it is nevertheless worth noting that the topics listed above include some interesting stories and could be fruitful lines for future research. The smallholder poultry industry is expanding. There is a successful pork industry based on smallholder-reared pigs, some of which are contract farmed, that supplies the domestic and export market. Macadamia nuts, grown at higher altitudes, are claimed (by the industry association) to provide smallholders with the best return of any cash crop. Mango exports are expanding, and many of these are grown by small farmers in poor areas with marginal rainfall. Potatoes can be an HVA cash crop but the potato sector has major problems: yields that are well below their potential, a weak supply to smallholders of virus-free seed potatoes, and a marketing chain that needs extensive investment in the cold-chain infrastructure that Reardon and colleagues have studied in India.

Another issue, raised by a number of interlocutors in Kenya, was concentration among a small number of providers and lack of transparency in export markets. The issue was raised for green vegetables and macadamia nuts.

Finally, some important institutional innovations are underway that are fascinating in their potential and could form (maybe already do form) the basis for a future research study. This is the mutually reinforcing effects of local assembly of inexpensive Chinese-origin motorcycle kits; banks that use asset-finance instruments to allow poor people to purchase motorcycles that can be used for transporting produce or as taxis; mobile phones which allow producers and consumers to investigate markets; and the *mpesa* payment money transfer service. This is greatly expanding the possibilities for producers, intermediaries, and consumers in the higher population density areas of Kenya. The enhanced timeliness of price discovery and subsequent transactions works to the benefit producers of perishable products in particular.

## **Summing-up GPR27 Africa Work and Suggestions**

The body of IFPRI African HVA work reviewed here displays a solid integrity, which may be thought of as an IFPRI “signature.” Research designs are well considered; data collection methods are suitable; quantitative methods are appropriate; and the conclusions are measured and not overstated. The approach of publishing well-edited research reports followed, a year or so later, by

summaries in the journal literature is indicative of a disciplined process. IFPRI research is careful, not polemical, and therefore must be among the most reliable sources of information and advice available to policymakers and policy advisers. This should be a strong base from which to influence policy, but in Kenya there was little evidence of either IFPRI brand-recognition in relation to HVA or of the relevant communities being aware of the IFPRI work. Why might this be the case?

One possibility is that policymakers and advisors have been influenced by a body of ideas, the origins of which they are not aware. As J.M. Keynes wrote:

*The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas.*

Indeed, IFPRI research on smallholder HVA production in Africa, which this evaluator perceives as an important channel for poverty reduction, which is challenging, but with which it is far from impossible to achieve sustained success is in line with current thinking in Kenya by people working in public organizations, NGOs, and research organizations. In summary, although this evaluation did not find traces of IFPRI work influencing strategic thinking about HVA in Kenya, this does not prove an absence of influence, simply that this influence was not discernable in this study.

The modest IFPRI influence on HVA in Africa can perhaps be attributed to the following factors:

- Failure to achieve “critical mass” on this topic
- Failure to synthesize guidance on the “how” challenges
- Weaknesses in the communications approach, resulting in a failure to make an impression on public officials, NGOs, or the private sector.

On the critical mass issue, the body of IFPRI HVA research on Africa would do credit to a university department, perhaps one primarily concerned with academic quality rather than impact. However, to have a strong influence, there should have been more studies of more countries and, perhaps, more conferences drawing in other researchers. Clearly IFPRI has resource limitations and may have to think about tackling fewer topics but in more detail. Alternatively, more strategic alliances may be required with other research institutions that can bring their own financial resources as well as expertise to enhance the overall research effort.

Following from this, NGOs, bilateral and multilateral donors, and governments need ideas and advice as to how to move forward with the organization of smallholders engaged in HVA. What forms of contract farming or vertical integration will be fair to smallholders yet commercially sustainable? What are the major gaps in service provision to smallholder HVA producers and how can these gaps be closed? How can first-stage aggregation of the product be best achieved? Closely related to this point, how can collective action be achieved most effectively: formal cooperatives, smaller self-organized groups, or groups organized by processing companies? How can private investment be encouraged and linked to smallholders? Alternatively if the HVA strategy is mainly to be based on large farms, what are the implications for poverty reduction? IFPRI work, in a somewhat

scattered way, raises critical issues and provides hints as to what the answers might be but no more than hints.

Finally, IFPRI's communications approach could be improved. The starting point would be for IFPRI to make its website the destination of choice for people working on the "how" questions: that is, questions related to the policy and organization design challenges of HVA (or any other topic in the IFPRI mandate). The current IFPRI approach to communications is not very effective in bridging the gap between solid academic research and the needs of policymakers and advisors. The accessible synthesis in the *Contract Farming Handbook* by Margaret Will, discussed earlier, is an example of what can be achieved.

The ideal would be that the NGO and public officials that this evaluator interviewed in Kenya would know about IFPRI because they had recourse to its website when they needed ideas or guidance about challenges they were encountering. This would require more of a toolkit approach along the lines of "*if you are facing this problem, then these are possible lines of solution that have been shown to work.*" Equally important would be to explain why apparently attractive solutions, such as collective action, may be hard to achieve and sustain. There is scope for IFPRI to develop a networked approach, as it has for some other topics, which would be interactive with the wider policy and research community.

## **4. “THE REST OF THE WORLD”: IFPRI HVA RESEARCH OUTSIDE AFRICA AND INDIA**

The research under GRP27 extended beyond Africa and India in a variety of directions. This evaluation study has chosen to comment on those pieces of work that (a) resulted in an article in a refereed journal and (b) had something to contribute on the topic of HVA, smallholders, poorer consumers, and related value chains. This amounted to four articles.

For this evaluator, the article richest in policy insights is “Impact of Contract Farming on Income: Linking Small Farmers, Packers, and Supermarkets in China” by Miyata and Minot, in *World Development*. Based on China fieldwork, the article analyses a particular empirical study and is a useful guide to general thinking about circumstances in which contract farming may or may not prove (i) financially viable; and (ii) pro-poor.

The significance of this work extends beyond China. The study analyses empirical work on contract farming of apples and green onions in Shandong Province and examines the impact of this on household incomes. Both crops are perishable and would be expected to benefit from vertical coordination. Taking into account that average farm sizes in China are less than 0.5 ha, the study authors argue that if contract farming can be shown to have a pro-poor impact, then there would be grounds for policies and government interventions to support contract farming. An example of a possible support could be cost-sharing in extension.

The research addresses three related questions:

- (a) To what extent do less educated and smaller-scale farmers participate?
- (b) Does contract farming raise the incomes of participants?
- (c) If incomes are raised, how does this happen (through lower input prices, higher yields, better crop prices, or another mechanisms)?

Answers to these questions emerging from Miyata and Minot’s study are that selection into contract farming is not biased by farm size or education but may be influenced by labor availability and locational proximity to the village head. After controlling for other possible determinants—education, farm size, proportion of land irrigated, household labor availability—in the econometric models the authors find that contract farmers earn more than their neighbors growing the same crop. Further, direct questions to contract farmers indicated a perceived increase in income since they began contracting. Finally, apple and onion growers differed in the ways in which contracting helped to raise income: for the former it appeared to be enhanced technical support and for the latter better prices received from packers.

Commenting on the policy implications of their findings, the authors advocate that public policy should support contract farming through measures such as provision of clear legal frameworks, mediation between farmers and firms, and encouraging extension agents to work in coordination with firms. They note that the government already provided concessionary loans and tax regimes for certified firms. Finally, they warn that contract farming should not be seen as a general solution to problems of credit, information, and market access for all small farmers in developing countries. Contract farming works best for reducing the transactions costs for perishable commodities sold into quality-sensitive markets.

Moving to Vietnam, a study by Saenger, Torero, and Qaim of the “*Impact of Third-Party Contract Enforcement in Agricultural Markets—A Field Experiment in Vietnam*” confirms the result expected from economic theory: third-party certification of milk quality appears to stimulate higher productivity (input use) among farmers. The business case for such an intervention is not investigated; for example, what are the costs of the intervention—in the experiment it was provided free by the researchers—relative to the benefits? Also, the Vietnam case is unusual because the farmers face a strong monopsony and there is hardly any local (village) market for milk, as it is not part of the traditional diet, so farmers are particularly vulnerable to opportunistic behavior by the monopsonist. In summary, an interesting piece that contributes to thinking about a topic but on its own is not much use to policymakers or designers of contract farming schemes for dairy farmers.

A study by Howarth Bouis carried out in Bangladesh is interesting, although it was part of IFPRI’s nutrition research rather than GRP27. It looks at the effects of adopting polyculture fish production and commercial vegetable production. This study is conducted against a background of rapid increases in the price of lentils, vegetables, and fish relative to rice. These enterprises were more profitable than rice but he finds that there is little reason to believe that adoption has increased the micronutrient status of households. The aggregate impact on household income is positive but not strongly so. This evaluator has the sense is that this work would have benefitted from more thought about a counter-factual situation in which there had been distinctly less diversification from rice into vegetables and fish. It is uncertain as to what conclusions a policymaker/adviser could draw from this paper, except perhaps not to set expectations too high.

Finally, a paper by Abay Asfaw deals with another part of the world: Latin America and the Caribbean. The paper aims to identify and quantify determinants of fruit and vegetable consumption. Regression analysis shows that the important factors are income, urbanization, price, and poverty. While the importance of these factors is not surprising—it would be surprising if they were not relevant—it helps to have the regression parameters. In summary, the paper contains useful contextual information but no guidance for policymakers on what might be done to develop HVA.

## 5. CONCLUDING COMMENTS

It may be useful to conclude with summary comments on the questions posed in the TORs, questions given detailed consideration earlier. One important consideration is that while for at least the first half of the life of GRP27 research was required to be “policy relevant,” the project documentation for this earlier period shows scant evidence of management pressure on researchers to indicate uptake pathways for their research, other than workshops and publications. The thinking seems implicitly to have been that findings, and ideas about useful theory and methods, would be communicated to national scientists and to the staff of influential funding agencies and by osmosis would filter through to policy.

Much of the work reviewed here was conceived and developed in the earlier period of GRP27, with results appearing in journals a year or two after project completion. Therefore, it can be inferred that most of the research projects and associated communication activities reviewed in this study were not designed to have quick and specified impacts on policies. Losing sight of this background risks criticizing researchers for failing to achieve objectives not stipulated at project inception. As this evaluation has made clear, GRP27 output, as with much other IFPRI work, is generally of exemplary quality when judged as academic output. The challenge emerging from this evaluation is directed more to IFPRI Management and Board: for what purposes was this work commissioned? What did IFPRI believe it was achieving and what evidence did it have about possible achievements?

A distinction between IFPRI GRP27’s work in, on the one hand, India, and, on the other hand, Africa and the “rest of the world” stands out. In India, the IFPRI brand has a strong reputation going back over 35 years. India-based experts described IFPRI as the most credible and prestigious non-Indian organization for policy advice on agriculture and food. IFPRI has a substantial office in New Delhi (although the office has a wider regional responsibility) and this facilitates links to Indian policy advisers and keeps IFPRI staff up-to-date on developments and policy debates in the sector. In summary, IFPRI has a strong platform in India and historically has been influential on important questions. Disappointingly, in the case of GRP27, the evaluation could not detect evidence of IFPRI having policy impact, although, as stated earlier, this is not conclusive evidence that it did not have such impact. Nevertheless, IFPRI focused on the right issues by studying the implications for poorer farmers of the shift from grains to HVA; this research produced the important finding that such a shift was generally a pro-poor development. Also, IFPRI’s work on alternative marketing arrangements for smallholder HVA and contract farming was timely.

The book by Reardon, Chen, Minten, and Adriano (2012) could prove to be “paradigm shifting,” although its appearance is too recent for this evaluation to have identified strong publication impact indicators. This work contains many interesting findings, some of which could influence public policy. The findings with the greatest potential influential include (a) the rapid pace of change in value-chains for potatoes—change driven by private, but initially government-enabled, investment in cold storage; (b) the interaction between the change in value chains and the rapid change in urban diets and growth of modern retail; (c) the fact that these changes did not exclude small producers although they did challenge small retailers; and (d) the misconceptions and unreliability of local “expert informed opinion” about these changes. This last finding suggests the need for further research to build additional confidence in the findings’ robustness. If further research confirms these findings persist, IFPRI should undertake an aggressive communications strategy, as it would have something unique and important to say.

Turning to Africa and the “rest of the world,” GRP27 work appears to have been too scattered to afford IFPRI intellectual leadership in the field or to have much policy impact on the development of HVA. Stand-alone studies resulted in journal publications in Bangladesh, China, Latin America and the Caribbean, and Vietnam, but none of these studies shared a strong common theme. Miyata and Minot’s study of contract farming in China is excellent, but is the only GRP27 contribution to the China HVA literature. Saenger, Torero, and Qaim’s field experiment in Vietnam concerning third-party certification of milk quality is interesting. It too stands alone as GRP work on HVA in Vietnam. Also, the field experiment concerns an unusual market structure, and this casts doubt on the robustness of the findings if extended beyond Vietnam.

GRP27 research on Africa can be grouped into certain broad subject areas. This evaluation identified the following subjects: (a) the value of an institutional economics approach for analyzing smallholder HVA value-chains; (b) smallholder dairy marketing in Ethiopia; (c) contract farming in Madagascar with an emphasis on agricultural productivity and the environment (including deforestation); (d) the implications for smallholders in India and Kenya of food safety barriers; and (e) the possible impacts of HVA production on poverty. Research on this last topic, by Martin, Minten and Swinten, takes a broad view by referring to earlier Green Revolution literature; this evaluation described it as the culminating achievement of GRP27 work in Africa.

The work on Africa appears to have a somewhat “probing” and “experimental character,” along the lines of “let us see what we can do to open up this topic and then move on.” There is little evidence to indicate a consistent focus on a topic for a sufficiently long period to engage policy advisers and policymakers and shift policy. There is weak evidence of a rationalized evolution of priorities within GRP27, along the lines of “now we have established X we will move on to Y.” Thus, Delgado’s early path-finding work on applying institutional economics to value chains is not as well connected to subsequent research in GRP27 as might have been expected.

Turning to contract farming, it was noted that IFPRI work hardly registers in Margaret Will’s (2013) *Contract Farming Handbook*, a book which tries to distill findings on best practice.<sup>4</sup> In IFPRI’s defense, IFPRI was arguably addressing higher-level policy issues, such as poverty and environmental impacts of allowing contract farming to develop. On the other hand, some IFPRI work has focused on practical aspects of contract farming, such as phyto-sanitary barriers and third-party certification of quality.

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<sup>4</sup> In October 2014, as this evaluation report was moving from draft to final version, Minot and Ronchi contributed a briefing note (Note Number 344 in the series “Viewpoint: Public Policy for the Private Sector”) for the IFC website. The policy conclusions include (i) contract farming can help integrate smallholders into modern agricultural value chains; (ii) critics contend that farmers may be subject to abuses; (iii) the literature shows that contract farming can raise incomes, mainly for high-value crops; (iv) in many cases firms are willing to work with small farmers; and (v) conflicts are common between buyers and farmers and alternative dispute resolution mechanisms may help.

The note sets out a research agenda and points to current gaps in knowledge. The limits on existing research are as follows: (i) nearly all studies are cross-sectional rather than longitudinal, thus failing to shed light on the dynamics (trends in the sector); (ii) randomized control trials could provide more rigorous estimates of impact; (iii) more information is needed on the current and potential prevalence of contract farming for key commodities; (iv) most studies focus on the farmers’ view and future work should take more account of the objectives and constraints facing firms; and (v) more research is needed on alternative dispute resolution mechanisms.

Contrasting this briefing with Margaret Will’s manual, which is not referenced in the IFPRI note, is useful. The IFPRI briefing has the typical hallmarks of IFPRI work, that is, conclusions carefully drawn from the research literature. To summarize the messages to policy makers: contract farming can work; there are pitfalls for both farmers and firms; and we have serious deficiencies in our understanding of the issues including major gaps in basic information, so need to keep on researching. This ultimately amounts, to a list of matters for policymakers to take into account in discussions about contract farming. This note contains little guidance, however, as to what the various players—farmer organizations; cooperatives; NGOs; private firms; or government at local and national level—need to do. This note does not refer a reader to other sources that might provide such guidance, either.

Turning to influence on government, civil society, international funding agencies and academia, a distinction can be made between academia and all of the other institutions. This evaluation could not detect any impact on the non-academic institutions—although, to repeat a point made several times in this evaluation study, this does not prove conclusively that there was no impact. Academic influence is easier to trace by using the bibliometric methods discussed, and the findings here are broadly satisfactory. GRP27 work did get into the appropriate refereed journals in the field and often attracted creditable numbers of citations. In summary, the academic reception of GRP27 work has been good.

Finally, IFPRI could consider the following steps to achieve greater impact:

- IFPRI should be more selective in choosing countries and topics to study, focusing on fewer and larger research projects that would engage researchers for longer periods of time.
- Research projects should aim to have a higher profile, from inception to the final write-up and publication of findings. This will ensure that relevant government departments, NGOs, and international and local researchers know about it and remain interested and connected while the work is on-going.
- Where feasible, research projects should try to link to national or sectoral strategic policies and be positioned as contributions to these;
- IFPRI should seek as much of a national and local contribution as possible in the early stages of designing of research projects. This should include national and local contributions to objectives, methods, and communications;
- IFPRI should radically rethink communications methods. The evaluator was told a number of times that on HVA topics the IFPRI website was a useful resource for full-time researchers, but not very helpful for government, NGO, or private business personnel looking for accessible briefings.
- The emphasis on refereed journal output has advantages, including external refereeing and the quality discipline this can provide; attracting leading academics to work for or in collaboration with IFPRI; and the possibility of drawing widespread attention to path-breaking work. However, most refereed journals lack immediacy, and most journal editors prefer to publish new research whereas practitioners may prefer literature reviews and distillations of research findings. In other words, the outputs of most use to practitioners tend not to be academically prestigious.
- A way to promote effective communications would be to attach IFPRI communications staff to each project, with a brief to ensure appropriate communications at all stages of the work and to seek to ensure that the communities that the research is trying to influence are aware of and interested in the work. An aspect of this would be to seek potential users' advice to the research teams at stages in the research process when this might be useful.

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## ANNEX 1: LIST OF PERSONS INTERVIEWED IN KENYA

| Date         | Person                           | Affiliation                                                                                                    |
|--------------|----------------------------------|----------------------------------------------------------------------------------------------------------------|
| May 26, 2014 | Prof. Willis Kosura              | University of Nairobi, College of Agriculture, Kabete                                                          |
|              | Patrick Muigai                   | East African Market Development Consultants Ltd                                                                |
|              | David Makongo                    | SNV Kenya, Business Development Advisor                                                                        |
|              | Charles K. Muigai                | Nut Processors Association of Kenya, Head of Secretariat                                                       |
|              | Dr. Ignatius G. Kahi             | Land O'Lakes Inc., Chief of Party, USAID Semi-Arid Livestock Enhancement Support (K-Sales)                     |
|              | Lynn Renken                      | Mercy Corps, incoming Country Director for Kenya                                                               |
|              | Maurice O. Amolo                 | Mercy Corps, Deputy Director for Kenya                                                                         |
|              | Ogolla James Arim                | Technical Director, Horticulture, Kenya Agricultural Value Chain Enterprises Project (USAID)                   |
| May 27, 2014 | John Logan                       | Country Director, Technoserve Kenya                                                                            |
|              | Steve Collins                    | ACDI/VOCA, Country Director                                                                                    |
|              | Stanley Guantai                  | ACDI/VOCA, Senior Research, Extension and Partnerships Officer                                                 |
|              | Dr. Jane Amuko                   | University of Nairobi, Horticulturalist / Post-harvest Expert, Department of Plant Science and Crop Protection |
| May 28, 2014 | Dr. Festus Murithi               | Kenya Agricultural Research Institute, Assistant Director, Socioeconomics and Applied Statistics               |
|              | Dr. Joseph Gichane Mureithi      | Kenya Agricultural Research Institute, Deputy Director for Research and Technology                             |
|              | Prof. Margaret Jesang Hutchinson | University of Nairobi, Horticulturalist, Head of Crop Science at College of Agriculture                        |
|              | Dr. Mary Mathenge                | Director, Tegemeo Institute of Agricultural Policy and Development, Egerton University                         |
|              | David T. Ruchiu                  | Farm Concern International, Africa Director, Regional Office Sub-Saharan Africa                                |
| May 29, 2014 | Dr. Steven Were Omamo            | AGRA (Alliance for a Green Revolution in Africa), Director of Policy and Advocacy                              |
|              | Joseph Rusike                    | AGRA, Programme Officer, Policy and Advocacy                                                                   |
|              | Nadia Martinez                   | Farm Africa, Kenya Country Director                                                                            |
|              | Stanley Mbugua                   | Operations Director, Farmer's Choice Ltd                                                                       |
| May 30, 2014 | Dr. Pascal Sanginga              | IDRC, Senior Program Specialist for Agriculture and Food Security                                              |
|              | Fred Ogana                       | E.A. Market Development Associates Ltd., Managing Partner                                                      |
| June 2, 2014 | Moses O. Nyabila                 | Venture Dairy, CEO for East Africa                                                                             |
| June 3, 2014 | Wangari Kiragu                   | Africa Harvest (Biotech Foundation International)                                                              |

| <b>Date</b>  | <b>Person</b>            | <b>Affiliation</b>                                                                                      |
|--------------|--------------------------|---------------------------------------------------------------------------------------------------------|
| June 4, 2014 | George Adem Odingo       | Kenya Agricultural Value Chain Enterprises Project (KAVES), Technical Director for Maize and Food Crops |
|              | Joseph Kere Oyuga        | Kenya Agricultural Value Chain Enterprises Project (KAVES), Market Development Manager                  |
|              | Dr. Andrew Karanga       | The World Bank (Kenya), Senior Agricultural Economist                                                   |
|              | Kenneth Ayuko            | State Department of Agriculture, Deputy Director for Policy Development and Coordination                |
|              | Dr. David Jakinda Otieno | University of Nairobi, Head of Agribusiness Management, Department of Agricultural Economics            |
|              | Robert Allport           | FAO, Assistant Representative, Kenya                                                                    |
|              |                          |                                                                                                         |
| June 5, 2014 | Beatrice Ng'ayu          | Horticultural Crops Development Authority, Horticulture Officer                                         |
|              |                          |                                                                                                         |
| June 6, 2014 | Anthony Wainana          | Sidai (a company supplying and supporting smallholder livestock producers and pastoralists)             |

## ANNEX 2: LIST OF INDIVIDUALS INTERVIEWED IN AND ABOUT INDIA

| Name                     | Organization                                                                                           | Position                                                           |
|--------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| Prof. Abhijit Sen        | Planning Commission                                                                                    | Member                                                             |
| Sachin Korde             | Mahagrapes (Gultekdi, Pune)                                                                            | Technical Manager                                                  |
| S. K. Sharma             | Global Agrisystems (a member of the Katra Group), New Delhi                                            | Managing Director                                                  |
| Pratap S. Birthal        | National Centre for Agricultural Economics and Policy Research                                         | Principal Scientist                                                |
| Anjani Kumar             | ICRISAT New Delhi                                                                                      | Principal Scientist (Economics) Markets, Institutions and Policies |
| Prof. G. K. Chadha       | South Asian University                                                                                 | President South Asian University and former VC JNU                 |
| Ulhas M. Salunkhe        | Venky's India Contract Boiler Division, Pune                                                           | Assistant General Manager - Integration                            |
| R. G. Pedgaonkar         | Venkateshwara Hatcheries (VH) Group                                                                    | Deputy General Manager                                             |
| Prof. Kirit S. Parikh    | Integrated Research and Action for Development, New Delhi                                              | Chairman (and former member of the Planning Commission)            |
| Prof. Bharat Ramaswami   | Indian Statistical Institute, New Delhi                                                                | Professor in the Planning Unit                                     |
| Suresh Pal               | Indian Agricultural Research Institute, New Delhi                                                      | Head of Division of Agricultural Economics                         |
| Satpal Chahar            | Agrocel Industries Ltd, Ranch Office at New Grain Market Kaithal                                       | Branch Manager of Agri-Service Division                            |
| Rajesh Mehta             | National Council for Applied Economics Research                                                        |                                                                    |
| Vijay Vyas (by phone)    | Prime Minister's Economic Advisory Council                                                             | Member (and ex-director of IIMA)                                   |
| Ashok Gulati             | Commission for Agricultural Costs and Prices (the advisory body on food supplies and pricing policies) | Chair                                                              |
| Sukhpal Singh (by phone) | IIMA, Ahmedabad                                                                                        | Professor (research expert on contract farming)                    |
| P. K. Joshi              | IFPRI South Asia, New Delhi                                                                            | Director                                                           |
| Fred Roche (by phone)    | Ex-Asian Development Bank                                                                              | Ex-Head of Agriculture                                             |
| Graham Dixie (by phone)  | Advisor, World Bank                                                                                    | Member of the "Enabling the Business of Agriculture Project"       |