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ASSESSMENT OF EXTENSION AND ADVISORY METHODS AND APPROACHES TO REACH RURAL WOMEN: FINAL TECHNICAL REPORT

— IN BANGLADESH, INDIA, KENYA AND MALAWI —

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Modernizing Extension and Advisory Services

Assessment of Extension and Advisory Methods and Approaches to Reach Rural Women: Final Technical Report

– In Bangladesh, India, Kenya and Malawi –

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Table of Contents

EXECUTIVE SUMMARY

This MEAS-funded research project was conducted to provide an assessment of a range of different types of approaches that are currently being used to reach rural women. This assessment was conducted to identify new knowledge and understanding of the approaches that are working, those that are not, and those that are not working as well as they might. Central to this work was providing reasoning and explanations for successes and failures of these approaches and to determine what the best approaches are in reaching rural women in different contexts. The geographical focus of this research was Bangladesh, India, Kenya and Malawi.

We conducted a desk-based systematic review of literature (peer-reviewed and grey) for evidence and information and case studies to capture on the ground realities.

Our findings indicate that there is a severe lack of scientifically sound and robust evidence and information on the effectiveness of extension and advisory services in general, but more specifically on its ability to reach rural women. An extensive review of literature revealed only 55 closely related peer-reviewed journal articles.

The information contained in the grey literature did provide some more contextual information, some more comprehensive than others, but many were anecdotal and opinion-based in nature.

The case studies provided a considerable amount of information on the situation being faced by rural women in a variety of settings and illustrate the effectiveness of extension and advisory services in reaching them. These case studies highlight success factors and many constraints.

Moving forward, we need to harness the body of evidence and information that exists on reaching rural women though extension approaches, and to then channel this body of knowledge into policy and practice. Then policy and decision makers need to harness approaches that work so that they are adopted and taken, ensuring they are widely disseminated through scaling up and scaling out.

Little is known of the constraints that rural women face. It is becoming clearer through this review that their socio-cultural situation is fragile. What is desperately needed from extension and advisory services are to recognise this evidence and to factor it into the development of extension programmes (for women) in the future.

INTRODUCTION

The aim of this MEAS-funded research project is to provide an assessment of a range of different types of approaches that are currently being used to reach rural women. This assessment will provide new knowledge and understanding of the approaches that are working, those that are not, and those that are not working as well as they might. This research will also provide an analysis of the findings to provide reasoning and explanations for successes and failures of these approaches and to determine what the best approaches are to reach rural women in different contexts.

The geographical focus of this research was Bangladesh, India, Kenya and Malawi. These countries were chosen because they have culturally and socially contrasting situations that could provide an insight into the complexities. The specific research objectives are given below.

Objectives

- To conduct a meta-comparison of existing women-focused agricultural extension engagement methods identifying those common elements across the methods as well as unique features.

- To provide a cursory exploration of the scale in use and of the achievements of the approaches used through country-specific case studies.

Specific questions this research set out to answer were:

- What are the existing women-focused extension engagement methods/approaches being used to reach rural women?

- What comprises the methods being used? What are the are the common elements? What unique approaches are being used?

- What is the evidence of scale in the use, impact, uptake, adoption of, success, constraints, achievement, and benefits to women of the methods/approaches used?

METHODOLOGY

Meta-Comparison of Methods

The purpose of this part of the research was to collate and provide topical and related peer-reviewed and published grey literature on extension methods to reach rural women in the selected project countries; from there we were to conduct a meta-comparison to identify common elements of the methods being used as well as unique features. This section of the report outlines the methodology adopted in collating and analyzing this literature.

A repository/database was created using Mendeley (reference manager software). The literature contained within Mendeley was shared with project partners using Dropbox. The research parameters and scope for the identification, selection, assessment, data extraction, synthesis, interpretation and discussion of the papers given was done in accordance with PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) as described by Moher *et al* (2009). Full details of the method used are provided in Annex I.

Key research questions for this part of the research were:

What extension methods and approaches are being used?

- What are their impacts? What is the level of uptake? What is the level of adoption?

What of these approaches are targeting women?

- What are their impacts? What is the level of uptake? What is the level of adoption?

What are the success factors of these approaches?

What are the constraints of existing approaches to reaching rural women: social, cultural, economic, technical, environmental and infrastructural?

Case Studies

Case studies were conducted to capture 'real life' stories and experiences from the field on existing women-focused extension engagement methods/approaches being used to reach rural women. More specifically to capture and provide:

- Lessons on new knowledge and understanding of the approaches
    a. That are working
    b. That are not working
    c. That are not working as well as they might
- Reasoning and explanations
    d. For successes and failures of these approaches
    e. To determine what the best approaches are in reaching rural women in different contexts.

Full details of the methodology for conducting the case studies are presented in Annex II.

FINDINGS

Meta-Comparison of Methods (peer and grey literature)

What extension methods and approaches are being used?

Evidence from Bangladesh and India

Extension organizations in general have been using a wide range of methods to reach rural communities with new information/knowledge across Bangladesh and India. These could be broadly classified as methods for reaching individuals, groups, and the wider public (Anandajayasekerem et al, 2008; Sezgin and Karada, 2011; Hoffman et al, 2009). Individual extension approaches include advice based on field visits, farmer visits to the extension agent office, and contact between the extension agents and farmer through telephone (landline and mobiles), letters, or e-mail. The group approaches include trainings, demonstrations, group meetings (interest groups, neighborhood groups, commodity group, self-help groups, whole family training, etc.), farmer field schools, and exposure visits (field trips, farm visits, and excursions). To reach a larger audience, extension has been using field days, farmer field schools, agricultural shows and exhibitions, crop competition, campaigns, and use of mass media (mainly radio, newspapers, and television).

Approaches to extension also vary widely from top-down and supply-led to bottom-up, demand-led and participatory. Approaches also vary depending on the mandate of the organization or the program. For instance, group approaches are often used for addressing natural resource management challenges, linking farmers to markets, and development of enterprise clusters where cooperation and support from a large number of farmers is critical. Advances in information and communication technology (ICTs) have provided new opportunities for extension to reach more farmers in a short amount of time. For instance, mobiles are increasingly used to transmit voice and text messages to reach a large number of farmers with the same message. Similarly, farmers and extension agents can now access information related to technology, availability of inputs and services, and price and weather information from several websites

on agriculture. South Asia has a long history of applying different types of ICTs to reach rural women with new knowledge and services, which include applications that vary from community radio, participatory videos, web portals, telecenters, and mobile phones (Sulaiman et al, 2011).

Evidence from Malawi

Through our analysis of literature, seven approaches to extension have been identified in Malawi. They have been classified as approaches for reaching groups of farmers, individual farmers, and a wider audience. The main ones for reaching groups of farmers include, farmer participatory research (FPR) approach (includes focus group discussions), rural participatory appraisal, farmer groups, trainings, farmer field schools/field days, training and visit extension approach, the model village, demonstration plots, ICTS, and field days.

A number of specific methods used to deliver information to individual farmers include farmer-to-farmer extension, extension workers, lead farmer, use of model farmer, peer farmer, individual or group visits, meetings, demonstrations, ICTs, and farmer tours.

To reach a wider audience, the approaches used are cluster extension (communities) and cooperative clubs (based on common enterprise).

It must be noted that these methods of service delivery offer the opportunity to reach various types of farmers with different needs in various settings and there is not any real distinction made between reaching groups or individual farmers.

Farmers' feedback revealed that the use of organized groups, such as clusters, clubs, and model villages, was the best approach in reaching farmers with extension messages when compared to approaches that target individual farmers. The reasons given were the ability to share amongst each other information and experiences, resources (organized groups allow farmers to take advantage of economies of scale to perform tasks that could otherwise be achieved as an individual), and valued voice, as the organized groups of farmers provide a platform for the farmers to speak and be heard on issues that could easily have been ignored if the farmers had acted individually.

Evidence from Kenya

Over the years, Kenya has embraced extension services as a means through which information is passed on to farmers. Historically, crop-based or livestock extension services have been advanced through the Ministry of Agriculture. However, extension service providers include commodity-based organizations targeting specific crops like tea, sugar, and coffee, church or religious-based organizations, nongovernmental organizations (NGOs), community-based organizations (CBOs), and cooperative societies, among others. The main extension approaches being used in Kenya are focal area approach (FAA), common interest group, farmer field schools (FFS), ICTs, farmer-farmer extension, training, value chains, and community groups. Out of these, the common interest group approach is the most widely used approach in Kenya to reach a larger audience of farmers.

Approaches Targeting Women

Evidence from India

In India, the most common approach in reaching rural women seems to focus on creating an appropriate social organization with women and then implementing agricultural development initiatives through that social organization. Several government-anchored initiatives seem to have adopted this approach. These seem to be more widely adaptable and sustainable. The social organization of women with some central binding activity seems to provide necessary sustainability to these groups. The capacities and skills of these groups are developed through several rounds of trainings and exposures. Renowned expert agencies are involved in initial grooming and capacity building of these social organizations. Along with this, the elaborate government machinery provides continued support and financial support to these initiatives, thereby exhibiting a greater potential for success, a wider-reach, and sustainability.

Evidence from Bangladesh

Five types of approaches to reaching rural women could be noted in Bangladesh. The first is building social infrastructure and then implementing an agricultural initiative to effectively reach rural women. The second approach focuses on value chain development as a way of reaching rural women with agricultural knowledge. The third and fourth approaches, respectively, emphasize reaching rural women through self-help groups and the use of ICT tools. Greater adaptability and sustainability, though, have not yet been established. Reaching rural women through women extension workers is the fifth approach adopted by several organizations. For the current sociocultural situation in Bangladesh, in which women face challenges in communicating with male members outside their families, this seems to be a suitable approach.

Evidence from Malawi

Out of the methods and techniques identified, there are none that specifically target women farmers. Extension approaches are generally implemented irrespective of gender. For example, the lead farmer or the peer farmer methods can either be male or female, except with the farmer group approach. Farmer groups are to be women only; based on the assumption that women will be free to express themselves, this format allows women farmers a chance to voice their needs. The literature mentioned little on extension approaches specifically targeting women.

Evidence from Kenya

Of these, the ones used to reach rural women are mainly targeted courses: FFS and FAAs. In terms of successes of the approaches, in those that advocate social mobilization (SHGs, demonstrations, groups, courses), having a group identity and empowering women especially to make decisions are documented as essential to reaching rural women. Despite these success factors, there are still many constraints to reaching rural women, including lack of focus on the poorest farmers, women with no land or lower social status being excluded from group activities, inadequate institutional support, complexities of ICTs that do not address the illiterate sector, lack of recognition of women as farmers and agricultural producers, and male extension agents being biased against women.

Success Factors

Evidence from the literature points to the fact that women farmers work better in groups because they can learn from each other while helping each other in the learning process without feeling marginalized. Women farmers mostly prefer participatory approaches because it allows them to contribute to the discussions and voice their opinions.

Evidence from India

A couple of papers evidence 'success factors' for designing programs to reach rural women such as discuss the need for customizing programs based on local needs and socio-cultural contexts and using bottom-up planning approaches. Again, this information is extremely limited. The need for building social groups and networks, providing backup support services, mobilizing women, capacity building, and working in partnership are also highlighted.

Evidence from Bangladesh

Some of the literature did identify success factors for reaching women. The main ones include using a bottom-up approach that focuses on building groups, e.g., FFS. The sustainability of these groups depends on financial, institutional, human, and social capital. The literature also highlighted combining extension with an economic activity and, from a gender perspective, the significance of making women's work visible through working with whole family approaches to achieve family cooperation and raise the profile of women. The need for appropriate training and monitoring of FFS facilitators and synchronizing activities with the cropping season were also highlighted.

Evidence from Malawi

There was some information indicating that farmers' commitment and the ability to participate in group activities are essential factors of success of some of the approaches. Other successes of the approaches seem to lie in providing incentives for farmers to join activities, the amount of extension time spent with farmers, and the availability of material for training.

Evidence from Kenya

Both farmers and extension agents found field days and demonstrations to be effective. This may be linked to their capacity to reach many farmers as well as stakeholders. On the other hand, farmers preferred individual farm visits because they tend to be farmer-demand driven, and extension agents tend to provide personalized attention for their specific needs. The new ICT-related methods of extension are also becoming popular but are constrained by infrastructural challenges. The focal area approach (FAA) has been extensively linked to the success of the National Agriculture and Livestock Extension Program (NALEP). In addition, other community-based approaches, namely farmer field schools (FFS) and common interest groups (CIGs), have also been found to positively impact farmers and, in some cases, women. In the case of women farmers, literature indicates that the common interest groups (CIGs) approach was most effective because they enable the mobilization of women through their social nature as well as multiple entry points for extension agents. The approaches identified are those that take local contexts into account, which allow them to better understand the social setup of the community while learning from local indigenous knowledge and using multiple social networks as entry points into farming communities.

What are the constraints - social, cultural, economic, technical, environmental, infrastructural?

Evidence from India

There was some evidence regarding the constraints to reaching rural women. These were documented as: women are beneficiaries of programs rather than an integral part of the program/project; use of top-down approaches; failure to recognize women farmers; lack of women in decision-making processes; gap between policy objectives and realities on the ground. In terms of constraints, limitations within both the public sector (supply-driven, inflexible, lack of funding) and private sector (focus on rich areas, not building social capital) were identified. Others identified were socio-cultural barriers, lack of education, and the existing digital divide between urban/rural areas and men/women.

Evidence from Bangladesh

In terms of constraints, there is a need to change the existing picture of gender inequality. Women are seen as beneficiaries rather than as participants in the development process. There was also some evidence suggesting that there is a need to address culture and local context in extension processes.

Evidence from Malawi

There is evidence of some of the socio-cultural constraints to effective extension delivery. Some of these are: top-down approaches that overlook local knowledge, farmer needs and concerns, women farmers being limited in raising their concerns in front of male extension agents (though increasing the number of female extension agents may not be the solution), women's lack of both assets and land excluding them from extension activities, much of the extension being focused on richer rather than subsistence farmers, and illiteracy inhibiting participation in extension programs. In Malawi, extension is implemented irrespective of gender. A constraint is that men deliver extension, creating a gender imbalance. There is a need to develop and promote gender-sensitive approaches to extension delivery.

Evidence from Kenya

A recurring theme is the high level of illiteracy, especially among the poorest, as well as the high cost associated with of access, e.g., internet access, which keep extension services out of reach for many. These are highlighted below:

- Extension in Kenya is delivered via knowledge-sharing forums or participatory-based methodologies. However, knowledge integration generally occurs at the farm or household level.

- Low literacy skills, management ability, negotiating capacity, and financial facility by small-scale farmers, especially in the adoption of high value enterprises.

- Gender inequalities in ownership of resources, like land, which reduces women's access to extension services, credit, information, etc.

- In some cases, women are not regarded as "economically active" farmers; hence, they tend to be excluded from membership of farmer groups and cooperatives. This makes it very difficult to access or demand public extension services.

- Extension services are mostly designed for commercial farmers who grow cash crops, however most women farmers are smallholders who grow subsistence food crops.

- Extension service providers usually expect women to access them in the extension spaces/venues, but there may be social, cultural, or religious constraints. Moreover, limiting factors like educational opportunities, cultural and discriminatory practices, and lack of capacity constrain women's equal participation in extension-related endeavors.

- Women's multiple roles constrain their time and mobility and thus their availability to participate in different extension activities.

- Higher proportions of women are illiterate, engage in subsistence agriculture, and are not well acquainted with current technologies.

Case Studies

Evidence from India

Approaches that consider demand-driven, bottom-up planning, wider linkages and support structures, long-term commitments for capacity development, trust, recognition of women's roles, and provision of women with ownership and responsibilities have proven effective for rural women. Despite these successes, there is evidence that suggests there remains a need for ensuring that approaches used are needs-based within the local context/environment and supply-driven rather than target-based. This is the only way to ensure that women are not seen as just recipients/beneficiaries of programs, but are rather an integral part of the process of change and reform.

Evidence from Bangladesh

Creating strong social organizations is central to reaching rural women, e.g., through the formation of union federations and use of group approaches such as FFS for training and building entrepreneurial skills. This approach is participatory and seems to have a degree of flexibility. There is also evidence to suggest that ICTs have the potential to reach rural women. The case studies did highlight that effectively reaching rural women requires a long-term presence, commitment in terms of human and financial resources, and the engagement of a number of stakeholders. The case studies also highlighted that the initiatives being implemented via these approaches greatly depend on the resources and ability of women farmers to adapt to new practices and environments.

Evidence from Malawi

The case studies clearly revealed that women's ability to work in groups, to support each other and to learn from each other is crucial for women farmers to benefit from extension, as women's devotion and commitment to help each other was clearly evident. The case studies also revealed that it is crucial for husbands to support their wives in extension activities. Women prefer to work with female extension workers, it being conducive for women to discuss issues, so the problems for women rest with the implementation of activities. For effective implementation, most rural women need the support of their husbands to take up extension activities and programs. When implementing extension programs, implementers need to take into account the wider complex socio-cultural environment in which they are operating, especially regarding levels of support and involvement of husbands.

Rural women's illiteracy and their lack of access to productive assets greatly inhibits their ability to take part in extension activities. This is compounded by the fact that, in Malawi, male extension workers who normally work with male farmers dominate the agricultural extension service sector; this systematically bars women from accessing valuable extension advice and leaves them marginalized.

The case studies indicate the urgent need to recognize that strongly held beliefs that influence people's attitudes and behaviors related to gender identity need time to change; they stress that empowering women is a long-term process more likely to be achieved if men and husbands are able to understand and support their cause.

Evidence from Kenya

The case studies demonstrate that most of the rural women benefited from rural extension. At times they were not targeted directly, but where deliberate efforts were made to target women, the impacts of extension were considerable. Rural extension and technologies that are sensitive and responsive to women shift the gendered division of labor in their favor. The case studies demonstrate that, if targeted appropriately, providing women with knowledge greatly enables them to make informed social and economic decisions.

The case studies also indicate that no single extension method is sufficient by itself. Combinations of different extension methods that complement each other yield better results. Selecting the methods that fit the social context is critical. The packaging of extension messages must be sensitive to the community's practices and beliefs. Additionally, combining extension services with grants financing for procurement of resources for implementation activities facilitates quicker adoption of technology and scaling up of rural enterprises that mostly benefit women. It was also clear from the case studies that women require follow-up support on a continuous basis to achieve any long-term benefits and change. Above all, reaching rural women requires time, energy, resources, commitment, and a political will to drive behavioral change.

DISCUSSION

Agriculture provides the main source of food, livelihoods, and income for the world's most vulnerable and marginalized communities. Statistics by the FAO (2011) indicate that 43% of the agricultural workforce is made up of women: 20% in Latin America, 50% in Asia and Africa, respectively, possibly more. Rural women are involved in crop production, processing, livestock rearing, and other small-scale income-generating activities. This is on top of their responsibility for looking after children and dealing with the household in term of cooking, fetching water and fuel wood, and looking after the elderly. Recently provided, some evidence suggests that if women had the same access as men to land, technology, financial services, education, and markets, it would be possible to increase their agricultural production and reduce the number of hungry people in the world by 100-150 million (FAO 2011). Women are the backbone of agriculture and the need to link extension to food security and livelihoods is more pressing than ever before.

Key findings from the literature indicate that there is very limited peer-reviewed literature related to this topic. Out of an initial 178 articles, after a process of data extraction, we were only able to identify a total of 55 closely related and relevant papers across the 4 countries (India: 12, Bangladesh: 11, Kenya: 9 and Malawi: 23). Most of the reviewed papers argued for the need to support rural women and provide recommendations on ways forward, e.g., the need for women extension workers, training, linking to markets, pluralistic approaches, access, issues, working at the local level, building trust, and ICTs. There is very little empirical evidence available for the effectiveness of the different extension approaches being used. There was also very little information available on the approaches specifically for targeting women. Of this limited information, there was some evidence on the success factors and constraints. Through analysis of the information, the most common building blocks for success for women farmers were identified as follows:

- Social mobilization/group mobility/participatory approaches with high levels of participation, sharing of group resources, having a sense of identity, having a chance to contribute, learning about their needs and aspirations, ability to voice concerns, learning, and supporting each other;

- The effective transfer of knowledge, information, and skills via engagement with both men and women designed to suit the socio-demographic profile of the user;

- Respecting/learning/promoting indigenous knowledge, e.g., appropriate training and ICTs;

- Having allies and support (e.g., women mentors) reduces negative attitudes towards women farmers; and

- Enterprise development (back-up institutional support and skills) especially for enterprise/value chain projects.

There was also some evidence on approaches that do not work. Some of the key constraints identified in the literature to reaching rural women are:

- Approaches that have limited communication and dialogue with intended recipient groups/communities on their needs, desires, wants, and requirements;

- Approaches that lack strategic focus on how they could contribute to changing/addressing gender inequalities and tackling social and cultural constraints;

- Approaches that fail to recognize women as farmers and their contribution to agriculture as a target group; and

- Approaches that are top-down, supply-led, and input-driven.

There is little information available in the literature on how to engender extension approaches, how to determine the target groups (levels of poverty, vulnerability), and how to ensure target group needs are met. There is much information about working with smallholder farmers but little disaggregated data (sex and socio-economic categorization).

Table 1 highlights the findings of the case studies, which confirmed what was found in the literature.

Table 1. Highlighted results of case studies

Plus points	Down sides
• Built on women SHGs, participation, with some elements of other support. • Collaboration with other stakeholders. • Availability of inputs. • Capacity building/training.	• Women are mostly receivers of the projects/programs. • Constraints faced by target group not met (poverty, social, economic, cultural, technical, education). • Women realize they are marginalized but feel powerless to change their situation. • Trade off between what women want and their husbands/household demands. • Poor communication methods not taking illiteracy levels into account. • Little opportunity for demanding other support. • Little evidence of convergence with other stakeholders.

CONCLUSION

Through a process of systematically reviewing literature and conducting case studies, this research project has provided crucial evidence and information on the state of gender issues in extension and advisory services in Bangladesh, India, Kenya and Malawi. The evidence and information presented in this report points to the need for urgently addressing the gender needs and dimensions of agricultural extension services and advisory support.

The information highlights the considerable gaps in the service provision for reaching rural women. Of significance are the underlying socio-cultural constraints identified, which hamper the effective implementation of good extension and service practices.

In terms of the ways forward and next steps, the evidence provided in this report points to the need for dealing with the many issues identified in policy and practice. One suggestion is for the widespread dissemination of the knowledge, evidence, and information of key extension elements that work with the intention that they are adopted. The challenge that lies ahead deals with the ability of extension and advisory service providers to increase successes and address the many constraints identified. Presented below are some recommendations on how to address the gender inequality in extension and advisory services.

- Focus: thinking strategically and critically about women as a target group, their problems, constraints, and dilemmas that include social and cultural constraints.

- Right entry point: recognizing limitations. Working in partnerships with other actors at all levels.

- Understanding the social architecture of support networks available.

- Rationale and sustainability: thinking about the content, relevance, and reach of programs offered or to be offered. Developing programs that are gender-sensitive and poverty-focused and built around lives and livelihoods rather than on agricultural production.

- Inclusive Approaches: developing programs that are built around needs, desires, aspirations of women in consultation through dialogue with men and household members, among others in and interested in development.

ANNEX I: METHODOLOGY FOR META-COMPARISON OF LITERATURE

Development of the repository

The databases selected for the repository are Mendeley and Dropbox.

Mendeley[1] is a reference manager that can help organize research material. Since the project had stakeholders across the globe, the collaborative and shared feature of the 'Group' function of Mendeley made it the most suitable reference management system to use. The Groups were allocated by country where initially the group members had access to the research pertaining to their respective regions. The research within the Groups was annotated and updated periodically.

Dropbox[2] is a virtual data warehousing facility and is operated by Dropbox, Inc. Dropbox facilitates the creation of folders and subfolders with real time upload and download synchronization of data. Dropbox also facilitates the creation of groups where group members have access to the research. The reason why Dropbox was used in conjunction with Mendeley was the download of files facility offered by Dropbox for group members and subfolders features, elements that are not available in Mendeley.

Research Approach

The research approach follows the PRISMA guidelines (Preferred Reporting Items for Systematic reviews and Meta- Analyses) as described by Moher *et al* (2009) and as stated in the research proposal. Although the medical profession adopts this approach for conducting systematic reviews, the principles can be applied more widely in other academic disciplines and comprise of:

- Setting research parameters and scope
- Identifying and analyzing relevant studies
- Quality Assessment
- Data extraction
- Data synthesis
- Data interpretation
- Valuation and Discussion

Setting research parameters and scope

The research parameters were defined by direct relevance to the following key words: agricultural extension; advisory services; gender; rural women. These words were supplemented with other words (see below for details). The supplementary words were agreed upon amongst the team members. The following three conditions determined the key word search:

- Number of hits returned from the database when key word or supplementary words were entered;
- Progression along the key word list; and

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[1] www.mendeley.com

[2] www.dropbox.com

- How comprehensive the Boolean Operation and Root word function was on the database.

Research search

The key words and consequent supplementary words, which share a common root or synonym, were grouped together. The countries were put in one group. There were three groups of key words and supplementary words.

1. Group A: Agricultural Extension
2. Group B: Gender
3. Group C: Country

Key words and supplementary words list

Group A Key Words- 'agricultural extension/services', 'advisory services/methods',

Supplementary Words- 'knowledge system', 'extension Strategies', 'fee-charging extensions', 'national extension', 'engagement methods', 'agricultural education', 'farming systems research', 'farm field schools', 'farmers forest management schools', 'agricultural practices',

Group B Key Words- 'women', 'rural women', 'gender', 'farmers',

Supplementary Words- 'gender integration', 'gender analysis', 'gender equality', 'gender equity', 'gender division of labor', 'gender differentiation', 'gender disparity/neutral'

Group C Key Words - 'Bangladesh', 'India', 'Kenya', 'Malawi'

As with any database, agricultural extension and gender were the first key words entered. If the database did not return with a high number of hits, the search was primarily restricted to the key words.

The results that came up were further limited by country (i.e., India; Malawi; Kenya; Bangladesh) to bring up the relevant articles. If the search did not return a high number of hits, then the limiters with regards to year of publication were removed.

If the returns on the database were high, using Boolean Operators (OR/ AND) and we progressed down the list replacing key words. This example is explained further in stages.

Stage 1. If Agricultural Extension is key word 1 of group A, gender is key word 1 of group B and India is key word 1 of group C. When all the results with that combination of words have been reviewed, then the words in the Group B are changed to the next one.

Stage 2. Agricultural Extension is key word 1 of Group A, rural women, is key word 2 of Group B, and India is key word 1 of Group C. When all the words in Group B are finished, then we move to key word 2 of Group A.

Stage 3. Advisory services is key word 1 of Group A, gender is key word 1 of Group B and India is key word 1 of Group C. When all the key words in Group A and B have been used, we move down to key word 2 on group C. The search cycle then moves back to Stage 1. This process goes on until the articles coming up lose relevance to the topic or start reappearing.

The databases selected for the literature were Science Direct, Web of Knowledge, ProQuest, Taylor and Francis Online, INASP, and Google Scholar. This selection was made on the basis of the extent of peer-reviewed literature available (regional or global) and also the extent of the refinement options the respective databases offered. The literature search initially covered a twenty-year period (1992-2012) to identify literature post-green revolution and literature on the impact of the World Bank initiatives for agricultural extension in the '80's, with evolving discussions and critiques of the various issues of agricultural extension and rural women. As the research progressed, it became clear that there was an acute lack of available journal articles, which lead us to remove the time limitation on the search.

Following is the summary of each database's characteristics followed by notes on advanced research options and particular difficulties encountered for each database in relation to the AEMRW project. Lastly (Section 3.7), succinct comments on the strengths of the databases were made.

Science Direct
Science Direct, a product of Elsevier B.V., is a full-text scientific database comprising journal articles and book chapters from over 2,500 peer-reviewed journals and 11,000+ books. The articles are grouped into four primary sections, namely *Physical Sciences and Engineering*, *Life Sciences*, *Health Sciences*, and *Social Sciences and Humanities.*

In Science Direct, searches were conducted for terms in full text search; the initial number of article hits with basic key word search (agricultural extension and women) resulted in numbers like 5,633. Science Direct has a comprehensive Boolean search operation function, which facilitated the above methodology. The search was further limited to options like "women" and country like "Malawi". These "limiters" would reflect automatically on the left hand side of the screen, these "limit to" words would be related to the key words. It is to be noted this "limit to" function is built within the Science Direct search mechanism.

Web of Knowledge
Thomson Reuters (formerly ISI) Web of Knowledge combines an academic citation indexing and search service with web linking, covering the sciences, the social sciences, the arts, and humanities. 23,000 journals are covered from 256 different disciplines.

For Web of Knowledge searches, items in the list of search terms were sought in papers' 'topic' fields, with refinement by subject area. As with Science Direct, the subject areas were generated dynamically according to the number of results within each area. This required attentiveness while searching since target subject areas such as 'environmental sciences/ecology, 'gender', and 'extensions' would appear in different positions for each search conducted.

ProQuest- ABI/INFORM
ABI/INFORM, owned by ProQuest LLC, covers the principal business journals such as *Journal of American Academy of Business* and the leading sources of online business news with scholarly content from Cambridge University Press, Emerald Group Publishing, Springer Science & Business Media, Palgrave Macmillan, and Oxford University Press.

Since high numbers (often in tens of thousands) were appearing consistently for searches with 'agricultural extension', additional operators were introduced, such as 'gender' or 'rural women'. The rationale for this was to focus on results pertinent to gender specific articles.

It was possible to further limit the results by using the dynamically-changing list of article subjects: usually, restriction to the Group C key words 'Malawi',' Kenya', 'Bangladesh', and 'India' was sufficient to ensure a workable number of search results. ProQuest search methodology was similar to that of Science Direct. It is to be noted that although the Boolean operation function is very comprehensive in ProQuest as well, the search was not very specific. For example, a restriction for articles on India would not necessarily bring up those relevant to this country. There were some difficulties using ProQuest due to search results timing out while they were still being transferred to Mendeley.

Taylor & Francis Online
Taylor & Francis Group[3] is an established name in academic publishing and the key brands include Taylor& Francis, Routledge, and CRC Press, the group publishes more than 1,700 journals and over 3,600 new books each year. The search can be conducted in three ways: Journals, Reference Works, or Databases containing Abstracts (where the relevant article can be ordered), where the search can be through Search Criteria (Key words, Author, Stemming), Subject Area, or Citation Search.

The Taylor & Francis Online search engine has advanced search options, preliminary searches revealed that the articles coming up were not entirely relevant to the AEMRW project. For the Journals search, advanced search options were used. The advanced search operators were not very expansive, which in turn severely restricted the key word function. The search was therefore limited to basic key words of the project. This led to the journals related to the subject rather than the articles. If the key word stemming was not used, then the articles were identified instead of the journals. The second search was on the database search, which led to access of the database- Studies on Women and Gender Abstracts (SWGA), where articles were purchased.

International Network for the Availability of Scientific Publications (INASP)
Journals Online (JOLS) is a system of community websites where groups of journals can be accessed. "The JOLs are the result of a partnership between INASP, the Public Knowledge Project (PKP) and CrossRef. PKP, based in Canada, developed the Open Journals System (OJS) technology used by the JOLs to support the development of websites hosting a number of journals. CrossRef maintains a multi-publisher linking network which vastly improves both visibility and accessibility of journal articles"[4]. This partnership has resulted in development and maintenance of databases according to countries or regions, with a wide area of subjects being covered. For the purposes of the project, the databases used through the INASP-JOL venture were *http://www.banglajol.info/* and *http://www.ajol.info/.* The initial searches within the INASP database would lead to the JOL system. The searches were limited to basic key words like 'agricultural extension' and 'gender' and 'country'. This was because INASP does not have a comprehensive Boolean Search function like Science Direct and ProQuest but rather brings up journal series instead of individual articles in the initial search.

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[3] www.taylorandfrancisgroup.com

[4] www.inasp.info

Google Scholar

Google Scholar searches articles, books, theses, abstracts, and court opinions from academic publishers, professional societies, online repositories, universities, and other web sites. For its biblio-metric rankings it weighs "the full text of each document, where it was published, by whom was it written, as well as how often and how recently it has been cited in other scholarly literature"[5].

One of the few sifting tools available to users of Google Scholar is to restrict to specific subject areas. Thus, searches were conducted within the areas Life Sciences, Environmental Science and Social Sciences. The benefit of using multiple operators during this fourth tranche of searches is that much of the most useful material has already been collated during the previous searches on other databases.

In Google Scholar it is not possible to search abstracts alone, just title or whole-text, so often the search locates one of the terms in a reference at the end of an article, which does not necessarily indicate substantive discussion of the term. Many Google Scholar results were books, dissertations and theses, reports from NGOs or institutions, or other grey literature.

The engine has severe limitations for those wishing to search analytically with any degree of sophistication, since it is not possible to exclude results from books, working papers, conference reports or PhD theses, or to pull up abstracts of papers. The attentive scanning of search results that this necessitates is very time-consuming. In addition, the search algorithm used by Google for ranking results is unclear; it has been demonstrated that ranking can be artificially skewed (Vaidyanathan, 2011).

Strengths of the various databases

Each new database provided a challenge, since the tools offered for refinement of searches differed in ease of use and time required to make useful selections. As an example of this, while Science Direct offered the option to refine search results by Journal Title, Topic, or Year, the deficiencies of Google Scholar as already mentioned made it more problematic to work with.

ProQuest- ABI/INFORM would categorize search results dynamically according to the number of articles within each respective journal category, necessitating a screening of the dynamic list for every search result. Since it changed with each search, the categories would appear in different places each time. Another strength was that ProQuest is a very comprehensive database covering a lot of other databases. For example, searches would lead to emerald insight or oxford journals, this function was time saving as the search spanned across multiple databases simultaneously.

Similarly, Google Scholar's algorithm for ranking search results has been criticized as suffering from the Matthew Effect (Merton, 1968) or 'cumulative advantage', namely that frequently cited works appear high up its rankings while recently published work with fewer citations is less visible.

Identifying and analyzing relevant studies

Categorization of literature

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[5] http://scholar.google.com

The number of abstracts and papers screened once the search results had been narrowed down as finely as possible was approximately 11,261 articles, of which 178 articles were selected for inclusion within Mendeley. It should be understood that putting the papers' identifying data and PDFs into Mendeley was not necessarily the final level of screening.

Those articles found were saved in PDF form and imported to Mendeley for categorization and review. Mendeley also enabled the comparison of articles to identify duplicates. As the search was coming up with very few direct articles, ones that simply had mention of the subject were highlighted within Mendeley to facilitate research.

A shared group was created within Mendeley entitled, 'Extension - Rural Women'. Articles were 'tagged' to enable them to be placed in broad subject category folders to assist thematic grouping for review. The rationale behind this was that since Mendeley does not currently permit the sharing of entire folders in its Groups, to enable separate reviewers to categorize papers in a similar fashion with the selected papers were all tagged thematically. Thus, contributing reviewers using Mendeley could use the tags to organize the papers on their own computers in similar folders.

The principal thematic folders were segregated country-wise: 'Bangladesh'; 'India'; 'Kenya'; 'Malawi'; and there was a separate folder entitled, "Theory and alternative extension methods", which had background information on the subject and, if encountered during the peer-reviewed literature research, various grey literature. The selected literature was eventually categorized, following the tag labeling mentioned above, as: 'Agricultural Extension'; 'Project'; 'Impact Assessment'; 'Evaluation'; 'Indigenous Knowledge'; 'Gender'; 'Social Equity'; 'Rural Development'; 'Agricultural Backwardness'; 'Poverty'; 'Poverty Alleviation'; 'Gender'; 'Rural Women'; 'Bangladesh'; 'India'; 'Kenya'; 'Malawi'.

Dropbox follows the same methodology of folders created, according to regions and subfolders. As Dropbox does not have the "tags" functionality like Mendeley, the main folders are further divided into database subfolders; for example, the folder 'India' would be divided into Science Direct, Google Scholar, INASP, and so on. A record of articles has been retained, not available through the databases accessible from Glasgow Caledonian University (GCU), which were subsequently requested via Inter-Library loans from the British Library. Nevertheless, some articles identified in the search were unobtainable, even from the British Library.

Criteria for inclusion / exclusion

The initial search involved the basic key words as identified in section 3. Initially "rural women" and "women" figured high on the key word function. This basically identified the acute paucity of current published literature with regards to women in agricultural extensions. The research was further fanned out and gender was later included as a primary key word function in the case of literature search for Malawi and Kenya. As a result, 178 relevant articles were identified.

Exclusions:

- Articles that do not cover Malawi, Bangladesh, India or Kenya.

- Literature published before 1992.

Exceptions to the above exclusions were made for:

- World Bank Studies and other organizational reports on the subject of extensions that did not cover the specified countries, but the regions (like Asia and Africa). This was included to keep the authors informed on any current best practices in those regions where the study countries were based.

Quality assessment

The research is screened at two levels. The initial screening is based on accessing only peer-reviewed journals from reputable databases. Given the constraints of time and resources on the project, it was not possible at the initial search stage to undertake a further screening of the papers to assess the research contained within them. The second level involved the regional associates, who vetted out country-specific data supplied through Mendeley and Dropbox.

Data Extraction

The project team developed a template for data extraction from the papers. The data extracted was in accordance to the overall research questions, which consisted of the following sections:

What extension methods and approaches are being used?
- What are their impacts?
- What is the level of uptake?
- What is the level of adoption?

What of these approaches are targeting women?
- What are their impacts?
- What is the level of uptake?
- What is the level of adoption?

What are the success factors of these approaches?

What are the constraints of existing approaches to reaching rural women: social, cultural, economic, technical, environmental, and infrastructural?

Data synthesis, interpretation and discussion

The data extracted was analyzed and synthesized, focused on the key research aims and objectives to provide a much wider discussion of the issues; it not only focused on the approaches and methods being used *per se* but more on what next? Are there any implications for influencing future policy? Presented below are key questions that were used as a template for this.

What and Why:
- What do authors set out to achieve and why – hypothesis and rationale that informs and underpins this work.

How:
- How does this relate to extension/advisory methods to reach rural women (is there direct reference/indirect reference/relevance) and how does it contribute to

understanding/application of extension approaches being used with particular reference to the definition of gender and extension?

Outcomes:
- What has been found by the authors and how does this inform/underpin/direct/focus future research on gender and extension. Is it empirical/theoretical/policy research?

Directions for future policy:
- How does the research aim to have or could influence policy on gender and extension (if at all indicated by the author(s))?

Conclusions:
- What are the common elements across the extension methods identified and what are the unique features?

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ANNEX II: METHODOLOGY FOR CASE STUDIES

Selection of Case Studies

Rationale for selection of case studies

Based on the review of literature, a typology of five major approaches being used for reaching women by extension were identified. These are:

1. Information dissemination through ICTs
2. Promoting knowledge and skills (conventional extension focusing on training, demonstrations etc.)
3. Social mobilization (formation of SHGs, federating these and linking agricultural programmes through these SHGs)
4. Use of women para-extension workers
5. Value-chain approaches (linking farmers to markets)

Each of these approaches has specific characteristics associated with them that are common to the approach being used. Using this evidence and information, appropriate cases were selected to represent the typologies in each of the project countries. Case studies selected had to contain characteristics of the approaches described. Case studies from within each typology were shortlisted, final selection was based on their (case organizations') willingness to accommodate researchers at the necessary times, their interest in external researchers examining their work, and the size of the country to ensure sufficient geographical spread. In India, all five typology case studies were selected, with three case studies were selected in each Bangladesh, Kenya and Malawi. The table below provides information on the case studies selected in each of the project countries.

Major Approaches in reaching women by extension	Characteristics	MEAS case studies			
		India	**Bangladesh**	**Kenya**	**Malawi**
Information Dissemination	Mostly ICT-based (Radio, TV, Print media, Videos, Mobiles, telecenters, Call Centers, etc.)	Use of ICTs to reach rural women: MSSRF's initiatives in Puducherry.	Use of ICTs to reach rural women farmers: The case of e-Krishok in Bangladesh	Kenya Agricultural Commodity Exchange (KACE)	
Transferring skills, technologies and expertise	Farmer training centers, farmer field schools, demonstrations, individual farm visits to advise farmers	Transferring technical knowledge and skills to women farmers: ATMA Una, Himachal Pradesh		National Agriculture Livestock and Extension Program (NALEP) ; or The green belt movement promoting integrated agro forestry in Kenya	Transferring skills, technologies and expertise: Women Club Livestock Enterprise (Piggery Units) in Kasungu District Kasungu ADD
Social Mobilization	Self-help groups, thrift and credit groups, common interest groups,	Reaching women farmers through social mobilization: Community Managed Sustainable Agriculture (CMSA) in Andhra Pradesh	A case of reaching women farmers with community organization as the organizing principle: Union Federations promoted by RDRS in Bangladesh	Jaa Marufuku under the Ministry of Agriculture	Social mobilization: Dowa Women Group in Kasungu Agricultural Development Division under DAPP
Women extension workers or women para-extension workers	Using women extension/para-extension workers to reach women better	Community-based para-extension workers to reach rural women in Bihar: A case from Jeevika			Women extension workers or para-extension workers: Dowa women group in Kasungu ADD
Value chain/enterprise development	Supporting the development of women entrepreneurs (individuals or collectives) and then linking them to markets /value chains	Producers' Organization For Reaching Rural Women: The case of Intivelugu Mahila Dairy Producers Company Limited, Nizamabad	Value chain development for adoption of new agricultural knowledge: BRAC's initiatives in Khulna of Bangladesh with Sunflower	African Harvest Banana production	

1.   Interactions with key stakeholders/focused group discussions

Focused group discussions were held with groups to determine: What is the current 'state' of existing women-focused extension engagement methods/approaches being used to reach rural women? The reasons for conducting the case studies were to:

Provide lessons on new knowledge and understanding of the approaches
- That are working
- That are not working
- That are not working as well as they might

Provide reasoning and explanations
- For success and failure of these approaches
- For determining what the best approaches are in reaching rural women in different contexts

In this context, information was collected at the village level (selected villages), block level (the most successful block in the most successful district), and district level (the most successful block) from a range of stakeholder to capture a holistic idea of what is happening with the following:

- Promoters of the approach
- Participants in the approach (women/staff)
- Beneficiaries of the approach (women farmers)
- Stakeholders connected with these approaches
- Key informants from those locations that are knowledgeable about those approaches

In terms of data collection, a template was developed to capture the following information. These templates were not designed to be questionnaires, but were used as an aid to guiding the participatory focus group discussions.

The approach (how women farmers are reached to build their capacity – how does the approach work?)
- What extension messages do you receive by this approach?
- What are the key elements of the approach?
- Who (participants in the approach) does what activities at different levels (village, block, district or the equivalent)?
- How are activities at different levels (village/block/district) integrated?
- How are district-level activities connected to further levels and articulated wider (if it is the case)?

Evidence of scale in use/impact/achievement/benefits to women of the methods used
- How many women farmers are reached (at district level – detailed statistics at all levels)?
- What specific benefits are accrued by women farmers (details of gained knowledge/skills/income/recognition)?
- Collect documents (if available) about impacts achieved
- How many women farmers are still involved in the initiative? Are there are any non-followers or drop-outs (if any, reasons)?
- How many women farmers are expected to join the initiative in future (potential scaling-up)?

- At least four different (ideally) success stories (women farmers benefitting)

Contributing factors for success (social, cultural, economic, technical, environmental, infrastructural)
- What are those specific factors that contributed for success of the initiative?
- How were these factors-for-success identified and leveraged?

Contributing factors for failures (social, cultural, economic, technical, environmental, infrastructural)
- What are those specific factors that contributed for failures?
- What are the challenges faced by the promoters of the initiative?
- How did they address those challenges?

Wider analysis
- What do you think can be done to improve the overall situation regarding extension approaches (using this approach or other) to improve the lives and livelihoods of women in agriculture?

- What types of approaches would have the greatest impact? Discuss this approach with others.

- What is missing? What is lacking? What is it that really needs to change to improve conditions for women (local, national, if possible to get at international levels)?

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