

Linking Graduate Research to Market-oriented Agricultural Development: IPMS Experience with Ethiopian Higher Learning Institutions[®]

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Abstract

Graduate programs in agriculture and allied disciplines in Ethiopia are expected to make concrete contribution to market-oriented development of smallholder agriculture. This, among others, calls for re-alignment and engagement of the programs with smallholder farmers and, value chain, R&D and policy actors. No panacea exists, however, as to how to ensure effective linkages, and thereby responsiveness. Lessons from initiatives on the ground in the country and beyond is thus crucial to inform the development of appropriate policy and innovative strategy. With the same purpose, this paper discusses the key challenges facing the graduate programs and IPMS initiative to enhance the relevance of graduate research to challenges in commodity value chain development. The paper draws lessons and identifies strategic options based on the insights from IPMS experience as well as other emerging opportunities to improving the relevance and quality of research and learning in the graduate programs. The paper concludes by explicitly recognizing that improving the quality and relevance of graduate research and learning is a daunting task, requiring a holistic approach, multi-pronged and multi-level strategies, and long term commitment.

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Introduction

The sense of urgency in Ethiopia today is more than ever about fostering sustainable development, to end poverty and hunger. Agriculture being the dominant sector of Ethiopian economy its performance determine the ability of the nation to address the problem of poverty, food insecurity, and to sustain overall economic growth. Yet, Ethiopian agriculture remains predominantly smallholder, rain-fed, subsistent-oriented, natural resource-based, and hence low input-output systems. Within such a context, market-based improvement of agricultural productivity is the key to achieving food security and poverty reduction (Global Food Security Act, 2009).

Globally, increasingly knowledge is driving the expansion of food production (McCalla, 1998), food security and environmental sustainability (Acker, 1999), and knowledge is a base for competitiveness in export market (Santiago et al, 2008). It is now widely acknowledged that readily available global knowledge and technologies should be harnessed to resolve problems of productivity, profitability and sustainability in smallholder agriculture (Inter-academy Council (IAC), 2004).

Enhancing human competences and organizational innovative capabilities are prerequisites to access, and effectively apply and exploit emerging scientific knowledge and technology, along with indigenous knowledge (IK). Higher learning institutions (HLIs) in agriculture and allied disciplines are vital in this regard. As a result, political commitment has increased in Ethiopia and beyond to support HLIs, graduate programs (GPs), and agricultural education and training (AET) in general. At the same time, however, HLIs, particularly GPs, are expected to efficiently utilize public resources for societal purposes and to deliver '*value for money*'.

The increasing emphasize on developmental roles of HLIs implies that GPs need to establish network with diverse knowledge sources, and forge linkages and closely work in partnership with farm households, agri-business, agro-industry, policy, and state and non-state research and development (R&D) actors. Yet, neither clear policy nor sufficient pilot initiatives exist in many countries to this effect (Santiago et al, 2008). We don't know enough about what kind of strategies and approaches are effective in re-orienting GPs and AET in general to their new and expanded developmental roles (Davis et al, 2007). Nor proven model is available as to how GPs can be better linked and become more interactive, thereby relevant and responsive. With the purpose of making a modest contribution, the paper presents down-to-earth experience of IPMS with national GPs in agriculture and allied discipline, discusses the insights and lessons, and suggests specific strategic options that may help address challenges to improving the quality and relevance of research and learning in agriculture and related graduate programs.

The remainder of the paper is organized as follows: first, some background information is in order in section 2, highlighting the most pressing challenges awaiting innovative resolution to get Ethiopian smallholder agriculture moving along a sustainable commercialization path and the imperative for knowledge and innovation. Within the context of the overall higher education reform agenda, Section 3 discusses the issue of relevance and quality in the national GPs. Section 4 discusses the rationale and

intervention modalities of IPMS to enhance the relevance of graduate thesis research projects, and it highlights some encouraging improvements observed due to the intervention. Finally, Section 5 draws conclusions and recommends strategic options for addressing the key challenges and to exploiting emerging opportunities to enhance both the developmental relevance and quality of graduate research.

2. Smallholder Agricultural Transformation: the Imperative of Knowledge and Innovation

Ethiopia has since the early 1990s pursued a national development strategy, which is rural-focused and market-based development of smallholder agriculture. Despite unprecedented public investments in the sector in the recent decades, the country experienced little progress. Notwithstanding some localized success and the recent encouraging sign of improvement in yields of staple crops (Ministry of Finance and Economic Development (MoFED), 2007), as the long-term trend confirms (World Bank, 2005; Byerlee et al. 2007), cropland expansion remains the primary source of agricultural growth, with little change in land and labor productivity.

The realization of the sought smallholder agricultural transformation will be more challenging than ever before. It will have to be achieved within the context of mounting demographic pressure set against natural resource degradation (World Bank, 2005), competing land use needs for food, feed and bio-fuel, highly diverse agro-ecologies, climate change (Admassie et al, 2008; Deressa et al, 2008), globalizing agro-food system, and rising volatility in food prices (Spielman et al, 2009). Within this context, the strategy for Ethiopian smallholder agriculture development must of necessity be more knowledge and information intensive. This is crucial to circumvent the resource scarcity through improving efficiency in resource use, to produce marketable surplus, and to successfully adapt and respond to changes.

Advances in basic sciences (Science Council, 2005) and information and communication technologies (Juma, 2009) are increasingly making new insights, tools and methods available that help to improve productivity, quality of agricultural produce, profitability, and ecological sustainability. Nevertheless, ability to access from diverse sources and effectively apply technical, organizational, institutional and entrepreneurial knowledge will be a *sin qua non condition*. This so-called ‘*absorptive capacity*’ encompasses ability to acquire, assimilate, transform and exploit knowledge (Zahra and George, 2006), and it entails new competencies such as ‘new’ knowledge and technology assessment skills, technical tool like effective utilization of ICT, and effective interaction, both within organization and with other organizations and actors (Hidalgo and Albort, 2008).

Cognizant of the emerging opportunities on the one hand and capacity challenges on the other, bilateral and multilateral development partners are shifting their priority in favor of capacity strengthening. One such example is the US Global Food Security Act (2009), emphasizing strengthening innovative capabilities of agriculture-related higher education and national research systems in developing countries. Agricultural HLIs can/should make special contributions to fostering sustainable agricultural transformation, through

relevant, need-based, proactive human and organizational capacity strengthening as well as impact-oriented research and innovation. In particular, GPs are well placed to conduct research to adapt and/or generate knowledge, to strengthen capacity of extension service for knowledge dissemination, and to generate research-based evidence to inform dialogue for on creating enabling policies and institutions (Global Food Security Act, 2009). As Teferra (2007) concludes, *‘Without strong graduate programs, it is simply impossible to establish a viable research culture and innovative capabilities in a nation.’*

3. Making Graduate Programs Responsive

3.1. Reform agenda

In Ethiopia, graduate research is an integral component of the overall research undertakings at colleges and university faculties of agriculture and allied disciplines, and often thesis research projects represent the larger share of time-bound research undertakings of universities. Thus graduate research can make its own contribution in addressing practical development and policy challenges if properly planned and implemented with the stakeholders. As put succinctly by Fear et al (2006, cited in Bawden, 2007:19), *“academy need to engage with the citizenry and not just work for it or on it or extend out to it.”*

Indeed there has been a continuous call for HLIs in developing countries to transform themselves into 'developmental institutions' to increase their contribution to development through the production and distribution of knowledge (Sutz, 2005). Societies expect of agricultural HLIs of the 21st century to play the critical role of technological gate-keeping; and bridging the *‘genetic divide’* and *‘digital divide’* (IAC, 2004). To serve these and other ‘developmental’ purposes, GPs should be deeply embedded into national productive and social sectors; socially networked- nationally and internationally- through a variety of formal/informal mechanisms (Bawden, 2007).

The quality of learning experience in GPs is equally critical. GPs have a vital role of creating ‘new generation’ of professionals who are staffing and leading public and private AET, agricultural R&D, and politics and policy development processes. Investment in the strengthening of GPs in human and institutional capacity has a powerful positive multiplier effects on the quality and relevance of national AET system as a whole (Global Food Security Act, 2009).

GPs need to have relevant, multidisciplinary, flexible and dynamic curricula, and mode of delivery emphasizing interactive, discovery, and experiential learning in ‘real-life-settings’ (Acker, 1999). Also, GPs need an enabling policy environment externally; and internally, should have ‘the right’ governance, incentive, and organizational/institutional arrangements up and running.

The ultimate test of ‘developmental’ HLIs and their GPs would be their ability to produce ‘new generation’ of scientists and professionals who are not just technically competent, but entrepreneurs, those capable of creating jobs through enterprises rather than job

seekers (Juma, 2009). Moreover, developmental HLIs are those institutions producing new generation of graduates who fit well to the emerging ‘*knowledge economy*’ and ‘*knowledge society*’ (Santiago et al, 2008), and graduates capable of providing effective and demand-driven knowledge service to public, private, civil society organizations (CSOs), and the citizenry at large (Bawden, 2007).

3.2. Graduate programs in agriculture and related disciplines in Ethiopia: the challenge of relevance and quality

Ethiopia has over three decades of experience with graduate programs in agriculture. The pioneer, the then Alemaya College of Agriculture, launched GPs in the year 1979 at M.Sc level in five areas of specializations. Today GPs are being run by the Colleges of Agriculture of Haramaya and Hawassa universities, Wondogenet College of Forestry, Faculty of Dryland Agriculture and Natural Resources of Mekele University, and the Faculty of Veterinary Medicine of Addis Ababa University. About 29 new M.Sc. programs in agriculture had been launched until 2007, and Haramaya University for the first time launched 4 PhD programs in agricultural disciplines (Kassa, 2007).

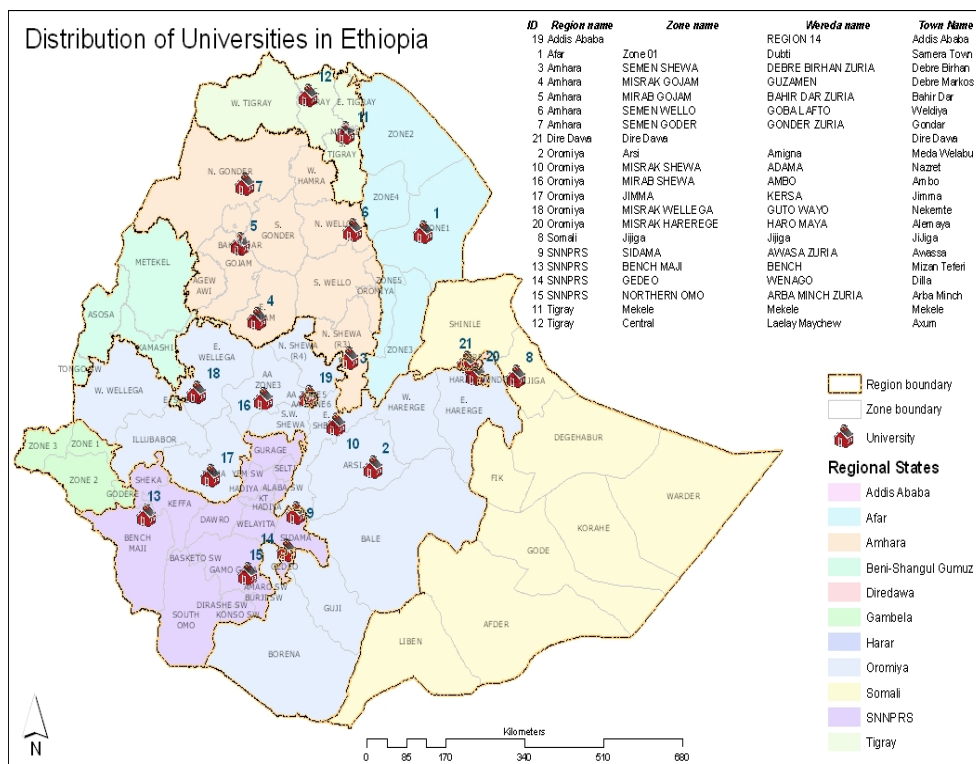


Figure 1: Distribution of universities in Ethiopia

Huge public investments have been made to create new universities¹, upgrade former colleges and technical institutes to university status, expand old universities, and to

¹ There are 22 functional universities and 9 more universities are under construction

develop ICT infrastructure and improve lab facilities (Figure-1). A number of higher education reform measures have been initiated too (Saint, 2004; Kassa, 2007), in the areas of funding, institutional autonomy, governance, and opening of new programs and revision of old ones. Further, national system support agencies have been established, encompassing Higher Education Strategy Institute, Education Quality and Relevance Assurance Agency and National Pedagogical Resource Centre (ibid).

The unprecedented political commitment in Ethiopia in supporting the expansion of HLIs, including GPs, is something highly commendable. Nonetheless, the real challenge lies in transforming the GPs into vibrant and responsive centers of knowledge and innovation.

Despite the government effort, empirical results indicate both the learning experience and research at HLIs, including GPs, have serious limitations in terms of quality, relevance and responsiveness. And even worse, the old and well established universities have had experienced deterioration in their research and innovation capabilities due to such factors as unclear research mandate, lack of national research priority, limited funding for research and outreach activities, and teaching overload and insufficient incentive for staff engagement in development-oriented research (Kassa, 2007).

Although programs and curriculum revisions were taken place in many HLIs, it was often done without rigorous market research, tracer studies, and the involvement of key stakeholders like the private sector. More often than not, the content is production/technology- oriented, emphasizing theoretical and conceptual issues to the detriment of practical and analytical skills (Davis et al, 2007). Further, the dominant mode of delivery in HLIs remains top-down and lecture-based, and aided by text books with little relevance to the situation of Ethiopian agriculture (Kassa, 2007).

The prevailing dominant learning philosophy and approach in HLIs in Ethiopia are less appropriate to developing the capacity of learners for *'life long learning'*. In a nutshell, the available evidence seems to suggest that the quality and relevance of Ethiopian GPs are worrying. As the World Bank (2003, cited in Amdissa, 2008) concludes, *'Expansion of higher education without maintaining and improving quality will be counterproductive and in the long run destabilizing.'*

3.3. Pilot initiatives by higher learning institutions

Despite the earlier mentioned challenges of quality and relevance however, there are isolated innovative experiments by HLIs in creating external knowledge networks and forging partnership with international and national development partners and foreign universities. It is imperative to learn from and capitalizing on such experience. Here is the highlight of some of the examples that the authors are aware of.

The first is the partnership for public staff capacity strengthening through modular and distance-based joint master program by Mekele University and University College Cork, Ireland. This 'new' program integrating e-learning has been run in partnership with the

Tigray Region Food Security Bureau, with financial support from the Irish Aid. The program has been found successful and effort is underway to replicate the program in other universities (personal communication).

The second example is the partnership between Hawassa University and University of Saskatchewan, Canada, with financial support from the CIDA (Beyene, 2007). The partnership was aimed at improving capacity in graduate instruction in agriculture, including the carrying out of relevant research through graduate programs, to enhance agricultural sustainability and food security in Ethiopia.

The third example is the partnership between Haramaya University and the Netherlands Cooperation for Higher Education (NUFFIC). The partnership was initiated with the primary aim of R&D capacity strengthening within the university and for institutional building, with ultimate aim of creating adequate capacity to effectively address development challenges of pastoral and agro-pastoral communities through R&D. One result of the partnership has been the establishment of the Institute of Pastoral and Agro-pastoral Studies (IPAS) at Haramaya University (personal communication).

Yet another exciting example is again from Haramaya University. This is a joint effort aimed at improving public extension by producing all-rounded professional extension workers capable of serving diverse needs of Ethiopian farmers, through innovative, practical-oriented, custom-made BSc training program. This commonly referred to as 'BSc Mid-career Program' has been initiated and run in partnership with Sasakawa Africa Fund for Extension Education (Safe), MoARD, and regional bureaus of agriculture and rural development.

Right from its inception, the program has been based on the philosophy of experiential learning in real-life –setting. The unique aspect of the program is the practical component involving action research. It entails participatory planning and implementation of supervised extension/enterprise projects (SEPs) by the candidates in their own place of work over several months. Team of university instructors conducts systematic periodic supervision of the implementation of SEPs, while technical backstopping and continuous implementation supervision is done by local supervisors assigned from among experts with regional, zonal or woreda offices as the case may be.

This arrangement expanded practical learning opportunity for the students, and encouraged the academic staff to get out of the 'ivory tower' and continuously interact with key stakeholders outside in the practical world. Secondly, the feedback through continuous interaction has been useful to keep the curriculum relevant and dynamic (Tefera et al, 2006).

Moreover, independent external evaluation (Mwangi et al, 2005:ii) concludes, “ *The program is well supported by all the stakeholders because it is flexible, demand-driven and in very high demand. It is also highly supported because of its experiential teaching/learning approach and the incorporation of off-campus supervised enterprise*

projects.” This highly regarded program has been replicated at Hawassa University, and effort is underway for further replication at Mekele and Bahir Dar universities.

4. Enhancing Relevance: IPMS Experience with Graduate Programs

IPMS is a five-year project funded by the Canadian International Development Agency (CIDA). The aim of IPMS is to enhance the effectiveness of the effort by the Ethiopian Ministry of Agriculture and Rural Development (MoARD) to improve the productivity of smallholder through market-oriented agricultural development. IPMS uses participatory value chain dev't approach with innovation systems perspective; and gender, HIV/AIDS and environment are systematically mainstreamed in all project components. The project has been operational in 10 districts or Pilot Learning *Woredas* (PLWs) from Amhara, Oromia, Southern (SNNP) and Tigray Regions.

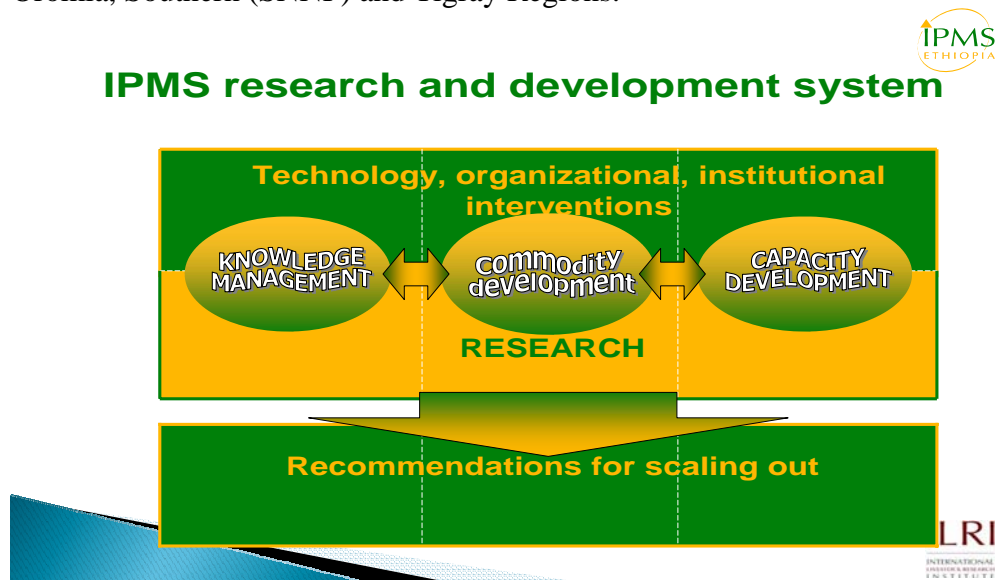


Figure 2: Project components

IPMS being research-cum-development project, undertaking research is a core project activity. The project employs action research approach with the purpose of solving emerging problems, and the documentation of experience to filter-out lessons for scaling and developing recommendations to feed into institutional and policy development. IPMS research strategy is multi-pronged; the project encourages multi-disciplinary approach and multi-institutional arrangements, whilst ensuring that capacity building activities are embedded into the research processes. One important research modality is the use of graduate students – through full scholarship and research sponsorship.

4.1. An overview of the quality and relevance of graduate research

As a part of its public sector innovation capacity development effort (Figure-1), IPMS has over the past four years worked closely with the national GPs in agriculture and related disciplines. During this period, the senior IPMS staff members have co-supervised graduate research projects and have served as members of board of examiners, who evaluate the quality of both thesis preparation and open defense. Table-1 shows the

summary of personal observation of IPMS staff over the last four years with regard to the relevance and quality theses by graduate students in agriculture and allied disciplines.

Table 1: The summary of observations regarding the relevance and quality of graduate theses

<i>Critical stages in thesis research</i>	<i>Description of observed weaknesses</i>
● Concept note and proposal development stage	<ul style="list-style-type: none"> ▪ Proposals are often ill-conceived, production-oriented, with little practical relevance ▪ Poor interaction between students, supervisors and sponsors ▪ Students lack support from statisticians; hence poorly designed research
● Implementation stage	<ul style="list-style-type: none"> ▪ Students lack practical skills (field and laboratory) and experience in working with communities ▪ Weak field supervision by university supervisors – due to heavy coursework load and many advisees ▪ Supervisors fail to provide timely and critical feedback.
● Write-up stage	<ul style="list-style-type: none"> ▪ Weak critical and systematized use of the literature ▪ Weak in scientific writing skills ▪ Difficulties in drawing appropriate conclusions and forwarding concrete recommendations
● Documentation and dissemination of results	<ul style="list-style-type: none"> ▪ Documentation in a form of thesis is a common practice ▪ In few cases, some universities publish abstracts of theses ▪ However, these materials only reach limited number of professionals and are written in a scientific manner, excluding their value to the wider non-scientific community – who are often the end users.

Table 2: Summary of the findings of stakeholder meeting about the status of graduate research

<i>Relevance and quality</i>	<i>Funding & staff</i>	<i>Documentation & dissemination</i>	<i>Weak linkages & collaboration</i>
<ul style="list-style-type: none"> ▪ Questionable quality of research 	<ul style="list-style-type: none"> ▪ Near exclusive reliance on limited government funding 	<ul style="list-style-type: none"> ▪ Poor documentation 	<ul style="list-style-type: none"> ▪ Intra-institutions
<ul style="list-style-type: none"> ▪ Generally driven by individual interest 	<ul style="list-style-type: none"> ▪ Disparity in allocation of funds - uncoordinated 	<ul style="list-style-type: none"> ▪ Dissemination mostly in the peer community 	<ul style="list-style-type: none"> ▪ Inter-institutions
<ul style="list-style-type: none"> ▪ Haphazard, isolated, supply driven, technology focused 	<ul style="list-style-type: none"> ▪ Problem of availability of adequate staff 	<ul style="list-style-type: none"> ▪ Inadequate use of ICT 	<ul style="list-style-type: none"> ▪ Research – extension – education
<ul style="list-style-type: none"> ▪ Mismatch with duration of research demand and available student time 	<ul style="list-style-type: none"> ▪ Senior staff retention problem 	<ul style="list-style-type: none"> ▪ Poor writing & communication skills of students 	<ul style="list-style-type: none"> ▪ Other relevant actors (private sector, farmers, ...)
<ul style="list-style-type: none"> ▪ Lack of a coordinated national agricultural research plan 	<ul style="list-style-type: none"> ▪ Limited flexibility of staff to adapt and respond to changing demand and expectations 	<ul style="list-style-type: none"> ▪ 	<ul style="list-style-type: none"> ▪

Further, IPMS - in collaboration with Hawassa University convened a stakeholder workshop in 2008 to stimulate discussions about the quality and relevance of research by

graduate students. The participants were from the relevant federal ministries (MoARD and Ministry of Education), Ethiopian Institute of Agricultural Research (EIAR) and Regional Agricultural Research Institutes (RARIs), CGIAR centers (ILRI and IFPRI), and relevant faculties and colleges from the Addis Ababa, Haramaya, Hawassa and Mekele universities. The participant confirmed earlier observations (Table-1) and generated additional insights (Table-2).

4.2. IPMS intervention to enhancing relevance

IPMS has over the past four years fully financed several candidates who were nominated by the public research and extension organizations. In addition, many other financially constrained graduate students, but with good academic performance, have received support to undertake their thesis research projects. So far more than 60 IPMS-sponsored graduate students (tuition/thesis or thesis only) have successfully defended their theses, and another 40 are presently at various stages in their research. IPMS strategies and modalities to enhance relevance are aligned with the critical stages in graduate research process. Due attention has been given to problem identification, skills to conduct rigorous analysis and develop appropriate recommendations, and proper dissemination of research results.

Problem identification and proposal development

The problem identification process by IPMS with partners involved the use of secondary data, GIS, expert consultation, and participatory diagnostic survey (PRA) and work plan development for each PLW. Subsequently, a stakeholder workshop was organized involving extension experts, administration, research institutions, women and men farmers, private traders, input suppliers, exporters to agree on priority commodities, problems, possible solutions, and responsible organizations. Problems that had ready solutions were dealt with the experts and the research institutions. Researchable issues were identified in areas where there were knowledge gaps.

IPMS facilitates students' consultation with partners and stakeholders. The graduate fellows identify researchable problems and develop concept papers in consultation with IPMS staff and partners at PLWs. IPMS staff at the head quarters communicates during full proposal development with the graduate fellows and university supervisors. This enables to steer thesis research projects to priority researchable problems that had been identified during the diagnostic survey and work plan development, and also to studies which would be conducted with the view of developing specific intervention options and solving emerging problems.

Further, IPMS facilitated the establishment of Woreda Learning and Advisory Committee² (WALC). WALC serves as important platform for graduate students to

² WALC is a structural arrangement for coordinating multi-stakeholder (public, cooperatives, rural finance, NGO and limited private actors) pilot intervention planning, process monitoring, and learning and innovation.

present their research proposal for feedback before the actual implementation commences.

Research project implementation and write-up

The project provided technical assistance to graduate students by assigning its senior staff members as co-supervisors to ensure effective implementation and quality of thesis. Further, IPMS in collaboration with Capacity Strengthening Unit (CaSt) of ILRI organized specialized training such as research methodology and proposal writing to enhance graduates' research skills. Moreover, IPMS sponsors the participation of the graduate fellows in relevant national forums such as conferences, workshops, seminars, etc.

Dissemination of research outputs

WALC is also an important platform for graduate students to present research results to potential users for verification, validation and sharing the findings. In addition, IPMS facilitates the dissemination of research outputs in the form of working papers, conference papers, and through mandatory ILRI wide graduate seminars. Further, the project collaborated with CaSt in facilitating the launching of Graduate Fellow Forum (GFF)- a platform for the graduates to share research results and to maintain linkage and also interact with ILRI.

Capacity strengthening for university supervisors

IPMS through its continuous interaction with the academia colleagues realized the need for strengthening the capacity of university supervisors in new concepts and approaches. A training workshop was carried out on 'the application of innovation system concepts and approaches in agricultural research for dev't (AR4D)' as part of the effort towards enhancing the relevance of graduate research to real challenges in agriculture and rural development.

Stimulating sustainable partnership at higher level

The challenge with project approach is the issue of sustainability. Cognizant of this, IPMS convened a national stakeholder workshop in October 2008 with the purpose of stimulating higher level deliberation as to how to forge sustainable partnership to enhancing the relevance of graduate research in advancing agricultural sciences and development in Ethiopia.

The importance of having some kind of coordination mechanism and a platform were considered critical to translate the intentions to concrete actions. Thus, it was agreed to establish a "***Forum for Graduate Research in Agriculture***", ***FGRA*** for short. The forum is consisting of deans of schools of graduate studies of relevant higher institutes as well as EIAR representative. Actors like IPMS and the Rural Capacity Building Project (RCBP) of MoARD were identified as collaborators with important facilitation roles. It

was also agreed that Hawassa University would play a coordination role during the transitional period.

4.3. Some encouraging observations

Tracer study is being undertaken to generate essential empirical evidence on the overall impact of the learning experience through action research and field exposure. However, the indications are that the improvement shown due to IPMS support in developmental-relevance of graduate research projects provides ‘*glimmer of hope*’, the quality of the theses though still fails short of expectations.

IPMS-sponsored graduate students have, through action-research, benefited from the exposure to development interventions on the ground and from the opportunity to interact with communities and various R&D actors. The students have been exposed to new research and development concepts, through their thesis research projects. Research by graduate students has been steered to priority and relevant topics; and orientation of the research systematically aligned to a broader development framework – value chain and innovation systems. The later has been achieved by linking graduate thesis research to commodity value chain development through research formulation, implementation and sharing of findings.

Further, some graduate fellows have worked across PLWs, helping in systematically addressing crosscutting issues such as livestock feed scarcity, accessibility and effectiveness of public AI (artificial insemination) service in livestock genetic improvement, etc. The results of the theses are being synthesized to feed into policy dialogue. Secondly, specific commodity research in PLWs by the students in different disciplines generated results which, in combination, help in addressing key issues along commodity value chains, from improving efficiency in resource use (water/feed/management capacity) in commodity production, strengthening supportive services, all the way to enhancing value addition, market-linkage and profitability.

The selected theses that have been published as IPMS Working Papers to disseminate research results are being used as references by graduate students in different universities. This directly contributes to alleviating the scarcity of reference materials that are relevant to the situation of Ethiopian agriculture. There is some anecdotal evidence indicating that several of these ‘new style’ graduates are already playing important roles in different capacities influencing the direction of market-based smallholder agriculture development in Ethiopia.

5. Conclusion and Recommendation

Unlike in the past, access to and effective application of knowledge will increasingly determine the ability of nations, including Ethiopia, in achieving productive, remunerative and ecologically sustainable agricultural development. It is thus decisive to have some strong graduate programs of high quality that are relevant and responsive to societal economic, social, political and ecological needs. Both the relevance of graduate

research projects and the quality of learning experience thus deserves careful attention to leverage and optimize graduate research contribution to addressing real challenges in agriculture and rural development. And this is something that cannot be left to HLIs alone.

The purpose of this paper is to make a modest contribution to the discourse on the issue of reforming HLIs in Ethiopia and beyond in Africa. More importantly, the authors through this paper hope to provoke further debates and to stimulate in this critical area more systematic and analytically rigorous research. The constraints, challenges and emerging opportunities to enhancing the relevance and quality of research and learning in GPs are summarized here, along with suggestions for the way forward.

5.1. Key lessons from IPMS experience

IPMS capacity-building support has been channeled in terms of financial and technical support, facilitating the connectivity of the demand for knowledge and the supply of knowledge, specialized training for research capacity strengthening, and the creation of platforms for knowledge sharing and stakeholder deliberation. The experience and approach of IPMS offers an operational strategy and *modus operandi* important to pilot-test and adapt intelligently borrowed '*best bets*' in order to innovate '*best fits*'.

IPMS experience also shows that linking systematically thesis research projects through action research to projects in agriculture and rural development, development-oriented research and extension activities could enhance developmental relevance of graduate research and expand learning opportunities for the students.

The achievement of the intervention has been limited, however, primarily due to insufficiently prepared graduate students in terms of skills in conducting development-oriented research, and staff shortage set against increased enrolment in GPs for providing the students with adequate and effective guidance. The existence of sufficient number of qualified staff with research skills, field exposure, and the knowledge of current development and options in agriculture, rural development and related fields is paramount important.

GPs should make a relentless effort to ensure that adequate capable staff members are available for both teaching and supervision. Some of the options to overcome the constraints include: i) striking a balance between enrolments and capacities, particularly availability of senior staff, and exploring the possibility of integrating e-learning; and creating an enabling environment for 'brain circulation' for efficient use of Ethiopian professionals in the country and to attract the diasporas, eliciting the support of expatriates with international and UN agencies based in Ethiopia, and overseas voluntary associations

On the positive side, initiatives to create functional multi-stakeholder platforms like the “*Forum for Graduate Research in Agriculture*” is potentially useful and need to be supported, but the forum should be inclusive, with enough representation of producer organizations, business and industry associations, NGOs, CSOs, and professional associations.

Such platform can facilitate experience sharing on better ways of strengthening linkages and partnerships between education, research, extension and development; the establishment of priority research agenda and/or thematic areas through participatory process; and for periodic deliberation on vision, policies, strategies and action towards enhancing the quality of learning experience and developmental relevance of research in GPs, and feed the consensus into higher level policy decisions.

Further, this kind of forum is useful to make coordinated effort towards mobilizing fund from diverse local and external sources in support of graduate research, and to lobby for public fund allocation which matches the expanded mandate of GPs , while also ensuring that public fund allocation is done on the basis of tangible contribution to development that GPs of respective institutions are actually making and/or likely to make.

5.2. Other opportunities that need to be explored and exploited

Learning from and capitalizing on pilot initiatives of HLIs

There is imperative need for learning from and capitalizing on the isolated ‘successful’ experiments by higher learning institutions aimed at creating external knowledge networks and forging partnership with international and national development partners and foreign universities. To this effect, further research is called for to document and analyze experience and filtering lessons.

Enhancing universities’ regional linkages and innovation collaboration

Lastly, an option that is worth considering within Ethiopian context is exploring opportunities and developing strategies to enhance universities’ linkages and collaboration with regional governments and other actors in the region (neighboring regions) where the universities are situated. Such research linkage and partnership seems practical in Ethiopia given: i) the wave of expansion of universities and graduate programs with increasingly fair regional distribution; and ii) highly diverse production, food security and environmental challenges across the regions.

Nonetheless, the habits and practices of regional governments are such that they may not have felt needs for research-based knowledge and innovation. On the other side, the capacity and incentive structures within higher learning institutions are such that GPs may be less responsive to regional priorities. Perhaps assessing existing capacities within university system may be an important entry point to design an appropriate capacity

strengthening strategy. In addition, establishing national competitive grants for university regional engagement and collaboration is an option worth considering to stimulating effective demand for research-based knowledge and innovation, while also providing incentive for response by universities.

Finally, we would like to make a caveat. Ensuring the quality of learning experience and developmental relevance of research in graduate programs is a daunting challenge. As research elsewhere shows, tackling one area without appropriate attention to inter-related aspects would lead to partial success. Thus, a holistic approach, multi-pronged and multi-level strategies, and long term commitment has more chance to succeed. The authors are of the opinion that such strategies should entail: i) creating and strengthening effective demand from the bottom; ii) strengthening staff competencies and organizational response capacity within the university system; and iii) supporting response from the top through appropriate policy, legislation, funding and incentive structures. These are crucial to reinforce the culture of quality, systems responsiveness and efficiency as well as to encourage universities to engage proactively in national and international knowledge networks, and in forging strategic partnership with national/regional government, economic agents, and public and private R&D actors.

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