

Full Length Research Paper

Needs assessment for inter- and trans-disciplinary training and research for the enhancement of rural transformation in the *Amhara* region, Ethiopia

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Abstract

Ethiopia is an agrarian country and agriculture is the backbone of its economy. Because of this fact, the government of Ethiopia has devised Agricultural Development Led Industrialization (ADLI) as the country's overall economic development policy and the country has been investing appreciably towards agricultural growth. Particularly for the last 15 years, public investment towards the expansion of higher education, research and extension in agriculture and natural resource management has been so enormous. These higher education and research institutions are expected in turn to play a great role in stimulating rural transformation. In reality, however, they are not sufficiently responsive to rural transformation especially in addressing problems and priorities of resource poor small-scale farmers. Thus, to assess the needs of trainings that are more responsive to rural transformation including inter- and trans-disciplinary trainings in higher education and research institutions is a paramount importance. To this effect, survey studies were conducted to collect primary information from focus group discussions and key informant interviews. Checklists and semi-structured questionnaires were also developed for respective groups of discussants and respondents. Stratified and purposive sampling technique was dominantly employed during the survey studies. Most respondents regardless their backgrounds were unaware of the term inter- and trans-disciplinary. This was because different stakeholders used to work independently which they had no experience how to integrate work in to a common goal. So, awareness on inter- and trans-disciplinary training/research can be created by practically involving stakeholders how they are working with in and across disciplines in which understandings change in response to the perspectives of others. Respondents who have awareness of the term inter- and trans-disciplinary training agreed with the relevance of inter- and trans-disciplinary training/research for addressing farmers' problems in stimulating rural transformation. Therefore, putting in to practice and giving emphasis on inter- and trans-disciplinary training/research in each stakeholder will much contribute to rural transformation.

Keywords: Rural transformation; Need assessment; Awareness; Responsiveness.

INTRODUCTION

Ethiopia is an agrarian country and agriculture is the

backbone of its economy. Agriculture is thus believed to be the major source of the country's economic growth and its development is expected to adequately drive the process of industrialization. Because of this fact, the

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government of Ethiopia has devised Agricultural Development Led Industrialization (ADLI) as the country's overall economic development policy and the country has been investing appreciably towards agricultural growth. Particularly for the last 15 years, public investment towards the expansion of higher education, research and extension in agriculture and natural resource management has been so enormous. These higher education and research institutions are expected in turn to play a great role in stimulating rural transformation. In reality, however, they are not sufficiently responsive to rural transformation especially addressing problems and priorities of resource poor small-scale farmers.

Higher education and research institutions, notably *Bahir Dar* and *Gondar* Universities and *Amhara* Region Agricultural Research Institute (ARARI) which are of the interest of this particular project, are short of the essential human and institutional capacities to conceptually and methodologically address rural transformation through knowledge generation, training and communication of research findings that reach deep into rural communities. By and large these institutions undertake disciplinary trainings and/or distant researches, whereas agriculture in *Amhara* region as well as in the country is mostly run by small-scale farmers who manage various agricultural practices altogether in less than a hectare of land under diverse conditions. This calls for responsive training and research that addresses diversified farmers' priority constraints.

To situate trans-disciplinarity in a development context, we need first to understand a little about the theoretical traditions. We therefore firstly provide a brief overview of the various epistemological strands in development research and look at the disparate positions that researchers have taken in their pursuit of a theoretical basis. This provides evidence of the clear need for a coherent explanatory framework for development studies and research. We then present views on interdisciplinarity and multidisciplinary and explain how these two frameworks fall short of adequately describing actual development practice with reference to academic training.

According to Judge (1998) interdisciplinary theory implies a direct interaction between disciplines, with individuals being knowledgeable and experienced within more than one discipline, but isolated by their experience across academic fields. (Max-Neef, 2004) puts forward interdisciplinarity as a hierarchical process where a dominant discipline imposes its judgment on other disciplines which are seen as working underneath it. In other words, there is a cooperation of sorts, but the leading discipline ultimately determines the research direction and provides the dominant epistemological basis. It seems then, that in interdisciplinary approaches, researchers draw on multiple 'knowledges' (either personal or inter-personal), but continue to situate their research in a defined and established 'academic' space.

Development research, in some academic contexts, takes place in this manner with researchers working primarily in a particular discipline, within an existing faculty, but informing their research somewhat with knowledge based in other departments and fields. In some ways such an approach provides for 'cross-fertilization' between disciplines, but there is still the challenge of dealing with the hierarchical nature of the process and the unquestioned assumptions carried by the dominant discipline.

What then, is it about transdisciplinarity that sets it apart from these other disciplinary concepts? As the prefix 'trans' indicates, transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond all discipline (Judge 1998). Different theorists have taken varied approaches to exactly what this entails. Christoph Kuffer (2005) argues that transdisciplinary theory is concerned with the crossing of boundaries in the production of knowledge. Molteberg and Bergstrom see transdisciplinarity as the integration of disciplines so that the totality of the transdisciplinary study would be greater than the sum of the parts (Molteberg and Bergstrom 2000a and 2000b). Max-Neef (2004) sees transdisciplinarity as the result of coordination between all different disciplines and the admission of multiple co-existent realities. As such, he argues that transdisciplinarity is about an interaction between various disciplines to provide coordinated practical answers to key questions in the real world, or, in the case of development research, in development practice. Importantly, in Max-Neef's view, such research is about creating the capacity for people to directly influence what they want to happen in their milieu (Max-Neef 2004). This description of transdisciplinarity is in alignment with the many proponents of theoretical praxis in development research. These include (Eade 2003; Reusse 2002; Rihani 2002), whose definition of praxis is a continuous cyclical process whereby theory informs practice which again informs theory and so on. It is clear then, that two important aspects of transdisciplinarity set it apart from other disciplinary concepts: firstly, the emphasis on co-ordination and integration of different types of 'knowledges' and secondly, the focus on solving real-world problems.

The objective of the study was therefore:

➤ To assess the needs of trainings that are more responsive to rural transformation including inter-and-trans-disciplinary trainings in higher education and research institutions of *Amhara* region/Ethiopia

RESEARCH METHODS

Desk study was carried out to get background and status of higher education and research institutions of *Amhara* region/Ethiopia in line with their responsiveness to rural transformation. Furthermore, survey studies were

Table 1. Groups of stakeholders used for focus group discussions and key informant interviews

No.	Focus groups	Main stakeholders	Informant groups	Samples
1	Higher education institutions	•Bahir Dar University •Gondar University	1. University heads 2. Instructors 3. Students	18 36 88
2	Research institutions	•ARARI head quarter • Gondar Research Centre	4. Research heads 5. Researchers	11 25
3	Employing organizations	•Extension and related offices •District and village cabinets •NGOs •Privates	6. Employers (heads) 7. Employee (alumni)	51 127
4	Farmers	•Farmers •Farmers associations	8. Farmers	62
Total				418

conducted to collect primary information from focus group discussions and key informant interviews. Main stakeholders were primarily identified and segregated into four and eight groups for focus group discussions and key informant interviews, respectively (Table 1). Checklists and semi-structured questionnaires were developed for respective groups of discussants and respondents.

Stratified and purposive sampling technique was dominantly employed during the survey studies. *Bahir Dar* and *Gondar* Universities were purposively selected among higher education institutions available in *Amhara* region and only agriculture related faculties and departments were used for the study. Heads and vice heads of the selected departments, faculties and universities were almost totally taken as respondents. Instructors and senior students of the selected departments were randomly given the questionnaires to respond. Almost all research directors, programme leaders and researchers of ARARI at head quarter office and *Gondar* Agricultural Research Centre were purposively used for the study.

Hierarchical purposive sampling was applied to select heads and agricultural experts at regional, zonal and district offices of agricultural extension and related sectors including irrigation, land administration and use, food security and disaster risk reduction, and cooperative promotion. All heads and technical departments' heads of these sector offices were tried to use for the study. Unless their number per department was more than five, questionnaires were given to almost all agricultural experts of the sector offices mentioned above. In case of exceeding their number greater than five in a department, the experts of that specific department was selected randomly.

The project was implemented in *Amhara* region specifically in north *Gondar zone*. For that reason, *Amhara* regional and north *Gondar zone* offices of these sectors in *Bahir Dar* and *Gondar* respectively were

selected purposively. *Chilga*, *Dabat* and *Debark* "Woredas" were selected for district level survey studies, while the three selected watersheds of the project namely *Wujiraba*, *Godinge* and *Mezega* are found in these "Woreda", respectively. All development agents (DAs) working in the three selected watersheds were used for the study, whereas farmers in the selected watersheds and in similar gender and age groups were selected randomly.

RESULTS AND DISCUSSION

Awareness of stakeholders for inter- and trans-disciplinary training and research

The term Inter- and trans-disciplinary training and research approach refers to a range of approaches from the simple communication of ideas to mutual integration of organizing concepts, methodology epistemology, etc. Rather than disciplines operating in parallel, it involves a synthesis of knowledge, in which understandings change in response to the perspectives of others. The aim is to seek coherence between the knowledge's produced by different disciplines. It challenges existing boundaries and 'redraws the map'. Inter-and trans-disciplinary leads to the evolution of disciplines, hybridization and outcomes that are greater than the sum of the parts. It does not only integrate across disciplines but includes a set of approaches that can generate new comprehensive knowledge and an overarching synthesis. Inter-and trans-disciplinary training and research approach is aimed at understanding complex issues. Given this definition of inter- and trans-disciplinary respondents were assessed whether they are aware of inter- and trans-disciplinary training and research approach or not. As shown in Figure 1, the awareness for inter- and trans-disciplinary training/research varied among respondent groups. The highest affirmative response (90.9%) was recorded from

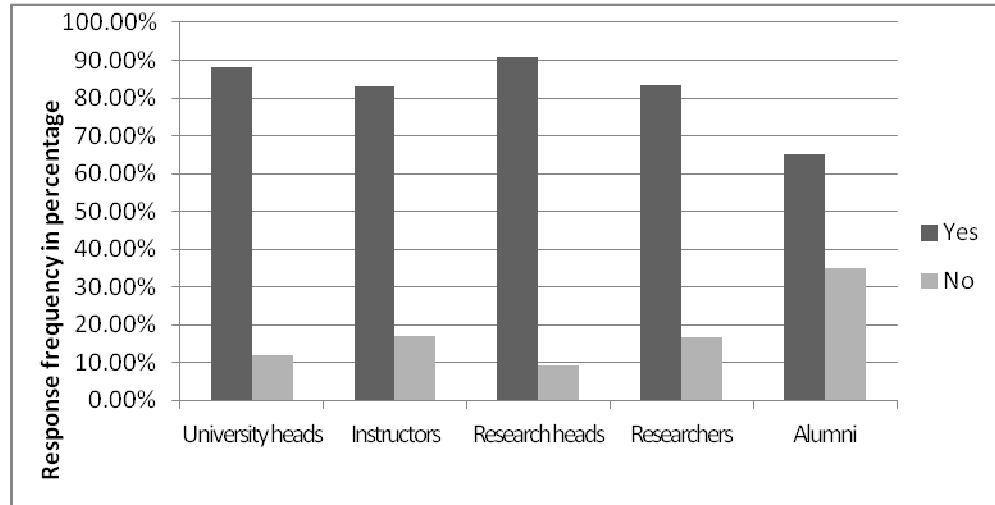


Fig 1. Responses of five respondent groups on a question whether they are or not aware of inter- and trans-disciplinary training/research

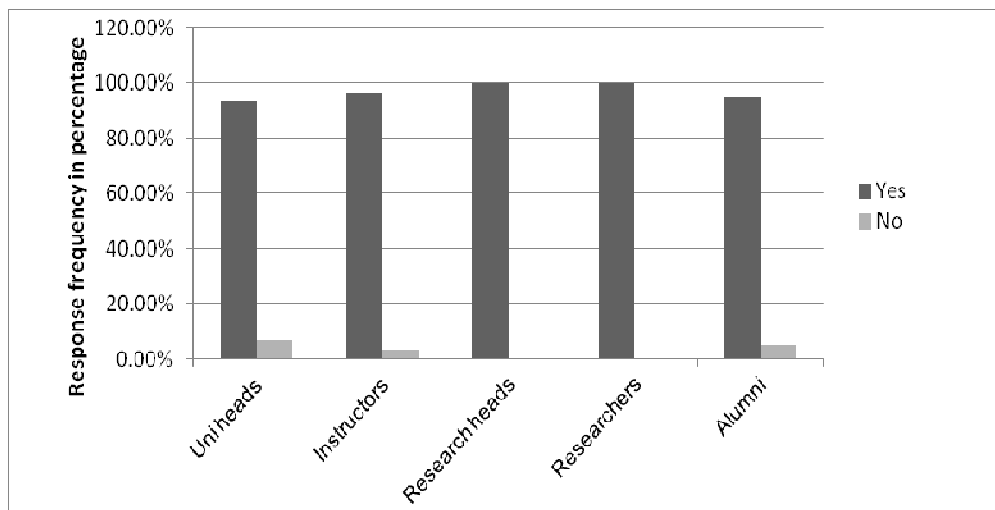


Fig 2. Opinions of five respondent groups on whether or not inter- and trans-disciplinary training/research would stimulate rural transformation better than that of disciplinary ones.

research head respondents, while the least affirmative response (65%) was found from alumni respondents.

In the focus group discussions, however, most respondents didn't properly define the term trans-disciplinary and they considered it as synonymous to the term intra-disciplinary. The reason why they associated trans-disciplinary with intra-disciplinary was that they were much acquainted with intra- and inter-disciplinary. Therefore, finally it was found that most respondents regardless their backgrounds were unaware of the term trans-disciplinary although they responded affirmatively in the questionnaire.

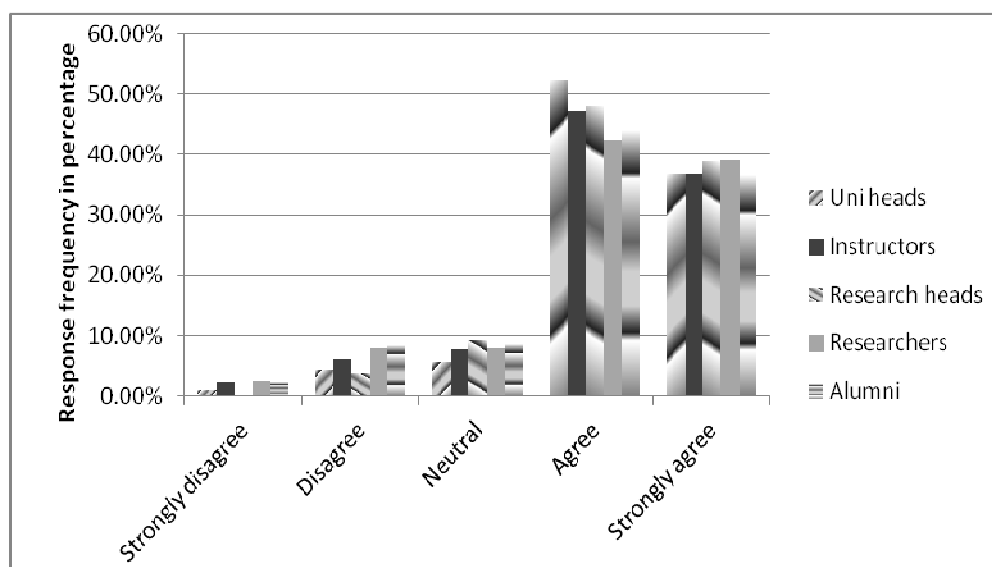
Responsiveness of inter- and trans-disciplinary training and research to rural transformation

Those respondents who have awareness about inter- and trans-disciplinary training/research were further interviewed that whether or not this approach would stimulate rural transformation better than that of the disciplinary one. From 93.3% to 100% of the respondents of five different groups (university and research heads, instructors, researchers and extension experts) responded affirmatively (Figure 2).

Especially research heads and researchers agreed 100% with the importance of inter- and trans-disciplinary training/research in facilitating rural transformation. Few university heads, instructors and extension experts

Table 2. Mean response values of five respondent groups on some aspects of inter-/trans-disciplinary and disciplinary training and research (1-5 scale; 1= strongly disagree, 5 = strongly agree)

Item statement	University heads	Instructors	Research heads	Researchers	Alumni	Average mean	Rank
Disciplinary training/research approach is limited in addressing the actual problems of farmers.	3.67	3.28	3.4	3.48	3.55	3.476	5
Inter-and trans-disciplinary learning/research approach gives chance for the participation of different actors.	4.56	4.39	4.55	4.28	4.08	4.372	1
Inter-and trans-disciplinary training interventions facilitate institutional learning and rural transformation better than disciplinary interventions.	4.28	4.17	4.55	4.24	4	4.248	3
Inter-and trans-disciplinary training approach gives more opportunity to the rural communities and other stakeholders to actively participate in training/research works.	4.22	4.28	4.55	4.4	4.2	4.33	2
It is my interest if inter-and trans-disciplinary training programs are established in the Universities.	4.22	4.39	4.18	4	4.39	4.236	4
Average mean	4.19	4.102	4.246	4.08	4.044	4.1324	

**Fig 3.** Opinions of five respondent groups on some aspects of inter- /trans-disciplinary and disciplinary training & research

(alumni) responded, however, negatively (Fig. 2). Indeed, background of their negative response was captured during focus groups discussion and it was found that they misunderstood it as if it may totally exclude professional specialization and promote only generalists.

Respondents of university and research heads, instructors, researchers and extension experts were also asked to provide us their opinion on some aspects of

inter- and trans-disciplinary vis-à-vis disciplinary training/research approach. Their response results are presented in Table 2 and Figure 3.

Majorities of all respondent groups agreed with the relevance of inter- and trans-disciplinary training/research for addressing farmers' problems, stimulating rural transformation and facilitating institutional learning. All merits of inter- and trans-disciplinary got mean values

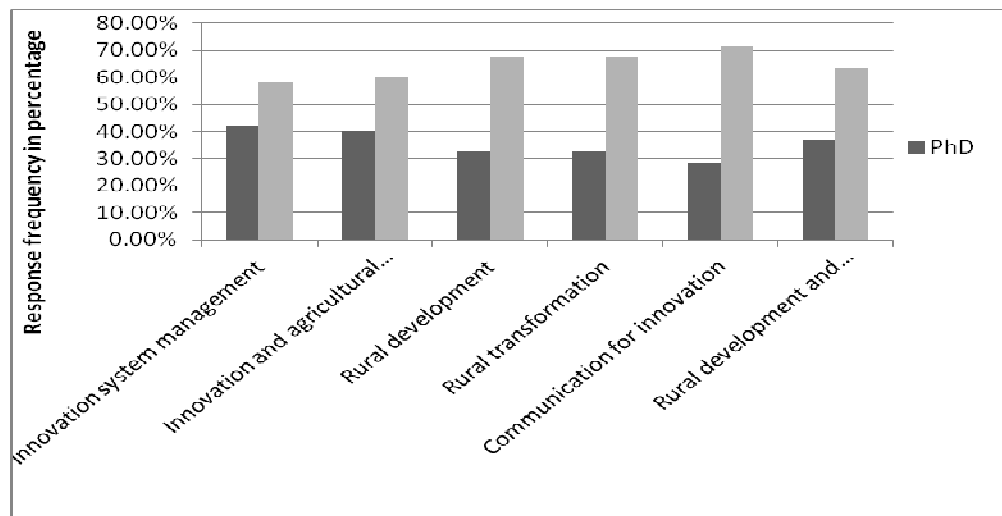


Fig. 4. Opinion of respondents on the suggested study areas for PhD/MSc programmes that promote inter- and trans-disciplinary

above 4 across all respondent groups, while demerits of disciplinary got mean values less than 4. These results might indicate that either the respondents were more interested on inter- and trans-disciplinary than disciplinary aspects, or they were not confident enough to comment the disciplinary approach as main problem of higher education and research institutions for their poor performances in facilitating rural transformation.

Suggested inter- and trans-disciplinary trainings

The present need assessment was mainly aimed at exploring general frameworks for inter- and trans-disciplinary trainings at long- and short-term levels including PhD/MSc. and on-job/in-service trainings, respectively, which may have potentially big impacts on rural transformation.

Long term inter- and trans-disciplinary trainings

It is obvious that in a resource constraint environment, development actors are required to have multiple bodies of knowledge and skills rather than highly specialized disciplines working separately. Moreover, professional skills need to be expanded to include managerial and financial skills, and also the capacity to work efficiently and harmoniously in multi-disciplinary teams. Unfortunately, many of development actors in the region have not been exposed to such training opportunities, and thereby lack the vision of partnership, working towards a common goal, and the concept of teamwork.

During the survey studies, respondents of university and research heads, instructors, researchers and extension experts (alumni) were asked to choose some of

the suggested long term trainings and/or to suggest any other appropriate inter- and trans-disciplinary training for PhD and/or M.Sc. Much of the responses emphasized the need for specialized trainings in inter-and-trans-disciplinary at Masters and PhD level. The suggested specialized training needs in inter-and-trans-disciplinary, which were also supported by respondents, were:

- Innovation system management
- Innovation and agricultural information system
- Rural development
- Rural transformation
- Communication for innovation
- Rural development and agricultural extension

Among the suggested study areas for PhD programmes, “innovation system management” was rated the highest followed by “innovation and agriculture information system” then by “Rural development and agriculture extension”, “Rural development”, “Rural transformation” and “communication for innovation” (Figure 4). Whereas for master programmes, highest number of respondent suggested for “communication for innovation” followed by “Rural transformation” by then “Rural development”, “Rural development and agriculture extension”, “innovation and agriculture information system” and “Innovation system management” (Fig. 4).

Short term inter-and trans-disciplinary trainings

On top of long term inter- and trans-disciplinary trainings, higher education and research institutions of the region necessitate to equip its staffs with short term inter- and trans-disciplinary trainings so as to enhance their rural competences. Hence, Respondents of university and research heads, instructors, researchers and extension experts (alumni) were asked for the duration of

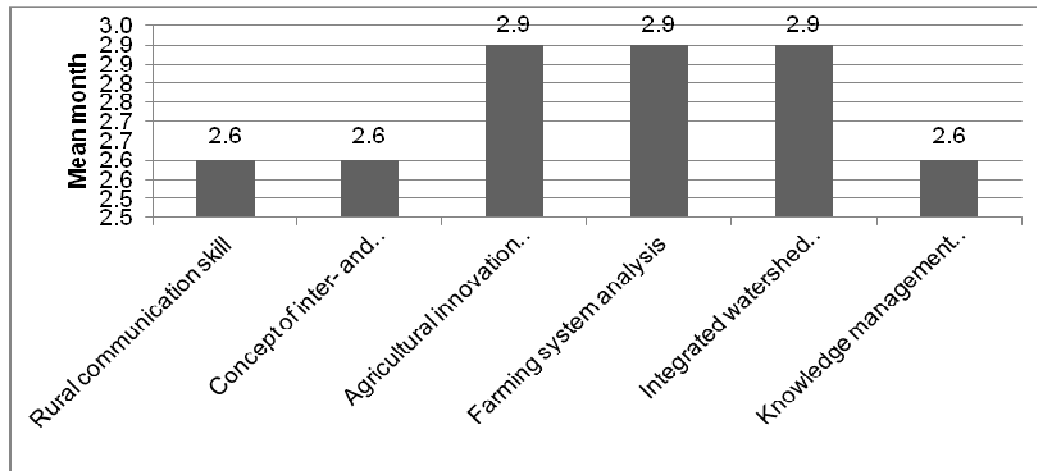


Fig 5. Duration given by respondents to the suggested short term inter- & trans-disciplinary trainings

suggested short term inter- and trans-disciplinary trainings, as well as, to suggest any other suitable short term trainings that can strengthen the rural competences of higher education and research institutions of *Amhara* region/Ethiopia.

“Rural communication skill”, “concept of inter- and trans-disciplinary”, “integrated watershed management”, “farming system analysis”, “agricultural innovation system” and “knowledge management system” were suggested by the study team as short term inter- and trans-disciplinary trainings required for higher education and research institutions of *Amhara* region/Ethiopia. On average almost all respondents suggested similar duration for the suggested short term trainings. Integrated watershed management, farming system analysis and agricultural innovation system got the highest mean month, 2.9 months, (Figure 5) with a standard deviation of 3.1, 2.9 and 3.3 respectively. Whereas, rural communication skill, concept of inter- and trans-disciplinary and Knowledge management system got 2.6 mean month training duration with a standard deviation of 2.7, 3.0 and 3.5, respectively.

The training needs assessment questionnaires prepared for respondents of university and research heads, instructors, researchers and extension experts (alumni) were open to suggest other additional appropriate long term and short term inter- and trans-disciplinary trainings. Beyond responding on the suggested trainings, none of the respondents didn't, however, suggest any potential study areas for both long term and short term trainings. This implies that either respondents are not well aware of inter- and trans-disciplinary trainings or they are less interested to it or they lack motivation for anything at all.

CONCLUSION AND RECOMMENDATION

Assessing the needs of trainings that are more

responsive to rural transformation in higher education and research institutions of *Amhara* region/Ethiopia/ was explained by awareness of stakeholders and responsiveness for inter and trans-disciplinary training and research; and the need for specialized training in inter-and-trans-disciplinary at long-and short-term levels.

Accordingly, the awareness for inter- and trans-disciplinary training/research varied among respondent groups. Most respondents regardless their backgrounds were unaware of the term inter-and trans-disciplinary because they considered trans-disciplinary as synonymous to the term intra-disciplinary as they were much acquainted with intra- and inter-disciplinary. This was because different stakeholders used to work independently which they had no experience how to integrate work in to a common goal. So, awareness on inter- and trans-disciplinary training/research can be created by practically involving stakeholders how they are working with in and across disciplines in which understandings change in response to the perspectives of others. They should skillfully demonstrate how it enables them coherence between the knowledge's produced by different disciplines.

correspondingly, responsiveness of those who have awareness about inter- and trans-disciplinary training and research to rural transformation has shown that university and research heads, instructors, researchers and extension experts agreed with the relevance of inter- and trans-disciplinary training/research for addressing farmers' problems in stimulating rural transformation. Therefore, putting in to practice and giving emphasis on inter- and trans-disciplinary training/research in each stakeholder will much contribute to rural transformation.

In addition to this, much of the responses emphasized the need for specialized trainings/ inter- and trans-disciplinary/ at Masters and PhD level which included among the suggested study areas, “Innovation system management”, “Innovation and agricultural information system”, “Rural development”, “Rural transformation”,

“Communication for innovation”, and “Rural development and agricultural extension”.

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Appendix

Acronyms and Terminologies

1. *Amhara*: One of the regions in Ethiopia located in the north western of the country.
2. *Gondar*: One of the zones in *Amhara* region located in the north west of it
3. *Bahir Dar*: Capital city of *Amhara* region located in the north western of it
4. *Woreda*: District
5. *Chilga, Dabat* and *Debank*: Districts geographically located in north *Gondar*
6. *Wujiraba, Godinge* and *Mezega*: Name of the three selected watersheds of the project geographically located in the above mentioned three *Woredas* respectively.
7. ARARI: Amhara Region Agricultural Research Institute
8. ADLI : Agricultural Development Led Industrialization
9. DA: Development Agent (Extension worker working with a farmer at a grass root level)
10. NGO: Non Governmental Organization
11. Disciplinary studies: projects that take place within the bounds of a single currently recognized academic discipline.
12. Multidisciplinary studies: several different academic disciplines researching one theme or problem but with multiple disciplinary goals. Participants exchange knowledge, but do not aim to cross subject boundaries to create new knowledge and theory. The research process progresses as parallel disciplinary efforts without integration but usually with the aim to compare results.
13. Interdisciplinary studies: several unrelated academic disciplines involved in a way that forces them to cross subject boundaries to create new knowledge and theory and solve a common research goal.
14. Transdisciplinary studies: projects that both integrate academic researchers from different unrelated disciplines and non-academic participants, such as land managers and the public, to research a common goal and create new knowledge and theory. Transdisciplinarity combines interdisciplinarity with a participatory approach.