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**Communicating Agriculture and Nutrition:  
Opportunities for Agricultural Extension-Communication and Advisory Services in Nepal**

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**Abstract**

*Meeting the dual goal of improving income and enhancing the nutrition status of Nepal's rural residents is the mandate of the Integrating Gender and Nutrition within Agricultural Extension Services (INGENAES) project, which is supported by the United States Agency for International Development's (USAID) Feed the Future initiative. A landscape study that provided an overview of Nepal's agriculture and the status of the country's agricultural extension system (AES) threshed out a primary target audience—rural women. How can they be reached with nutrition information through the existing AES? The landscape study also identified 11 organizations as INGENAES collaborators. What opportunities do they offer to advance INGENAES objectives? Following Rice and Foote's (2001) systems-theoretical approach, this formative evaluation study drew from the insights of project and program managers and coordinators, communication officers, representatives of non-government organizations (NGOs), extension officers, and editors and journalists of farm publications who work in the intersection of agriculture and nutrition in Nepal. Data were gathered from a survey of the chief communication and/or extension officers of these 11 partner agencies. Additional data were collected from evaluation questionnaires completed by project managers and communication officers of 12 government and non-government agencies who participated in a seminar-workshop on how to improve gender and nutrition communication. These two methods brought to light opportunities that can be used to enhance the communication and/or extension of nutrition-enriched agricultural information, especially to rural women. Recommendations for future communications work are offered.*

*Keywords:* Extension and advisory services, Nepal, gender-sensitive nutrition communication, gender and nutrition in extension, rural women

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### Introduction and Objectives

Being one of the least developed countries in the world, Nepal faces persistent food insecurity and threats to human health due to interwoven risks factors and vulnerabilities. While the national poverty rate stands at 25.2% (2011 estimate), which means that around a quarter of the population lives on less than \$1.90 a day, this figure rises to 45% in the Mid-Western and 46% in the Far-Western regions (Asian Development Bank, 2017). Poverty prevails in rural areas where agricultural production remains under optimal levels and few income-generating opportunities exist. According to Bishokarma and Amir (2014), inadequate nutrition and sanitation practices undercut public health, and meager public investments in infrastructure, health, nutrition services, and disaster management hamper economic growth.

About two out of three Nepalis are engaged in agriculture, mainly growing crops on small plots of land using basic farming methods. Yet, many in rural communities still do not have enough nutritious food to eat. Poor access to high-quality seeds, fertilizer, irrigation facilities, and markets makes earning a living an ardent struggle. As a result, more than half a million seek work outside the country, 95% of them male (Bishokarma & Amir, 2014). Climate change makes these already marginalized people even more vulnerable. Strong patriarchal social structures and an enduring caste system restrict the status and contributions of rural women (Jha, 2014).

Meeting the dual goal of improving income and enhancing the nutrition status of those who rely on agriculture for their livelihood is the mandate of the Integrating Gender and Nutrition within Agricultural Extension Services (INGENAES) project, which is supported by the United States Agency for International Development

(USAID) as part of the presidential Feed the Future initiative. INGENAES seeks, among other objectives, to integrate nutrition in agricultural extension services, reduce gender gaps in the delivery of these services, and thus empower women farmers. In a given country, INGENAES works with a variety of stakeholders. These include farmers, producer groups, cooperatives, policy makers, technical specialists, development NGO personnel, and donors (Thapa, 2015).

One of INGENAES' target countries is Nepal where undernutrition is a chronic public health problem across the country's three main geographic regions, the *terai* (or the plains) to the south, the hill region in the middle, and the Himalayan Mountain region to the north. The Nepal Demographic and Health Survey conducted by the Ministry of Health (MoH) in 2016 reported that 36% of the country's children under five were stunted, and 10% were too thin for their height (wasted), which is indicative of acute malnutrition. The survey also found that a little more than half (53%) of children 6-59 months old are anemic. Four in ten women 15-49 years of age also were anemic (MoH, 2016). According to Prakash (2017), "socio-economic, geographic, and educational factors, along with regressive gender norms, contribute to the poor health status of Nepalis, particularly women and children" (p. 2).

Against this backdrop, this study was conducted with three objectives. The first was to characterize INGENAES partner organizations in Nepal that will help alleviate this sub-optimal health status. What is their capacity to communicate agriculture and nutrition information, especially to rural women? The second objective was to determine the extension and communication approaches and activities that these organizations have developed and implemented relevant to INGENAES goals.

What have they done so far so that rural communities are able to access gender-sensitive agriculture and nutrition information? The third objective was to identify the opportunities for infusing nutrition information into the existing agricultural extension and advisory systems so that the information needs of rural residents are served. What strategies and tactics have been successful in reaching those in the countryside?

Rigorous programs typically conduct formative and summative evaluation of strategies and tactics. In formative evaluation, programs or projects are assessed during their development or early implementation phase to provide information about how best to revise and modify activities and operational structures. Summative evaluation, on the other hand, involves making judgments about the efficacy of a program at its conclusion. The present study was based on formative evaluation results. It answers the foregoing research questions by drawing from the insights of project and program managers and coordinators, communication officers, local representatives of non-government organizations (NGOs), government extension officers, and editors and journalists of farm publications and the agriculture media who work within the spheres—and the intersection—of agriculture and nutrition in Nepal.

The recommendations emanating from this research identified opportunities and constraints expected to inform current and future government and private sector efforts to build robust gender-responsive and nutrition-sensitive extension and advisory services. The Nepalese experience in reaching out to those who live in some of the most remote locations in the world is expected to offer insights into how rural residents can get their taste of James Hilton's (1933) *shangri-la*.

### **Literature Review and Conceptual Framework**

This study subscribes to the definition of agricultural extension services (also known as agricultural advisory services) offered by Meinzen-Dick, Quisumbing, Behrman, Biermayr-Jenzano, Wilde, Noordeloos, Ragasa, & Beintema (2011). The term, according to them, refers to “the range of information, advice, training, and knowledge related to agriculture or livestock production, processing, and marketing provided by governments, NGOs, and other sources that increase farmers’ ability to improve their productivity and income. Delivery may take the form of individual or group visits, information and communication technologies (ICTs), organized meetings, use of information and communication technologies, or teaching through the use of demonstration plots, model farms, or farmer field schools” (p. 62). The related but separate field of agricultural communication, on the other hand, examines communication processes among various actors and entities both within and outside the food and agriculture complex. Because communication is integral to the extension process, the present study uses the term “extension-communication” to describe activities that have the goal of reaching out and engaging diverse stakeholders in joint problem solving and opportunity seeking to benefit the rural areas of Nepal.

### **The Challenge of Reaching Rural Women**

Policy analysts (e.g., Gartaula, Niehof, & Visser, 2010) report that 65.6% of Nepal’s entire population (about 29 million) derive income directly or indirectly from agriculture. Of this figure, 72.8% are female (Asian Development Bank, 2017). Largely due to male labor out-migration, the role of women in agriculture has deepened as they take full responsibility for household

survival and take charge of farm operations (Lastarria-Cornhiel, 2008). Their access to extension remains generally poor. For those lucky enough to gain access, the quality of such a service and the appropriateness of the information provided are subject to gender bias. Whatever they learn finds limited application because women farmers often have limited access to resources including land, cash, and labor (Quisumbing et al., 2015).

Exploring gender relations and women's assets in four agricultural interventions in South Asia and Africa south of the Sahara, Quisumbing et al. (2015) observed that rural women, in general, have more "informal" roles that are often smaller in scale, localized, and less conspicuous. This suggests to communicators and extension agents that reaching rural women requires a tailored approach. According to O'Donnell (2012), women access information through informal channels, and are less likely to use technology due to cultural barriers, lower literacy levels, and less disposable incomes.

### **The Challenge of Infusing Agricultural Extension with Nutrition Information**

Integrating nutrition into the AES presents a number of challenges. At the core of the challenge is extension's long-standing focus on crops and food, and to a certain level, on livestock and natural resources conservation and management. Extension agents do not typically perform nutrition- or health-related activities (Fanzo et al., 2013). At the most, conventional extension approaches have concentrated on improving the nutrition content of crops.

Like most community workers, extension agents are stretched beyond their capacity. Adding the delivery of nutrition information will exacerbate their already heavy work portfolio. A confluence of factors serve as additional depressors.

Among others, they receive meager training on how to implement nutrition activities that suffer from a deficit of resources. Mobility is limited, and communication channels to community leaders are scarce. For the extension service to serve as a viable platform for the communication of nutrition principles and practices, the context and mechanisms for delivery must be clear, and incentives to the senders and receivers of information alike, must be in place (Fanzo et al., 2013).

### **A Systems-Theoretical Approach to Evaluation**

To account for the breadth of potential variables that may have a bearing on the impact of extension-communication initiatives, Rice and Foote (2001) posited a systems-theoretical approach to evaluation. This approach includes seven stages: "(1) specifying the goals and underlying assumptions of the project, (2) stipulating the process model at the project level, (3) identifying prior states, system phases, and system constraints, (4) postulating immediate as well as long-term intended post-states, (5) specifying the process model at the individual level, (6) choosing among research approaches appropriate to the system, and (7) assessing implications for design" (p. 152). The basic assumption is that project inputs intended to improve prior states are influenced by a set of constraints and opportunities within a system. As some inputs are transformed into outputs, a new "post state" evolves (Rice & Foote, 2001).

As part of INGENAES formative evaluation efforts, the present study focuses on the first four stages of Rice and Foote's (1989) systems-theoretical approach and infers individual-level processes of actual exposure, awareness, knowledge and attitude change, and trial and adoption of recommended practices (Stage 5). The findings are expected to inform the choice of

research approaches (Stage 6) and point to potential ramifications for project design (Stage 7), which are the purview of summative evaluation works. Thus, the present study poses the following research questions:

RQ1: What is the capacity of INGENAES partner organizations to communicate agriculture and nutrition information, especially to rural women?

RQ2: What have these partner-organizations done so far so that rural communities are able to access gender-sensitive agriculture and nutrition information?

RQ3: What strategies and tactics stand a good chance of reaching those in countryside with nutrition-infused agricultural information?

### **Methods**

This study applied a mixed methods approach. The first method involved personal interviews with the chief communication or extension officers of INGENAES' 11 partner organizations in Nepal. For this, the interviewers used a structured questionnaire. The purpose of this first method was to ascertain the characteristics of these organizations, especially those attributes that have a direct bearing on their ability to conceptualize and implement extension-communication activities that cater to rural women (Objective 1). This method also was used to identify and evaluate extension strategies and tactics these agencies have implemented that can be replicated to expand the dissemination of agriculture and nutrition information to farmers and farm families (Objective 2). The results of questionnaire pretests showed that agencies assign different meanings to communication terms (e.g., they need to be reminded of the difference between a strategy and a tactic,

product vs. message, interpersonal vs. mediated channels; what the term "nutrition" encompasses) and use different terminologies to describe communication products (e.g., billboards vs. "flexboards"; TV soap operas vs. television drama series) activities and operations. To assure the equivalence of terms used, the researchers opted for face-to-face interviews. This method also enabled interviewees to clarify questions and interviewers to explain the type of responses expected of them.

The second method made use of self-administered questionnaires distributed to the participants of a seminar-workshop on "Communication Strategies to Reach Rural Women with Nutrition Messages." The purpose of this method was to identify previous and current activities and approaches that can be strengthened or expanded to reach rural women with agriculture and nutrition information (Objective 3).

All research activities were approved by the university's Institutional Review Board before participants were recruited (IRB# 17046).

### **The Interviews**

The chief communication and/or extension officers of partner agencies were interviewed face-to-face. These individuals were selected as interviewees because they are most knowledgeable about the organization's extension-communication activities and initiatives. They were identified by the INGENAES in-country coordinator who secured their permission to be interviewed. Before the interviews, they were asked to sign an informed consent form by graduate student interviewers from the Kathmandu-based Master's in International Cooperation and Development program of the Midwestern University of Nepal. Four graduate students were trained on the nature and objectives of the project,

the questionnaire, the interviewing protocols, and the preparation of reports following each interview. The participants were interviewed in the locale of their choosing; many opted to do so at their place of work.

The structured questionnaire was divided into five parts. The first part asked about organizational characteristics, including the organization's nature and scope, the total number of employees who work in Nepal, the number of people who perform extension-communication functions, and the percentage of females in the extension force. Respondents also were asked the number of volunteers they attract in an average year. The second part asked whether the organization implemented programs that incorporated gender equity and nutrition information into agricultural extension, and the frequency with which their organization performed 10 gender-sensitive practices (e.g., Extension-communication activities are planned keeping in mind gender issues and concerns) and five nutrition-sensitive practices (e.g., We consider the nutrition requirements of farmers and farm families when we plan extension activities). These items are listed in Table 2. The responses to these Likert-scale items ranged from 1 (never) to 5 (always). The respondents were then asked to identify specific programs or projects that incorporate gender equity and nutrition information as part of their extension function; the methods, activities, and procedures used to incorporate these information into extension; and the messages that were conveyed within a project. The fourth part solicited the communication materials the organization has produced that incorporated nutrition into agricultural information, and the frequency with which the agencies used mediated and interpersonal communication channels to disseminate such information. The fifth part

consisted of five open-ended questions that asked the interviewees for the challenges they have experienced in planning for and implementing gender-sensitive activities, and in incorporating nutrition information into extension activities in general. The respondents were also asked to recall the difficulties male and female extension agents have experienced when communicating with rural women, and the skills they think can stand improvement and are therefore the likely focus of future training. Thus, the interviews produced both quantitative and qualitative data.

Each interview lasted from 1.5 to 2 hours. They were audio recorded and transcribed for analysis and future reference. The respondents were contacted to clarify conflicting answers. Descriptive statistics were used to analyze the responses.

### **The Evaluation Questionnaires**

The other method employed in this study involved evaluation questionnaires distributed to the participants of a one-day seminar-workshop on "Communication Strategies to Reach Rural Women with Nutrition Messages" conducted in Kathmandu. The workshop was attended by 25 individuals from 12 agencies. They were project or program managers and coordinators, communication officers, and local representatives of NGOs and government entities working in the sphere of agriculture, nutrition, or both; government extension officers; and editors and journalists of farm publications.

The two-page questionnaire, which produced mainly qualitative data, asked the participants the following questions: (1) What has your organization done that show the greatest potential of reaching women with agriculture and nutrition information? (2) What nutrition-related communication materials have been produced so far as part of your extension work? (3) What

constraints have you encountered in reaching and communicating with rural women? (4) What constraints have you encountered in disseminating information about nutrition? (5) What can be done in the short- and long-term to alleviate these constraints?

The open-ended responses gathered through the evaluation questionnaire were examined using thematic content analysis (TCA) to tease out the manifest and latent opportunities for the expansion and improvement of future extension-communication work. TCA detects the thematic content of interview transcripts (or other texts) by identifying common themes (Anderson, 2007). These themes were then distilled and grouped from the texts. The themes were named based on the actual words used by participants. Interpretation was kept to a minimum. Three methods were adopted to enhance validity, including

first tier triangulation of researchers, a documented audit trail of materials and processes, and respondent verification (Miles & Huberman, 1994).

## Results

### RQ1: The Organizations, their Characteristics, and their Communications Capacity

The chief communication or extension officers of all 11 partner organizations agreed to be interviewed for this study. These organizations, their scope of work, the number of their employees who work in Nepal, the number of their employees who perform extension-communication functions, the percentage of the extension-communication workforce that is female, and the number of volunteers they attract each year are shown in Table 1.

Table 1

*Nature, Scope, and Employee Characteristics of INGENAES Partner-Organizations in Nepal*

Organization	Nature and scope	Number of employees	Extension-communication employees	Female extension employees (%)	Volunteers per year
AICC/MOAD	National government	40	25	30	0
BBP Pariwar	Local NGO	14	5	100	15
CSISA/CIMMYT	International research	45	15	2	0
Heifer International	International development	58	23	40	0
HKI	International development	270	25	3	0
IDE	International development	75	20	50	2
KISAN	National NGO	261	200	23	122
PAHAL	National NGO	241	202	37	0
Sabal	National NGO	155	55	11	0
Suaahara	National NGO	130	44	10	10
YPARD	International youth network	37	37	50	600

*Note.* The acronyms stand for the following organizations: AICC/MoAD—Agricultural Information and Communication Centre, Ministry of Agricultural Development; BPP Pariwar—Boudha Bahanupati Party Pariwar; HKI—Helen Keller International; IDE—International Development Enterprises; CSISA-CIMMIYT—Cereal Systems Improvement for South Asia, a project of the International Maize and Wheat Improvement Center; KISAN—Knowledge-based Integrated Sustainable Agriculture and Nutrition; PAHAL—Promoting Health, Agriculture and Alternative Livelihoods Program; SABAL—Sustainable Action for Resilience and Food Security; YPARD—Young Professionals for Agricultural Development.

Of these 11 organizations, only one respondent reported not having a project with a gender-sensitive or nutrition component. The majority (9) said they implement projects with gender and nutrition dimensions. How often do they

implement gender- or nutrition-sensitive best practices? The responses suggest that most of the organizations that participate in INGENAES implement such projects “very often” to “always” (Table 2).

Table 2

*Frequency with which Partner Organizations Implement Gender- and/or Nutrition-Sensitive Best Practices*

Practices	Mean	SD
<i>Gender-sensitive practices</i>		
1. We plan extension-communication activities with the goal of giving attention to the needs of both men and women.	4.83	0.389
2. Extension-communication activities are <i>planned</i> keeping in mind gender issues and concerns.	4.66	0.651
3. Extension-communication activities are <i>implemented</i> keeping in mind gender issues and concerns	4.66	0.492
4. Our extension-communication personnel work with female farmers.	4.50	0.798
5. We disseminate information and technologies that are appropriate to the needs of female clients.	4.17	1.337
6. We collect gender-disaggregated data for program monitoring.	4.17	0.996
7. We evaluate projects based on their differential impact on men and women.	4.08	1.240
8. Our extension-communication personnel work with male farmers.	3.92	0.996
9. We disseminate information and technologies that are appropriate to the needs of male clients.	3.83	1.642
10. We train extension-communication personnel to conduct gender-sensitive extension activities.	3.75	1.288

*Nutrition-sensitive practices*

1. We consider the nutrition requirements of farmers and farm families when we plan extension activities.	4.25	0.965
2. We train extension personnel on how to incorporate nutrition topics in agricultural extension activities.	4.17	0.937
3. We evaluate the impact of nutrition-related extension activities.	4.00	1.651
4. We produce communication materials that discuss nutrition together with agriculture information.	3.92	1.311
5. We promote equal food access within families in all our programs.	3.83	1.586

<sup>1</sup> Response options range from 1 (never) to 5 (always).

### **RQ2: Extension-communication Activities**

The respondents listed a wide range of communication materials they produce and/or disseminate to fulfill their functions. These include an array of print media products (brochures, booklets, manuals, pamphlets, fliers, fact sheets, flip charts, bi-monthly magazines, crop calendars, posters or hoarding boards, and agricultural reference guides), radio and TV broadcasts, videos, interpersonal interaction sessions (mainly through field demonstrations and annual fairs), folk media (specifically street dramas and role-playing scenarios), and online outlets (social media) and mobile apps. These materials carry a variety of agriculture-related messages, including information about how to use technologies, good production practices (e.g., integrated pest management, soil fertility management, how to grow high yielding crop varieties, how to raise livestock), lemon production, and micro-irrigation.

Nutrition- and health-related messages include kitchen gardening, hand washing, serving a balanced diet, good housekeeping, improved shelter, the nutrition benefits of locally grown food products such as pulses, organic fruits and vegetables, the nutritional benefits of poultry products, crop and animal diseases and their prevention, breastfeeding techniques, and the roles and responsibilities of family

members in improving agricultural production and nutrition in the household.

What communication channels do they use, and how often? Table 3 summarizes the frequency with which the respondents use interpersonal and mediated means of communication to perform their functions. The results suggest a strong propensity to rely on interpersonal communication channels, but the organizations depended heavily on local opinion leaders to spread the word. Mass media use was significantly low, except for community radio.

Respondents were queried as to whether they tailor their project's messages based on specific audience characteristics. Findings show a keen awareness of the need to fine-tune messages based on audiences' geographic location, the major agricultural activities they perform, their perceived health status, gender, and ethnicity. Organizations were least concerned about differentiating messages by age.

Asked to rank their training needs, the respondents indicated they would like to improve their (1) facilitation skills, (2) gender analysis and sensitivity skills, (3) ability to work with individual farmers, (4) ability to work with farmer groups, and (5) managerial skills, in that order.

Table 3

*Frequency of Using Interpersonal and Mediated Means of Communication in Project Activities*

Channels	Mean <sup>1</sup>	SD
<i>Interpersonal channels</i>		
Extension agents	4.33	0.985
Influential farmers, role models, opinion leaders	4.25	1.215
Government officials (other than extension agents)	4.00	0.953
Animal health workers	4.00	1.000
Agricultural input dealers	3.33	1.230
<i>Mass media channels</i>		
Radio	4.08	1.311
TV	1.80	1.686
Newspapers	2.00	1.095
Magazines	1.80	1.316
Online sources	2.50	1.715
Mobile phones	2.83	1.835
Videos	3.00	1.044
<i>Combination of interpersonal and mediated</i>		
Field demonstrations	2.66	1.537

<sup>1</sup> Response options range from 1 (Never) to 5 (Always).

How do they evaluate the impact of the extension or advisory services they provide? Three respondents mentioned that they conduct baseline and endline surveys following the standards set by the Bureau of Food Security, Food for Peace, or the Gender Equity and Social Inclusion (GESI) framework prescribed by USAID. Baseline, midline and endline data are gathered quarterly or annually. Three organizations reported disaggregating the data they collect by gender. For example, they said they take stock of the number of women they served, ascertain what percentage of female farmers adopted a new technology, and determine the number of hectares placed under a new production practice by both men and women. One organization stressed that it follows USAID monitoring and evaluation guidelines, while another said that its project personnel visit communities to observe

women's control over household income and savings. They also check the performance of influential residents they call "social mobilizers." An agency representative reported a mandatory target of 40% female and 20% male beneficiaries. Another mentioned that the organization analyzes the minutes of community group meetings to assess progress, while two said they measure progress by the number of women who assume leadership roles in community groups. An extension officer reported conducting small case studies for qualitative assessment.

### **RQ3: Opportunities to Improve and Expand Extension-communication Work**

The seminar-workshop participants who answered the evaluation questionnaire were fully cognizant of the constraints that limit extension's ability to reach rural areas.

Often cited were cultural and language barriers, the difficulty of selecting appropriate social mobilizers, traditional gender inequities (e.g., the wife performing a subservient role within the extended family structure), geographical remoteness and the punishing topography, time constraints on women, deeply ingrained family behavioral patterns (e.g., it is taboo for women to converse with strangers, particularly men), varying notions of what constitutes “good nutrition,” and women’s lack of decision-making power.

An analysis of their answers to the five open-ended questions teased out the following opportunities that can be tapped to strengthen the extension-communication of nutrition-enriched agricultural information in the remotest parts of the country. These opportunities fall under the following themes:

**An audience-centric perspective that recognizes the constraints to female inclusion.** Rural Nepal is now feeling the brunt of the male migration to the Middle East Gulf states for employment, which has rendered the agriculture sector practically female-dominated. Thus, the communication challenge is to reach a female rural audience whose members have low literacy and not enough time on their hands to fulfill their expanded roles in the absence of the male heads of household. They also receive multiple messages, not necessarily consistent, from many sources although they have limited access to cell phones and other ICTs. A heightened awareness of these constraints has made extension-communication personnel more sensitive to ways of reaching rural women without impinging too much on their time.

**A consortium of NGOs that offer pluralistic advisory services in a cooperative and coordinated manner.** INGENAES partner organizations in Nepal have the advantage of being part of a

dynamic consortium of development actors. For example, the USAID-funded Suaahara (good nutrition) project is led by Save the Children, with Helen Keller International, the Johns Hopkins Center for Communication Programs, Nepal Water for Health, Jhpiego, Nutrition Promotion and Consultancy Services, and the Nepali Technical Assistance Group. The Departments of Water Supply Sewerage and Agriculture and Livestock Services contribute to this project that uses an integrated approach (including nutrition-specific intervention, agriculture, water, sanitation and hygiene or WASH, and health service promotion) to confront malnutrition at the household level (USAID, n.d. a & b.). It focuses on changing behavior by promoting actions and initiatives within people’s means (e.g., adding animal-source protein to traditional dishes or maintaining a backyard poultry and/or vegetable garden).

**Within the INGENAES consortium are national and international research centers, which give the project structural connectedness to the best available sources of technical agriculture information.** An example is the Cereal Systems Initiative for South Asia (CSISA) under the auspices of the International Maize and Wheat Improvement Center (CIMMYT), which promotes high-yielding and climate-resilient rice, lentil and maize as well as small-scale mechanization to reduce farm labor.

The Agricultural Information and Communication Center (AICC), INGENAES’ direct link to the Government of Nepal via the Ministry of Agricultural Development (MoAD), is a professional wing charged with identifying, packaging and disseminating agricultural information to farmers, traders, entrepreneurs, and professionals through the conventional and new media. Its flagship publication, the *Krishi Diaries*, is published annually to

serve as a reference guide for frontline extension agents. The *Diaries* is a compendium of facts and recommended crop and livestock production practices. Its introductory part, for example, details the agro-climatic characteristics of Nepal's varied regions, including rainfall patterns and soil characteristics. Other contents include land use patterns, the extent of cultivable land, demographic characteristics of farmers, the national agriculture policy, how to secure crop and livestock insurance, newly developed crop varieties and the most suitable areas to grow them, soil fertility management techniques, how to control diseases in fisheries, seed quality management, integrated pest management, and the contact information of partner agencies and offices.

The *Diaries* practically beg for nutrition information. A short section that describes the nutritional value of locally grown foods, the symptoms of common diseases and the dietary recommendations to prevent them, proper food preparation methods, and information on food groups for dietary diversity are examples of what can be added to this widely distributed annual publication. The Center also wants to release the *Diaries* in 16 of the most widely spoken local languages in the country. (The *Diaries* are published exclusively in Nepalese).

There are other AICC capabilities INGENAES can exploit. On the broadcast front, it disseminates daily radio clips that feature success stories and agriculture dialogues. In late February 2016, it launched a Kisan (farmer) Call Center through which retired agriculture technicians, experts, and university researchers field questions from farmers who telephone for assistance with problems on the fields (Samatar Samiti, 2016). This panel of responders could easily include nutrition experts.

**Nepal has a wealth of folk media and traditional ways for communicating with the masses that can be harnessed in the service of agriculture and nutrition education.** Another means of lending women greater access to information is by embedding agriculture and nutrition messages in “edutainment” programs, those that both educate and entertain or amuse. Examples of these are local radio soap operas or dramas in a rural setting, and simple radio spots akin to public service announcements in the western media lexicon. Women can be assembled to form soap opera listening groups that discuss agriculture and/or nutrition topics with the help of a facilitator after exposure to edutainment programs. The Knowledge-based Integrated Sustainable Agriculture and Nutrition (KISAN) project produces broadcast spots, which they plug into local radio programs to educate farmers on how to control *Tuta absoluta* (Lepidoptera: Gelechiidae), a highly destructive insect pest that damages tomato and other plants in the *Solanaceae* family. INGENAES partner agencies can explore more creative ways of tapping the full potential of radio.

Nepalese culture is steep in the use of folk media to announce news and available services. Examples are the *katwal karaune*, akin to the African town criers, in which a person (the *katwal*) shouts out messages to villagers. Another is the *gandharva gaune*, in which an ethnic group, the *Gandharva*, is paid in cash or kind to deliver messages in the form of song. In the *jhyali pitne*, a drummer uses his instrument to call villagers to gather at the town square for special announcements. These traditional forms of sharing news and entertainment can be buttressed with agriculture and nutrition messages. They can thus fulfill the entertainment and information needs of rural residents without taking up much of women's time.

Nepal has had successful experiences in implementing communication interventions that have an “infotainment” bent. The most popular was *Bhanchhin Aama* (Mother Knows Best), a campaign that used community radio and theater to improve the health and nutrition status of women and children during the 1,000 days—from when a woman becomes pregnant to the child’s second birthday—in 25 underserved districts. The plots of this radio serial drama revolved around the character of an *aama*, a regular Nepali mother-in-law, who modeled and promoted nutrition and sanitation behaviors. This character also hosted a live call-in show, *Hello Bhanchhin Aama*, in which listeners shared experiences and discussed a range of topics, including agriculture and nutrition. The show, broadcast twice weekly in three different languages, achieved critical success, receiving more than 200,000 calls throughout the campaign, or an average of 1,600 calls per episode. The *aama* character is also featured in project videos, printed materials, billboards, and other campaign media.

**A dynamic group of NGOs with clear nutrition mandates has made a mark on the ground.** INGENAES’ scoping study immediately identified several NGOs whose continued presence in the field have made them highly visible to a rural audience. Their strong profiles are largely due to their aggressive communication units. Among them is KISAN, a five-year \$20 million effort to improve the availability of quality farm inputs such as seeds, plant protection chemicals, organic fertilizers, and irrigation systems. It targets households with incomes below \$1.25 per day. More relevant for INGENAES, KISAN trains private and public sector change agents to deliver extension services (USAID, 2016).

The Promoting Agriculture, Health, and Alternative Livelihoods (PAHAL)

project is a five-year, \$37 million initiative that seeks to “strengthen livelihoods, improve nutritional status, and increase the capacity of vulnerable households to mitigate, adapt to, and recover from shocks and stresses in rural communities,” particularly those in the vulnerable populations of the hill and mountain regions of Midwestern and Far West Nepal (USAID, 2016b). Mercy Corps leads the PAHAL consortium, which seeks to provide 160,000 households in 14 food-insecure districts access to financial services, markets, safe water and sanitation facilities.

The Sustainable Action for Resilience and Food Security (Sabal) is a five-year, \$59 million project that works in 11 Central and Eastern districts to improve food production and nutrition (USAID, 2016c; Sabal, 2015). Its activities include supporting female community health volunteers and mothers’ groups.

Suaahara is a five-year, \$46 million endeavor that focuses on better maternal and child health services. It has introduced home-based gardening in 20 districts, and uses smartphones to track its coverage of disadvantaged households. Since it was launched in 2011, Suaahara has been credited for increasing the practice of exclusively breastfeeding babies under six months old and giving children in 25 districts access to improved diets (Save the Children, 2014). Suaahara has launched communication interventions that have gained a strong rural following. These include radio discussion groups, celebrations of key life events such as a rice feeding ceremony during the 1,000 days, the national breastfeeding day, cooking demonstrations, radio jingles, and mothers group meetings (USAID, n.d.b).

Helen Keller International (HKI) works with farmers and farming communities to establish model farms and field schools where women are trained in

gardening, farm management, and farming practices. Its programs promote the consumption of iron-rich green leafy vegetables, fruits high in vitamin A, and animal-source proteins from poultry, goats, and fish. Women also are trained to sell surplus produce at local markets.

The Young Professionals in Agricultural and Rural Development (YPARD) is an international movement that encourages young people to pursue agriculture-related careers (YPARD, 2014). For INGENAES, YPARD practically guarantees a cadre of young people in tune with the needs of rural residents and to the resources that can be harnessed in the service of rural areas.

Boudha Bahanupati Project (BBP) Pariwar (or “family” in Nepalese) is an independent, non-profit networking and service organization that offers micro-credit loans to rural women. The organization started as the implementing arm of the Friends of Nepal Pariwar Foundation, which paid for the salaries and the in-service training and transportation expenses of nurse-midwives in rural clinics. Each nurse-midwife provides reproductive health services to an average of 1,400 residents per year.

Heifer International conducts projects that generate income and assets from the goat and dairy value chains by strengthening farmers’ cooperatives and business hubs. It is behind the Strengthening Smallholders in Livestock Value Chain project, which supports 138,000 families in raising goats so that the importation of live goats is reduced by 30% and milk production is increased by 10% (Heifer International, 2017).

The International Development Enterprises (IDE) implements projects on gender equity, nutrition, food security, and climate change resilience with private sector partners and donors (IDE, n.d.).

**The presence of a robust local or community broadcast infrastructure throughout the three major regions and the need to bridge the literacy divide point to radio as the mass medium of choice.** Over the past decade, development organizations have been exploring ways of harnessing mobile phones to improve farmers’ access to information. In parts of Africa, cell phones have been deployed to enable farmers to track the prices of select farm products, transact business, and bring rural folks into the financial system. While such mobile methods are yielding encouraging results in some parts of the globe, our interview and evaluation results suggest that, at least for now, the impact of mobile phones on agricultural and nutrition practices in Nepal has been minimal.

Radio, on the other hand, has been historically the most popular mass medium in the country (UNESCO, 2013). Radio Nepal, the state-run broadcasting system, reaches over 85% of the total population through its nationwide broadcast network and FM relay stations across the country (Acharya, 2015). According to the Ministry of Information and Communication, 360 FM radio stations were in regular operation by the end of 2013. Of these, private commercial interests own 40%, 40% are owned by NGOs, and about 15% are run by cooperatives (Ministry of Information and Communication, 2013).

The general communication environment points to radio as an enduring and effective information conduit. Survey respondents and workshop participants cited radio most frequently as a source of information about farming and nutrition issues. Extension agents, friends, and family stood out as major delivery channels of practical and technical information, but radio was the clear leader. INGENAES partners can thus capitalize on community-

based radio stations and news groups by supplying them with much needed content.

To make headway in the broadcasting field, there must be some uniformity in the terms commonly used to describe nutrition concepts, necessitating multi-lingual official translations. A dictionary will be most useful, especially for community broadcasters who may be unfamiliar with how scientific terms translate to the most commonly spoken local languages.

**More images in communication materials resonate better with a highly visual culture.** The literacy divide can be further bridged by capitalizing on more pictorial means of communication such as illustrated billboards (locally called “flexboards”), posters, and manuals. Nepal has a highly personal and visual culture in which pictorial depictions are better understood and liked, and line drawings resonate more with the local ethos. Familiarity, realism, and simplicity are important components of successful visual depictions, especially of the science behind recommended agriculture and nutrition practices. To fully exploit people’s propensity for the visual, however, communicators need to understand ways of ascribing value (“good” or “bad,” for example) to a pictorial rendition, know the “vocabulary” of local signs, and capitalize on the values attached to colors within the culture.

**Ubiquitous informal mechanisms of information exchange, especially places where women congregate, can be tapped for agriculture and nutrition purposes.** In every Nepalese village are small stores that sell a variety of everyday consumer items. At the end of the day, local residents congregate in these micro-commercial spaces to catch up on events and discuss issues. Women have been known to gather in nooks within marketplaces in what may

be called rural Nepal’s version of “social media.” Interpersonal communication channels offer the best push toward the adoption of recommended practices. Communicators and extension agents can capitalize on these informal information centers (e.g., local gathering places such as communal laundry sites, Internet hubs) to expand reach.

### **Conclusions**

While the constraints to agricultural extension-communication services in many parts of the developing world have long been recognized, the opportunities for growth are often overlooked. The findings of this study suggest that a consortium of highly responsive government entities, NGOs, and national and international research centers has already paved the way—and promises to sustain efforts—to effectively infuse agricultural extension with nutrition messages in Nepal. These groups have produced a wide range of communication materials and have communicated to their audiences through interpersonal and mediated means. Interview responses indicate, however, that they used interpersonal channels more in the course of their assignments.

An analysis of respondents’ open-ended answers to personal interviews and evaluation questionnaires teased out eight concrete opportunities that can advance the extension and/or communication of nutrition-enriched agricultural information in the country. The opportunities that stand out resonate with the nature of Nepalese culture. For example, the use of radio and illustrated billboards transcends the literacy barrier and finds a good fit with a culture that is highly personal and visual. That these media can be accessed at any time allows women the flexibility to be exposed to messages despite a grinding daily schedule. Extension agents also can tap the wealth of

folk media and traditional ways of communicating agriculture and nutrition to those in rural areas. To further offset constraints on women's time, agriculture and nutrition messages can be embedded in "edutainment" (educational entertainment) programs such as local radio soap operas, theaters, and dramas. Ubiquitous informal mechanisms of information exchange, especially in places where women congregate, also can be exploited for agriculture and nutrition purposes. Communicators can capitalize on informal interaction spaces (e.g., communal laundry sites, small variety stores, women's corners in marketplaces, Internet hubs) to offer more personalized instruction. With more than a hundred languages spoken as mother tongue in the country, there is a constant need to translate nutrition concepts and terms. A multi-language dictionary will be most helpful, especially for those who report for TV and radio.

The findings of this study were distilled from the responses of extension-communication officers and/or program directors of 11 INGENAES partner agencies. This roster does not include government instrumentalities with direct public health mandates and those who seek to elevate people's nutrition status albeit as secondary or tertiary goals. While attempts were made to validate answers through follow-up interviews, the study's external validity can be bolstered by matching the results against the outcomes of more quantitative summative evaluation efforts. A survey of intended beneficiaries will enable a comparative analysis of impact across regions.

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