

Public Health Foundation of India (PHFI)/International Livestock Research Institute (ILRI)  
India Research Initiative on Peri-urban Human-Animal-Environment Interface  
Research Capacity Building Program

## Conducting EcoHealth research: Basic skills


Workshop report

Gurgaon, India  
24–25 November 2016

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#### Citation

Public Health Foundation of India (PHFI)/International Livestock Research Institute (ILRI). 2016. *Conducting EcoHealth research: Basic skills*. Report of a training workshop held on 24–25 November 2016. Nairobi, Kenya: ILRI.

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## Background

EcoHealth approach has emerged over the last decade as a key concept guiding collaborative, transdisciplinary/interdisciplinary research to address and identify risk factors prevalent in the neglected peri-urban landscapes that are emerging as hotspots of infectious diseases. It stresses on the importance of taking an intersectoral and collaborative approach to identify the epidemiological phenomena at the human-animal-environment interface and build resilience of the vulnerable populations, structures and systems through regional, national and localized efforts undertaken by development agencies, governments, communities, and other partners. Eco Health (EH) with its multi-sectoral approach provide an ideal platform to identify and prepare these sectors to nullify some of the risk drivers. Further, to make EH approaches more locally relevant, sustainable, and inclusive, development of local capacities is essential.

The Public Health Foundation of India (PHFI) and the International Livestock Research Institute (ILRI) supported four-year applied research program (2013-17): the *India Research Initiative on the Peri-Urban Human-Animal-Environment Interface* or the Perimilk study aims to produce a resource-efficient, multi-stakeholder platform for research that will help sustain a community of researchers and practitioners to promote evidence-based coordinated policy and practice related to local healthy food production, livestock, and prevention and control of zoonotic diseases. Within the Perimilk study is a Research Capacity Building Program (RCBP) that promotes EcoHealth research through doctoral and post graduate fellowships. RCBP has been set up to select and build capacities of researchers and faculty members and to train them in transdisciplinary research methods.

RCBP provides a platform to young researchers from various disciplines to explore Eco Health approach and encourage problem-solving mindset. The initiative is an attempt to bring together various disciplines and sectors to provide an informed view of the research studies being undertaken so as to develop a rich body of researchers, encourage problem solving mindset and draw focus to neglected peri-urban interface.

Apart from supporting the research studies, the overarching objective of the initiative is to build the core competencies of the young researchers in transdisciplinary research methods. The aim is to advocate for transdisciplinary research by engaging with national research leadership and promote sub-national networks of transdisciplinary researchers. In lieu of this, RCBP will be conducting trainings for its research scholars to introduce them to the EcoHealth approach and transdisciplinary research methods. The first training was conducted in September 2016.

In November 2016, RCBP organized another two-day training workshop for the newly enrolled research scholars on *Conducting EcoHealth Research: Basic Skills workshop for RCBP Scholars*. The objectives of the training workshop were:

- To impart understanding of EcoHealth approach and its applicability in research practices among selected scholars.
- To develop basic research skills of selected scholars in conducting EcoHealth research.
- To understand the challenges and identify the key priority areas of research in the peri-urban dairy farms in India.
- To orient scholars to India Research Initiative peri-urban human-animal-environment interface and the PeriMilk study the research priorities identified within the project.

## Introduction to the consultation

A two-day training workshop for the Research Capacity Building Program (RCBP) scholars was conducted recently in Gurgaon from November 24-25, 2016, under the Research Capacity Building Program of the RCZI/PHFI India Research Initiative. It brought together research scholars and their mentors from the streams of veterinary public health, public health, veterinary epidemiology, remote sensing and geoinformatics, and anthropology. The training workshop introduced the participants to the concept of transdisciplinary research methods. The overarching objective was to impart understanding of EcoHealth approach and its applicability in research practices amongst selected scholars. The workshop provided training to develop basic research skills and provided hands-on training on important components of undertaking the research study. The topics covered were:

- The India Research Initiative and Perimilk study: Overview
- EcoHealth research approach: Introduction
- Planning a research study and ethics in research
- Proposal presentation and feedback
- Proposal discussions with mentors
- Writing research
- Literature search and reference management

The research scholars were also briefed about the research priorities identified within the project that helped them fine tune their proposals and develop the research questions accordingly. The workshop provided an opportunity to the scholars to discuss and deliberate with their mentors and peer-group about the study topic they have chosen. The discussion drew attention to some of the pressing issues of the peri-urban areas and helped the young researchers identify the key knowledge gaps and how their research study can help in identifying the key drivers of risk practices in the dairy sector.

A total of 22 participants attended the workshop, comprising 14 young researchers and three academicians along with the RCZI/PHFI team, representatives from ILRI and University College of Medical Sciences. The two-session was part of a series of capacity building training sessions for researchers selected for the RCBP under the India Research Initiative.

## Welcome and introduction to the workshop

**Dr Jessy Joseph, Senior Research Associate, RCZI/PHFI** provided an overview of the India Research Initiative on peri-urban human-animal-environment interface and the role of Research Capacity Building Program (RCBP) within the initiative to provide a platform for transdisciplinary research. The rationale for a dedicated Initiative to study Peri-urban interface and the importance of conducting One Health research was also outlined.

### **India Research Initiative and Perimilk study: Overview**

The Indian cities have witnessed a rapid and unsystematic mushrooming of peri-urban areas. In response to increased demand for food, traditional agricultural practices have been supplemented by highly intensified, industrial-style production units. Further, small holder dairy farming, typical of peri-urban ecosystems, suffer from lack of support and quality control of dairy farming as well as absence of an organized system of farm inspection or screening of animals for disease. These spaces are usually excluded from the vision and priority of civic authorities. Adding to their vulnerability are systemic weaknesses and limited evidence to inform policymakers.

## **Rationale for a dedicated initiative to study peri-urban interfaces**

A new focus on healthy peri-urban ecosystems is urgently needed to provide momentum and mechanisms to guide policy and build local capacity in integrating public health and livestock health within urban planning and social development.

So far, interventions have been mostly designed and targeted towards one sector in isolation. This complexity requires a more in-depth understanding from both human and animal health perspective, while recognizing the EcoHealth context of both.

## **About the RCBP Initiative**

The Research Capacity Building Program was formed with a few objectives to facilitate understanding of EcoHealth approach and address the key knowledge gaps. The initiative is an attempt to bring together various disciplines and sectors to provide an informed view of the research studies being undertaken. The RCBP hopes to develop a rich body of researchers, encourage problem solving mindset and draw focus to neglected peri-urban interface.

The conceptualization and design of the RCBP is based on a framework developed by the World Health Organization (WHO) to strengthen the knowledge management strategy that facilitates discussion and inputs from the community at large. The activities under the initiative are aligned around the three strategies of this framework:

- Research capacity building strategy;
- Gap analysis for agenda setting; and
- Developing Partnerships

## **EcoHealth research approach: Introduction and planning a research study and ethics**

Dr Johanna Lindahl, Scientist, International Livestock Research Institute (ILRI) provided the basic conceptual understanding of Eco Health research to the participants and introduced them to the finer nuances of Eco health approach and its applicability and viability in the peri-urban settings. She explained that One Health covers the entire spectrum of veterinary medicine, human medicine and environmental science and if followed systematically, there are benefits to be gained by controlling zoonoses in animals and along the value chain. The session helped the participants understand the concept of One Health and Eco Health and the difference between them. The session covered the six principles of EcoHealth research vis-a-vis sustainable positive change- Transdisciplinarity; Participation (different sources of knowledge); Equity (everyone's knowledge counts); Systems thinking (embrace complexity); Sustainability; and Research to Action. The importance of taking an intersectoral and collaborative approach to prevent, detect and control endemic and epidemic diseases among animals and humans by identifying the key drivers that are operating at the human-animal-environment interface was outlined. By gaining an understanding of the concepts and principles of EcoHealth approach, the participants would be able to apply some of the concepts to the research study that they will undertake. The impact of zoonoses on human health and the economic benefit of working through a collaborative approach to address the risks was covered in the session.

## **Planning a research study and ethics in research**

The session provided an opportunity to the participants to understand basic concepts of research design and planning, and basic research ethics. The objective was to provide guidance to refine their research proposals and finalize the protocol of conducting the research on the given topic. The basic

concepts of the research design planning, and research ethics were covered while emphasizing the importance of research ethics as it protects human participants and ensure that research is serving interests of individuals, groups and society as a whole. The importance of having a clear understanding of the problems and how research will help in addressing the underlying problems was stressed upon. The researchers must be clear about whether the evidence generated through the research will help in making a difference at the micro level. The clarity of the question will help in getting the correct answers as the research question determines what kind of data one need as that determines how to conduct the study? The session covered the key steps of planning a research study which included research methods, sampling strategies, data collection, conducting interviews, data analysis and writing techniques.

## Proposal presentations by the research scholars

This was an opportunity for the research scholars to present their research study and provide an overview of the rationale and aim of the study. Each of the participants got an opportunity to discuss the primary and secondary objectives of their study and other details pertaining to setting, study design, time frame, population/participants, sample size, methods, outcome measures and statistical analysis of their research study.

The session was an opportunity for the participants to interact and discuss with each other and receive feedback by the multi-disciplinary group on the research protocol for the study. This was a constructive exercise as it provided a hands-on experience to the research scholars to apply some of the learnings of the EcoHealth approach, specifically systems thinking, participation and collaborative approach.

## Training sessions

### Data collection and data quality

**Dr Jessy Joseph, Senior Research Associate, RCZI/PHFI**

The learning objectives of this session was to provide a basic understanding of selecting a research approach, methods of undertaking research and data collection methods to ensure the quality of the data. The overall decision to study a topic is based on assumptions, procedure of inquiry (research design) and specific research methods of data collection, analysis, and interpretation. The participants were briefed about research design and various procedures of inquiry, the process of data collection, selecting a research approach and what data should be collected, good practices to be followed in data collection management and analysis, the essentials for the integrity of research, and various issues in data collection. The session also covered topics such as quality control and improvement, methods of data entry and quality control measures as the quality of good data is imperative to derive better understanding of a research topic.

### Writing research

**Dr Johanna Lindahl, Scientist, ILRI**

The objective of the session was to orient and train the participants on the basics of writing research. A brief overview of various components of a research publication such as introduction, material and methods, results, discussion, conclusions, abstracts, journals and reviewing was provided. The importance of setting the agenda, describing the issue and providing the necessary data to understand the research study was reiterated. Setting the agenda and defining in clear terms why is this a problem, describe the whole issue and giving the data necessary to understand, what is the purpose of doing it and what will be the use of research findings are some of the critical components of research writing. Before undertaking a research it is important to answer some

questions such as: What is the gap in knowledge and why was your work important? Set an objective and make people understand why you did it? Apart from this, the participants were briefed about plagiarism, correct use of English, use of references to validate, selecting an appropriate topic and correct use of key words.

## Literature search and reference management

**Dr Pranab Chatterjee, Senior Research Associate, RCZI/PHFI**

The session on literature search and reference management provided a hands-on training to the participants on use of software such as PubMed and Mendeley and the use of Medical Subject Headings (MeSH), Filters and Boolean operators to refine the search, develop research strategy, and download and email citation. These tools are immensely helpful in refining the search. The session outlined the importance of having a search strategy as it helps in getting the information one needs. Search strategy tips were provided to the participants such as pick a search topic, divide topic into concepts, find key words and subject headings to represent these concepts, refine search to dates and study groups. The concept of MeSH and how to search on PubMed was provided to the participants through examples. The session provided hands-on training to the participants on how to create a reference library.

## Technical feedback to the participants

Each research fellow was given a detailed feedback on his/her presentation. The diverse group of audience comprising of the mentors, external panel of experts from varied disciplines provided detailed feedback that covered the finer nuances of undertaking a research study. The feedback on the presentation style, importance of clarity and brevity of the content helped them hone their presentation skills. The technical feedback pertaining to the research question, the key objectives, methodology and sample size helped the candidates in refining their research methodology, and review and revise their proposals accordingly to ensure the desired outcome. They were specifically guided on the technical and financial feasibility of the proposed research study. The candidates were advised to attend courses on veterinary epidemiology, sample size calculation and sampling techniques. Suggestive readings and details of the forthcoming workshops were also provided to the candidates. Additionally, experts were also asked to follow the ethics of research during the data collection with special attention to explaining and obtaining consent.

## Challenges and priority areas

A group exercise with the research fellows and mentors was conducted to deliberate upon the various challenges and barriers that exists in the peri-urban landscapes and what are the key priority areas that need attention. The participants unanimously stated that lack of awareness, economic challenges and health seeking behaviour are some important determinants of the risk practices. It is thus imperative to understand the health seeking behaviour of a community to determine how they use health services and the associated factors vis-a-vis cost of services, level of awareness, accessibility to health facilities. Understanding the risk factors of BTB and differentiation between BTB and MTB is also important to decipher to be able to address the challenges strategically. Other challenges listed were various barriers for change such as unorganized dairy sector, milking practices and low veterinary collaboration.

Based on the challenges, the candidates listed out key priority areas of research in peri-urban smallholder dairy farms in India as follows:

- Epidemiology of zoonotic disease: knowledge, attitude and practices of smallholder dairy farmers



- Farm hygiene practices
- Socio-economic consequences of smallholder dairy farming dying out
- Socio-economic factors of small dairy farmers associated to zoonoses
- Awareness and knowledge among small dairy farmers, management of milk, prevalence of zoonotic disease and food-borne pathogens
- Lack of awareness in people regarding food safety and zoonoses

## Way forward

The two-day workshop with the research fellows and their mentors helped in listing out the key priority areas of research and various challenges that exists. It helped in providing clarity to the research fellows in terms of what their research study should accomplish in order to fill-in the critical knowledge gaps and contribute towards creating a rich knowledge database. The training was instrumental in orienting the research fellows on the importance and viability of Ecohealth approach to undertake research study. Apart from this, the two-day session helped the research fellows develop soft skills such as presentation skills, language, writing research proposal which is of critical importance.

There is a greater need for more such formal training programs to develop and capacitate the future research leaders as it is a great way to enhance the skills of the young researchers. This would require establishing institutional partnerships and create a platform that promotes dialogue amongst the research fraternity. RCBP will continue supporting transdisciplinary research by funding for junior researchers, building core competencies and providing training in transdisciplinary research methods at sub-national level in project states and beyond. The Project will help strengthen advocacy for transdisciplinary research by engaging with national research leadership. Finally, it will promote sub-national networks of transdisciplinary researchers through mid-level faculty and researchers from public and animal health and wildlife health.

A training module has also been developed covering the basics of undertaking research study, various methodologies, introduction to EcoHealth research methods that can be used by the research community as a ready reckoner to undertake research following an Ecohealth approach. Institutional partnerships will be developed to explore more subjects and disciplines to fill in the critical knowledge gaps and create a rich knowledge database that serves as a resource for the policymakers and developmental organizations working in the sector of animal health, environmental health, public health, zoonoses, emerging infectious diseases and dairy sector in the peri-urban landscapes in India.

## Agenda

Day 1		
09:00 – 09:30	Welcome and introduction to the workshop: India Research Initiative and Perimilk study: Overview Exercise part A: Research question	Dr Jessy Joseph
09:30– 10:00	EcoHealth research approach: Introduction	Dr Jessy Joseph
10:00 – 10:30	Exercise part B: Eco Heath approach adoption	Dr Johanna Lindahl
10:45 – 11:15	Planning a research study and ethics in research	Dr Johanna Lindahl
11:15 – 11:45	Exercise part C: Modification of protocol	
11:45 – 12:15	Data collection, quality, and management	
12:15 – 12:45	Exercise Part D: Survey questions	
13:00– 15:15	Proposal presentations and feedback	
15:30-17:00	Proposal presentations and feedback	
Day 2		
09:00 – 11:00	Follow up discussion: Protocol and data collection tool	
11:15 – 12:00	Writing research	Dr Johanna Lindahl
12:00 – 13:00	Literature search	Dr Johanna Lindahl
14:00-15:00	Reference management	
15:00-16:00	Exercise Part E: Creating a reference library Feedback sessions/deliverables	Dr Pranab Chatterjee
16:00-16:30	Conclusion	

## List of participants

No.	Name	Designation
1	Ms. Navita Yadav	Post Graduate Student Public Health Management
2	Ms. Priya Chinchwadkar	Post Graduate Student Public Health Management
3	Ms. Sonam Barak	Post Graduate Student Public Health Management
4	Ms. Akshita Singh	Post Graduate Student Public Health Management
5	Ms. Mansi	Post Graduate Student Public Health Management
6	Ms. Purnima Rai	Post Graduate Student Public Health Management
7	Ms. Shruti Pahwa	Post Graduate Student Public Health Management
8	Ms. Ikra Ahmed	Post Graduate Student Public Health Management
9	Ms. Vaibhavi Khadayata	Post Graduate Student Public Health Management
10	Ms. Divya aggrawal	Associate Professor/Mentor
11	Dr Dipanjan roy	Associate Director/Mentor
12	Dr Dhananjay Srivastava	Associate Professor/Mentor
13	Dr Debdatta bhattacharya	Scientist (RMRC)
14	Dr A.S. Acharya	Scientist (RMRC )
16	Dr P.K. Sahoo	Scientist (RMRC)