Community of Practice in Ecosystem Approaches to Health
CoPEH-Canada
Communauté de pratique sur les approches écosystémiques de la santé

HEALTH - FROM MULTIPLE PERSPECTIVES TO AN ECOSYSTEM APPROACH

Authors: Dr. Jena Webb, Dr. Céline Surette, Dr. Mélanie Lemire

Reviewed by: Carli Halpenny

Contributions: Dr. Bruce Hunter, Suzanne McCullagh and Marta Berbés-Blázquez developed the negotiating health activity during the May 2011 Teaching Manual Workshop.

CONNECTS WITH:
Complexity – Gender – Participation and Research

TABLE OF CONTENTS

The authors would like to thank Donna Mergler for the development of Figures 1-6 and Figure 9. Jena Webb would like to thank Enrique Cifuentes for insights that he provided which helped to develop the use of a conceptual framework in indentifying types of information and modes of inquiry.

SUGGESTED CITATION

Webb J, Surette C, Lemire M, (2012) Health: From Multiple Perspectives to an Ecosystem Approach. In: McCullagh S ed. (2012). *Ecosystem Approaches to Health Teaching Manual*. Canadian Community of Practice in Ecosystem Approaches to Health. Available: www.copeh-canada.org

MODULE INTRODUCTION

DESCRIPTION

In the context of ecosystem approaches to health, stepping back and thinking critically about health is a part of the process. Health can be defined in various and contrasting ways depending on one's standpoint, perspective or values. For example, public health authorities might define health differently than ecologists working in aquatic ecosystems or Indigenous communities in Northern Canada or representatives of petroleum companies. When differing worldviews come together, the process of negotiating health is complex. Nonetheless, it is also essential for understanding the issues and proposing actions and policies that are equitable, inclusive and sustainable. The process of negotiating and defining health helps frame health issues within current cultural, economic and political contexts, and within our own research or practice. It also enables us to choose the methodology and tools best suited to measure and/or define health in that context. It is also necessary to understand the structures that exist and look at them from a critical perspective to see how they hinder or promote health.

DIRECTIONS

This module contains two sections, which can be modified as necessary. The first session should be presented early in the course, as it introduces key concepts that are revisited in the other modules. Further, the "defining health" activity in section one is a good exercise to build a sense of community among participants of the course. If this will not be the first session, sessions on scale, complexity, or uncertainty could precede it foreshadowing towards health. The concepts presented in this module can also be integrated into other learning modules as strategic 'Ah-ha!' moments throughout.

AIMS/GOALS

- Think critically about multiple perspectives of health
- Experience health and the process of negotiation
- Learn how to frame health within an ecosystem perspective
- Explore ways of building and using a conceptual framework
- Think critically about the choice of appropriate indicators and methodologies to measure and/or describe health, and the limits of different tools

GUIDING QUESTIONS

- What is health?
- How is health defined and negotiated?
- What is the overall picture of the individuals whose health is of concern?
- What are the best indicators to address the health issue?
- What is unique to measuring health using an ecosystem perspective?

WORKING TERMS

Health, negotiation, multiple perspectives, spatial and temporal scales, health continuum, the pyramid of populations at risk, multiple health determinants, conceptual frameworks

SECTION 1 – EXPERIENCING AND NEGOTIATING HEALTH

DESCRIPTION

Health is a concept that can be intensely personal. It makes reference to one's own worldview and life context. To get past the differences a common vision of the health problem and the ideal state of health, is needed. In this section, common definitions of human, animal and ecosystem health are provided. There is, however, no consensus on health definitions and a working definition must be negotiated by each research project or intervention in its particular context. Following the definitions, some strategies and tactics for negotiating visions and definitions of health are presented. Creative tension is purposely generated to help students understand how health is integrated into real world situations.

LEARNING OBJECTIVES

- Deepen our understanding of what it means "to experience" in general and of experiencing health in particular, through a reflection on health and experiencing it.
- Develop an appreciation of humility, through the sharing of experiences.
- Explore the definitions of health by negotiating from different perspectives
- Practice the process of negotiating a definition of health.

KEY QUESTIONS

- What is experience, and how does one experience health?
- Is it possible to arrive at one common definition of health?
- How do you negotiate a health? (biomedical, socio-economic, etc.)
- In what ways is health a negotiable term?
- What are some of the processes by which we can negotiate health in our ecohealth work?

DISCUSSION QUESTIONS

- Does how we define health make a difference to how we treat health? How we develop our research or intervention? How we approach our practice?
- Can the same definition of health lead to multiple approaches to dealing with health?
- Can certain definitions of health lead to erroneous choices in methodology with respect to health?
- How can we make links between the individual experience and equity and gender issues (socially defined identities)?
- Why are these valuable? Why is it important to foster sharing of one's values?
- What are you experiencing? What are you not experiencing?
- What are you capable of being aware or conscious of? What are you incapable of being aware of or conscious of?
- If the definition of health is always open to negotiation, how do we use it to inform

our practice?

- How does the process of negotiating health affect the way YOU experience your own health?
- Is it necessary to reach a consensus on the definition of health?
- Does the definition of health change depending on the perspectives involved?
- How does the way we deal with or define human health issues affect animal and environmental health?

Reflective Prompts

- What do you do when you are healthy?
- What is it like to be healthy?
- What do you do when you are sick?
- What is it like to be sick?
- How can illness be prevented?
- Does what makes you healthy also make others healthy? What about animal health or ecosystem health?

Key Content

Defining Health

Health has a number of different definitions, and the concept of health challenges organizations that take up its cause. Classic definitions of health include those of the World Health Organization's (WHO) Consitution: "...complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1967) and the Alma Ata Declaration: "The extent to which an individual or group is able, on the one hand, to realize aspirations and satisfy needs; and, on the other hand, to change or cope with the environment" (WHO, 1978). The latter definition makes reference to an individual's relationship with the environment. It does not, however, draw out the interdependence of the ecosystem's health, human health and animal health. Some groups have attempted to rewrite the standard WHO definition of health; others go into more detail in mission statements or other documentation. One Health, for example, is dedicated to fostering collaborations between physicians, veterinarians and environmental scientists. The American Veterinary Medical Association defines it as "the collaborative effort of

> *"Health offers an approach to assessing the multi-faceted well-being of organisms, populations, communities and ecosystems. The combination of health with sustainability brings together the notion of a currently desirable state with that of longevity. In this, the less focused notions of what has been called sustainable development are made clear" (NESH, 2011).*

multiple disciplines – working locally, nationally, and globally – to attain optimal health for people, animals and our environment". James Kay's Diamond Diagram highlights how the needs of ecosystems are linked to the needs and wants of society in the presence of policy makers and other stakeholders (Kay et al. 1999).

Less attention has been paid to defining and refining the definition of "animal health". Indeed, a study looking at how animal health is defined in veterinary texts found that most did not present a definition of health (Gunnarsson, 2006). While it was rare that an author referred solely to animal productivity, this would never be considered a pertinent category when referring to human health. Furthermore, the environment was rarely taken into consideration in these texts. When it was, it was often in reference to disease (not health) or a "failure to produce."

> *"Since the ecological system may be fundamentally altered by the time that scientists attempt to describe and quantify pathology, the etiology of the disease is lost and analysis is primarily forensic or retrospective diagnosis."*
> *(Schaeffer et al. 1988, p. 447)*

Attempts to define ecosystem health in modern science are much more recent. An early definition is the following: "an ecological system is healthy…if it is stable and sustainable— that is, if it is active and maintains its organization and autonomy over time and is resilient to stress" (Costanza et al. 1992, p. 9). Ecosystem health is routinely defined with regard to a few parameters (such as diversity or productivity) and assessment relates to populations rather than individuals. A true evaluation, however, would also examine the interrelationships between populations (Schaeffer et al. 1988). Further, the original state of many ecosystems is not known to science, although traditional ecological knowledge can sometimes be used to reconstruct how the ecosystem might have looked before perturbation (Houde, 2007). In addition, our tools are not sophisticated enough to allow us to accurately establish how healthy an ecosystem is (Vogt, 1997). These complications lead some scholars to wonder whether it is even useful to speak of ecosystem health (Vogt, 1997). Definitions of ecosystem health also make frequent reference to human health and policy making. Viewing ecosystems in terms of human health provides important opportunities for the integration of social and health sciences into environmental management (Rapport et al. 1998). Ecosystem health can be linked to the services that ecosystems provide human communities to sustain them (Rapport et al. 1998), resulting in the Millennium Ecosystem Assessment definition of ecosystem health as "the ability of an ecosystem within its surrounding landscape to continue to provide a particular set of services." (MA, 2003, p.69)

Health is Multiperspectival

When a problem is being defined, multiple perspectives are brought to the table. Each individual, species, or ecosystem will have its own definition or requirements for health. In order to fully understand the health problem, all of these perspectives need to be acknowledged and explored. Module 6: Participation and Research elaborates on this theme. This exploration often highlights the need to look at health in terms of complex systems [See Module 3: Complexity]. Further, bringing in different perspectives on health can often highlight issues of gender [See Module 5: Gender], power and equity.

Two particular perspectives, "Western" and "traditional" views of health, often clash. On the one hand, Western science is rooted in a worldview which grew out of the dualism of Descartes. In this system there is mind and body, humans and nature; elements which as antitheses to one another. Humans can understand nature because they are separate from it. Following Descartes, Hume and Berkeley introduced the inductive method and modern science as we know it was born (Russell, 1961). The methods presuppose a reductionist view of nature – by reducing nature to its constituent parts, scientists could understand its internal workings (Suzuki and Knudston, 1992). The health sciences, particularly with respect to quantitative methods (see Appendix), have largely adhered to these principals.

Traditional views, on the other hand, often recognize the complexity of nature. They engage with local dynamics of an ecosystem to try to understand it as fully as possible, while retaining a certain awe of the enigmatic mysteries that nature offers us. Traditional Ecological Knowledge (TEK) is intrinsically ecosystemic and interdisciplinary. Both the scientific information and the methods used bear a striking resemblance to the ecosystem approaches to health. See the *Appendix* for an example of where differing definitions and a disregard for traditional knowledge led to a backlash.

There is, however, some convergence between "Western" science and "traditional" views. Einstein's Theory of Relativity shows that one can never know both the velocity and the position of an object at the same time, Heisenberg discredited Newtonian physics by showing that pausing nature to study it gives a false representation since nature is inherently dynamic, and Bohr demonstrated that the behaviour of subatomic particles can only ever be expressed in terms of probabilities. Further, systems thinking has revealed cases of synergy, where the properties of systems do not seem to equal the sum of their parts. Traditional science has been criticized as a "disconnected, inadequate description of the whole" (Suzuki and Knudston, 1992). Ecosystem approaches to health attempt to retain a holistic focus.

Negotiating Health

Ecohealth research and practice focuses on process. There can be as many different definitions of health as there are stakeholders. Different perspectives shed light on divergent worldviews and positions that are likely to come to the fore later on. Going through the process of acknowledging different perspectives can also help determine the positions and perspectives that are absent from the discussion. As the number of stakeholders and the complexity of the issue increases, the process of negotiating a common vision of health and of the issue at hand also becomes more complex. Yet, at the same time, the process of negotiating health can help foster a sense of community and better frame health issues. It highlights areas of convergence that can be used to develop a common vision. The focus is on the process instead of the outcomes, allowing us to understand where people are coming from and why they have a particular worldview. It then becomes part of the process of deciding how to go forward with the limitations expressed.

Box 1.

Sample perspectives for negotiating health activity

- *Pregnant waitress from small community*
- *International forestry company CEO*
- *Master tradesperson from a small riverside community who works for the forestry company*
- *Retired public health nurse*
- *Female salmon and her offspring 7 generations from now*
- *Boreal forest in the Springtime*
- *Unborn moose*
- *Provincial Ministry of Health*
- *Birch tree seeds*
- *Child who plays in a creek*

ACTIVITIES

Activity 1: Define and negotiate health

TOTAL TIME: at least 60 minutes
OBJECTIVE: To facilitate participant's experience of the multiple perspectives of health and live the process of negotiation through a role playing game. This is a good activity to have in the beginning of the course as it creates a sense of community and builds relationships between the participants. To foster this sense of community, all participants – students and instructors – should be actively engaged in this activity.

STEP 1: *Specific definitions of health* (15 minutes)

- Divide the participants into small groups (3 or 4 max).
- Give each group a different perspective or standpoint (which has been decided upon beforehand by the team; see Box 2 for some ideas).
- Ask each group to develop a working definition of health that considers the imposed perspective.

Note:

- the diversity of perspective is important for the negotiation process in step 2;
- it is important to include standpoints from the non-human world;
- include time and scale dimensions.

STEP 2: *Negotiating health* (at least 20 minutes – give more time if you can. This round takes more time than the first step as this is where the real process of negotiation begins)

- Reorganize the groups to make up to 5 groups where the individuals from each group in step one are spread out.
- Ask the participants to present the definition that emerged in step 1 to their new group.
- Negotiate a new definition of health that takes into account the different perspectives at the table.

Note: *Each of the new groups doesn't necessarily have a representative of all the imposed perspectives of step 1. It may happen that some groups don't arrive at a consensus or a common definition in the time frame allowed.*

STEP 3: *Wrap-up discussion (30 minutes)*

- Bring the participants into plenary.
- Ask each group to state its definition of health. NOTE: *If a group hasn't arrived at a definition explore with them why and how this makes them* feel*. Probe into whether* words *were the hindrance and whether some other representation (image, sound, etc.) could better synthesize perspectives and experiences.*
- Extract commonalities and differences from the different definitions.
- See if the group can get the 5 definitions down to 3.
- Debrief the negotiation process. Some discussion questions could be:
    - How is "health" a negotiable term?
    - How did the negotiating process occur?
    - Are any of these definitions transdisciplinary?
    - What role does willingness play in negotiating a definition?

Note: *Be aware that there might be some frustrations at this point and be prepared to discuss and debrief this by looking at the process*

Note: *Definitions can be kept for other activities in the course. If they are put in a visible place, participants can go back to them as the course evolves. They can be a dynamic teaching tool. It is also a good idea to synthesize the process. Ask each group to bring up their hand written initial definition from step 1 and save the definitions produced in step 2. Create a document which shows the evolution of definitions through the three steps and provide this document to the group.*

- *This activity is designed as a good icebreaker and should be done at the beginning*

of the course.

Activity 2: Reflection on our own definition of health

OBJECTIVE**:** To reflect on one's own way of experiencing and defining health.

DIRECTIONS: This activity can be part of a "reflective passport" and can be used as a transversal activity prompting reflections on the different fundamental concepts of ecohealth. The reflective passport is a journal where students can write their thoughts on the different concepts presented during the course and revisit them as they evolve during the course (See Module 5: Gender for an example of a reflective passport).

PRIOR TO THE COURSE: Ask students to write their own definition of health.

DURING THE COURSE: periodically (maybe 3 times during a 10 days course) ask students to go back to their definition of health and write their reflections/rewrite/adapt their definition. During sessions, field trips, and when debriefing health definitions, you can ask students how the definitions presented by groups, papers, or presentations resemble their own.

> *Note:*
>
> *As an ecohealth researcher or practitioner, including one who is preparing a course on ecosystem approaches, it is important to reflect on our own worldviews, motivations and definitions of health and their limits. These essential reflections help to create the openness needed to deal with and appreciate the divergent worldviews that will be expressed by the different stakeholders involved in an issue or a course.*

Activity 3: Mindfulness Meditation

10 minute presentation on the benefits of meditation (optional), 10 minutes of meditation and at least 30 minutes of discussion: The course itself can be a trying experience, with full schedules and constant contact with a new group of people. Ask students to reflect on how their health changes in these new circumstances, how they are "experiencing" health in the present. A mindfulness exercise can be carried out during class. Yale University has a research programme studying the impacts of mindfulness meditation and provides resources for carrying out meditation exercises. The first of the three audio exercises on their "resources" site (http://medicine.yale.edu/psychiatry/ytnc/care/resources.aspx) entitled "Body Scan Meditation" is an interesting exercise to bring peoples focus onto their own body and how it feels. Have people stay in their seats and close their eyes while you play the audio clip for them. Hold a discussion following the meditation, linking back to the concepts seen in the course and tying this personal "experience" of health into theory. Is it important to dedicate time to reflecting on health? To what extent is health an embodied experience? A theoretical concept? Does their own experience fit with the definition of health that they wrote down before the course? Does it fit better with any of the

definitions presented during the course? This exercise can be tied into a discussion about qualitative methods (see following section) as it is essentially a phenomenological approach to inquiry.

Note:

- *The mindfulness exercise should not be held at the beginning of a course.*
- *Meditation is a powerful experience. Be aware that some people may not be feeling themselves (or rather might be feeling much more themselves) after the practice and may need time to reflect privately before speaking. Allow people to not participate in the discussion and record their reflections in their passport instead. Do not ask people who have not volunteered to share their thoughts.*
- *If you are wary about introducing meditation in a course due to fear that sceptical students will find it esoteric, you can present the findings from new research about the health benefits of meditating (Brewer et al. 2011) before the meditation, bringing the exercise full circle.*

Activity 4: Analyzing the concept of health

TOTAL TIME: 60-75 minutes

OBJECTIVE: To reflect on common definitions of health and how much importance is given to critically thinking about defining health in science, policy and the media.

STEP 1: *Pre-readings*
Provide students with a variety of materials (research articles, government reports, newspaper clippings, organizational pamphlets, etc.) in which the word "HEALTH" is used. This material can be provided as course readings and the students can be asked to have read the material before arriving to save time for the following steps.

STEP 2: *Analysis (20-30 minutes)*
Ask the students (in groups or individually) to try to pull out the working definitions of health in each of these works (make sure they know that there may be more than one definition employed in each piece or that a definition might be difficult to tease out). They can highlight the definitions directly in the text or, if none can be found in the text, the assumptions behind the work can be turned into a definition and written on a separate piece of paper.

STEP 3: *Categorization (20-30 minutes)*
Have the students develop some categories to compare and contrast the various definitions.

STEP 4: *Wrap Up Discussion (15-20 minutes)*
What conclusions can they draw about the concept of health from this exercise? If the "negotiating health" activity was done, how are the definitions different from the ones developed by the group? Why? The categories developed in step 3 can be compared with the categories identified by Gunnarsson (2006) and described in the section on animal health above. Did different types of documents (scientific, media, governmental) define health differently? Did they treat the process of defining health the same?

SPECIFIC READING

Brewer JA, Worhunsky PD, Gray JR, Tang YY, Weber J, Kober H (2011) Meditation experience is associated with differences in default mode network activity and connectivity. Proceedings of the National Academy of Sciences of the United States of America 108: 20254-20259

Costanza R, Norton BG, Haskell BD (1992) Ecosystem health: new goals for environmental management. Island Press. 269 pgs.

Gunnarsson S (2006) The conceptualisation of health and disease in veterinary medicine. Acta Vet Scand 48: 20

Houde N (2007) The six faces of traditional ecological knowledge: challenges and opportunities for Canadian co-management arrangements. Ecology and Society 12: 34

Kay JJ, Regier HA, Boyle M, Francis G (1999) An ecosystem approach for sustainability: addressing the challenge of complexity. Futures 31: 721-742

Millennium Ecosystem Assessment (MA) (2003) Ecosystems and Human Well-Being: A Framework for Assessment. Island Press.

NESH (2011) NESH Approach. Available: http://www.nesh.ca/index_files/Page488.htm [accessed December, 13, 2011]

O'Neil JD, Elias B, Yassi A (1997) Poisoned food: cultural resistance to the contaminants discourse in Nunavik. Arctic Anthropology 34: 29-40

Rapport DJ, Costanza R, and McMichael AJ (1998) Assessing ecosystem health. Trends in Ecology & Evolution 13: 397-402

Russell B (1961) History of Western Philosophy. London: Routledge.

Suzuki D and Knudston P (1992) Wisdom of the Elders: Honouring sacred native visions of nature. Toronto: Bantam Books

Vogt K (1997) Ecosystems: balancing science with management. New York: Springer, 470 p.

WHO (1967) The Constitution of the World Health Organisation. Geneva: WHO

WHO (1978) Declaration of Alma--Ata. International Conference on Primary Health Care, Alma--Ata, USSR, 6-- 12 September, 1978

SECTION 2 - FRAMING AND MEASURING HEALTH

Description

This section explores some ideas about framing, measuring and describing health. The process of framing health in time, scale and along the health continuum will help students identify measurable variables that are indicative of the central processes influencing health within a negotiated definition. This ensures that identified variables address pertinent questions and take into account differences in temporal and spatial scales. Finally, we show how to use a conceptual framework to identify the types of information required and modes of inquiry for accessing this information.

Learning Objectives

- To frame inquiry within a negotiated, multi-perspective definition of health.
- To create a conceptual framework to frame and identify key questions.
- To recognize how health determinants act at different temporal and spatial scales.
- To identify indicator variables which address the questions and consider temporal and spatial scales.
- To critically discuss how the choice of conceptual framework and indicators influence the measured or described Health of a system.

Key Questions

Framing health

- What factors influence the health context?
- How are the chosen concepts/populations/landscapes related or connected?
    - Directly, indirectly, feedbacks?
    - Do they operate on the same temporal and/or spatial scales?

Developing a conceptual framework

- What is a conceptual framework?
- What should be included in a conceptual framework and how is this based on the chosen definition of health?
- What are the areas/connections of the concept map [See Complexity Module] or conceptual framework that are of particular interest in your system?
- What populations (human and animal) and ecosystems are involved?
- How are animal health and ecosystem health related to human health?
- How does your specific system map onto the conceptual framework?
- How can you use a conceptual framework throughout the process of studying or addressing health problems?

Measuring and describing health

- What different types of information and modes of inquiry are needed in order to address each of the spheres involved in the problem? How are they interconnected? Can you develop your intervention or research question so that your results will be complementary to the results of your colleagues from a different field?
- What kinds of variables are indicators of health states or processes? At what temporal and spatial scales are they acting?
- What tools can be used to measure these variables?
- What kind of conclusions can be drawn from these measurements? Do they address key questions?
- How does a project evolve during the different steps of the process? What could you have done differently?

Discussion Questions

- Is there one "correct" conceptual framework?
- How does a conceptual framework change if:
  - You use a different definition of health?
  - Different people are involved in creating it?
- What cannot be included/captured in a conceptual framework?
- Is it possible to measure/describe everything of interest? What cannot be measured or described? How might this influence the interpretation of the results? How might this influence the generalizability or validity of your results?

KEY CONTENT

Framing Health

How to frame inquiry within a negotiated definition of health?

Human and ecosystem health, including animal and "vegetal health," are embedded in multiple scales of ecosystems acting both in space and in time. In order to frame our health questions, it is important to understand this context. The health of the ecosystems and living beings can be affected by a multitude of factors or health determinants acting at different spatial or temporal scales, including both biogeophysical (air, earth, water) and built (houses, public infrastructures, road, etc.) ecosystems. We need to begin by understanding the physical, social and temporal contexts. Figure 1, referred to as an "onion skin diagram," and developed by Donna Megler (unpublished) helps us to visualize the different contexts – all of which act on health – within which the health of an individual, animal or ecosystem rests.

Figure 1: Health in a nested set of ecosystems

Further, health is a continuum acting over time and its deterioration is influenced by the severity of the exposure to one or several factors acting simultaneously or not (ex. contaminants, pathogens, socio-economic context, loss of culture, etc.). How one defines health and frames the health context can have important implications on which part of this continuum one is able to detect or improve on (see Figure 2).

Figure 2: A continuum of deterioration

The size of a population at risk of being impacted by a factor (Figure 3) will depend on the health outcome of interest and the health focus (Figure 4). So, how health is defined and

how the context is framed has important implications on the target population.

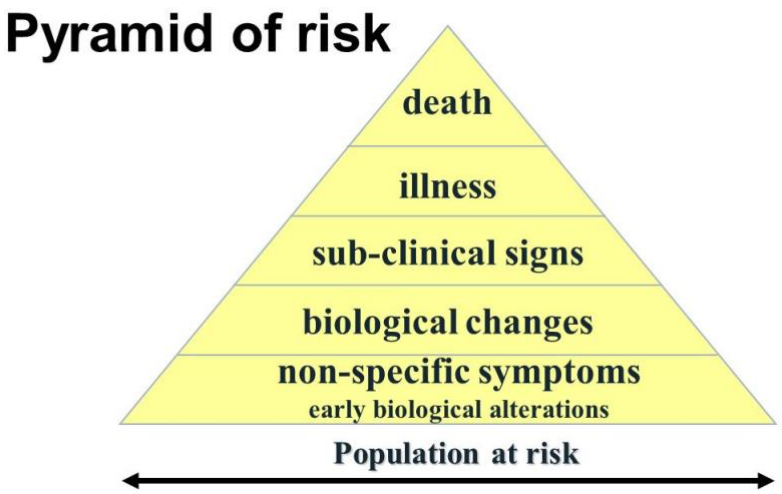


Figure 3: Pyramid of risk

The choices made in defining and framing health, leading to decisions about the size of the target population, in turn has implications on the type of study or intervention that will be carried out. The issue here is whether the focus is on the population as a whole or the individuals in the population. This will have impacts on which scale and moment in time intervention occurs. With a focus on individual health, therapeutic interventions become paramount; but, with a focus on community health, awareness raising and prevention are crucial.

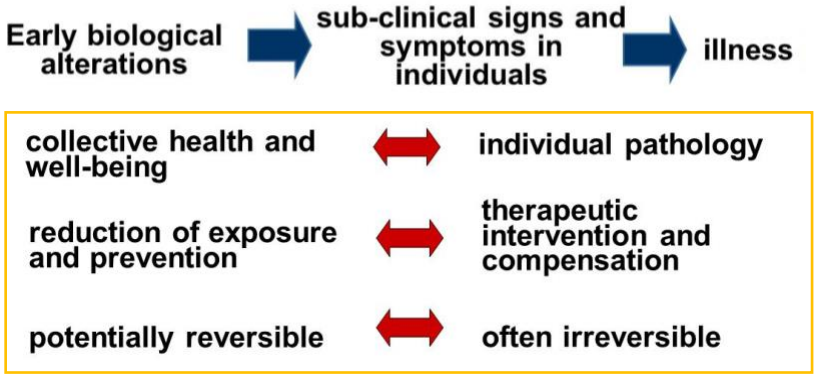


Figure 4: Health focus: individual vs. collective, remediation vs. prevention

In addition to issues of scale and time, there are a multitude of determinants of health,

or factors that influence health outcomes (Figure 5). Increasingly, health practitioners and researchers recognize the social determinants of health, such as lifestyle, nutrition, education, etc. (Lalonde, 1974; CSDH, 2008). The ecosystem approaches to health seek to integrate these social determinants of health with environmental determinants of health, such as climate, housing, exposure to contaminants, etc. This approach leads to a vision of health which requires inquiry using natural, social and health sciences making it inherently interdisciplinary (Figure 6).

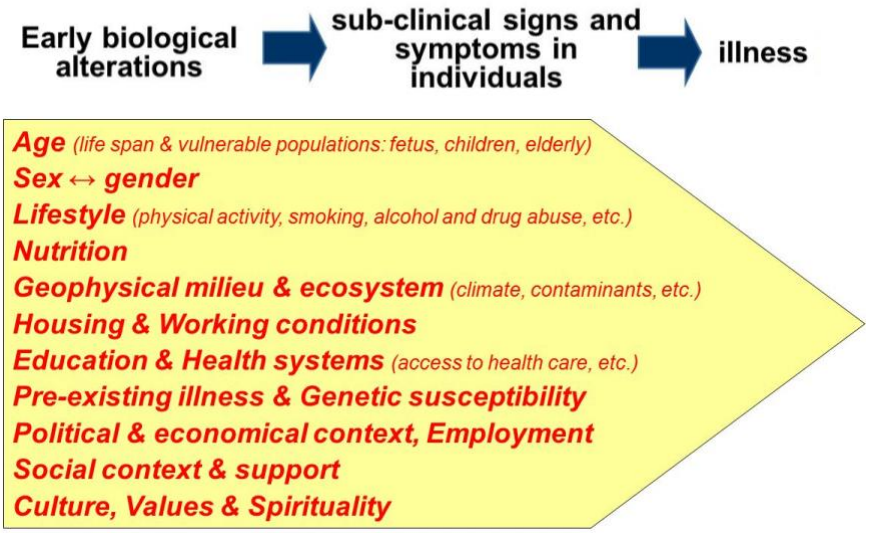


Figure 5: Multiple determinants

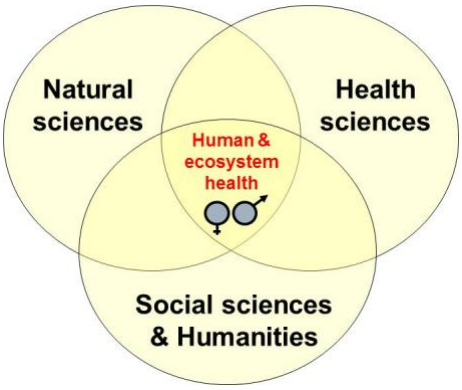


Figure 6: Multiple perspectives and interdisciplinarity

What is a conceptual framework?

A conceptual framework is a visual constructed to outline some of the principal relationships between human health, animal health and/or ecosystem health, and other relevant contexts such as economics, policy, culture, etc. The transdicisplinary nature of the ecosystem approaches to health means that most probably a great many factors will be deemed pertinent to the study of a particular health issue. On the other hand, including too many factors paints an unwieldy portrait. Creating a conceptual framework is an art and a balancing act. Conceptual frameworks are constructed to help focus one's efforts. The process of constructing a conceptual framework leads the scholar or practitioner to ask themselves many questions about their underlying definitions and the current context for the work. It may highlight areas that were neglected or assumptions that were made, which is in and of itself useful. However, the conceptual framework is also intended to be a road map used to guide the process of studying or improving a health issue, and should be continually consulted and re-constructed.

Note: *Social science students may be very familiar with conceptual frameworks, whereas students from the natural sciences may not. This can be turned into a learning point if the reasons for this are discussed. This also means that when creating groups for activities, such as the one suggested at the end of this section, attention should be paid to getting a balance between the social sciences and natural sciences.*

How to develop a conceptual framework

Several guiding questions can be used to develop a conceptual framework for addressing ecosystem, animal and human health based on the theory of complex systems and taking into account a negotiated definition of health:

a. How can the issue be framed in ecosystem terms?
b. What are the issues related to human, wildlife and ecosystem (natural and built)health?
c. What are the links between health and the ecosystem? Are they direct or indirect? Is there retro-action or feedback loops? Do they operate on the same temporal and/or spatial scales?
d. Where does the issue situate itself in the health continuum?
e. What are the health determinants?
f. Who are the populations involved? Among these populations, are any groups (human, animal or flora) more vulnerable? Are there specific gender and equity issues?
g. Who are the important stakeholders and actors involved in the issue?

From these guiding questions can emerge a wide diversity of conceptual frameworks. Figure 7, 8 and Box 3a present three different examples of frameworks, among many others. The Multiple Exposure Multiple Effects (MEME) model is a framework developed

for the World Health Organization by Biggs (2003) to provide the conceptual and theoretical basis for the development, collection and use of children's environmental health indicators. This model emphasizes the complex relationships between environmental exposures and child health outcomes. Figure 8 is an example of a conceptual framework of an agroecosystem's health management (Neilsen, 2001). Neilsen (2001) notes of the process of constructing a conceptual framework; "to simplify and identify key relationships within and between ecosystems is helpful in understanding ecosystem functional relationships in pursuing management goals."

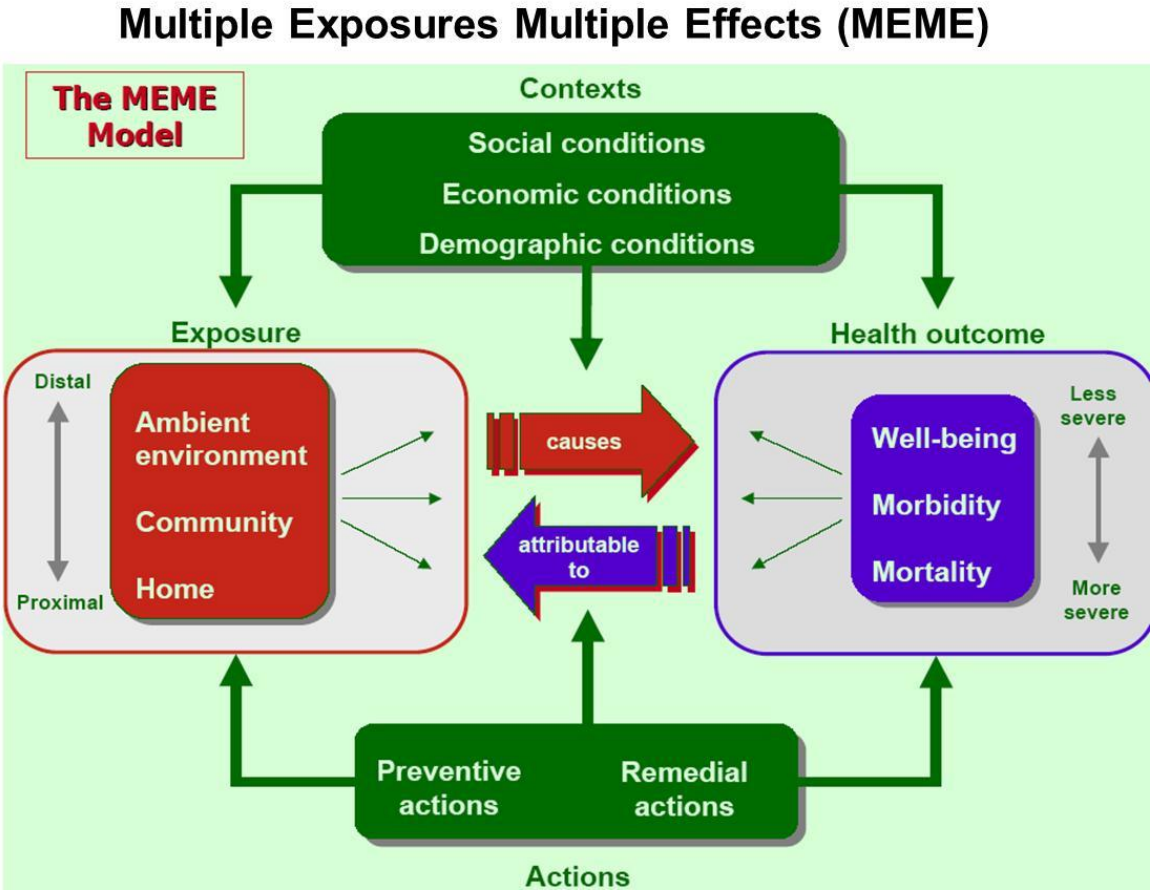
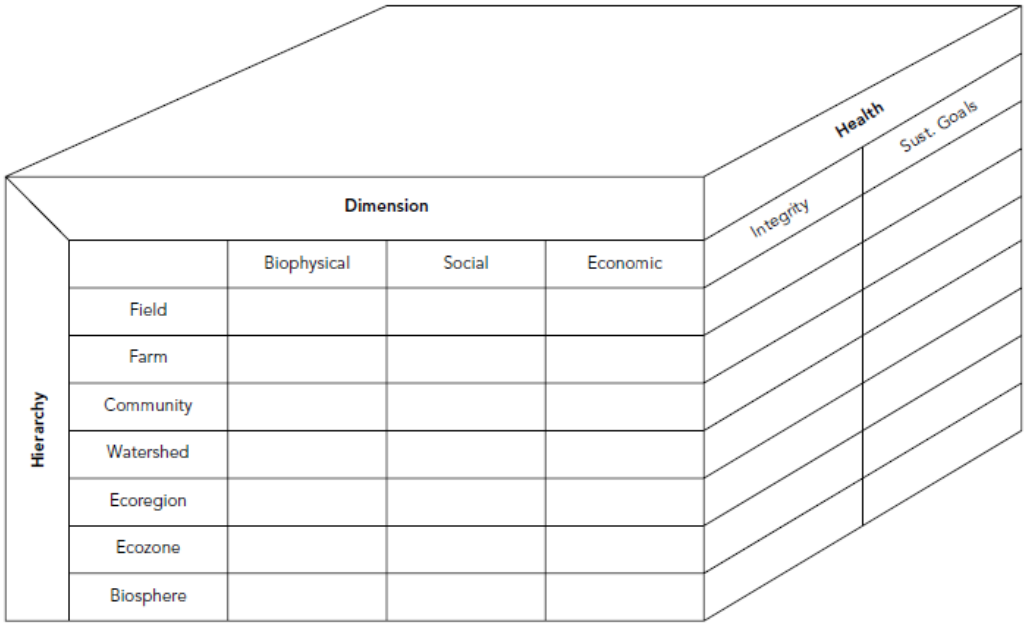


Figure 7: Briggs, 2003. Making a Difference: Indicators to Improve Children's Environmental Health. World Health Organization. pg 14. Available at: http://www.who.int/phe/children/en/cehindic.pdf. Accessed on March 16, 2012. This material is reproduced with permission of World Health Organization.

A conceptual framework, in this case an agroecosystem, illustrating a typical ecosystem hierarchy, its biophysical, social, and economic dimensions, and the essential parameters of health, namely, integrity and sustainable goal achievement.



* Observe that the temporal dimension can be imagined by replicating the diagram in time. Such a framework serves to simplify the complex relationships that must be considered in ecosystem health management (VanLeeuwen et al., 1998).

Figure 8: Nielsen, N.O. 2001. Ecosystem approaches to human health. Cad. Saúde Pública, Rio de Janeiro, 17 (Suplemento): 72.

Measuring and describing health

The process of defining, framing health and constructing a conceptual framework has identified different determinants, scales, populations, and contexts. Some aspects also need to be fleshed out or measured. Decisions made in the previous phases will have important consequences for the description or measurement of health. The measurements that will be taken or the medium used for describing health will be different according to the organism, population, scale or time frame chosen (e.g. individuals, herds, communities). Defining health in terms of early biological alterations vs. illness or death will mean that more sensitive tests will be required, ones that are on a continuous scale and which can be conducted on smaller populations, as shown in Figure 9. Further, the ultimate use of the information flows directly from choices made in framing health. For example, focusing on early biological or psycho-social alterations could eventually lead to preventive actions for a larger population. Ultimately, the process carried out in each project will lead to a unique methodology which is dependant

on both technical, disciplinary knowledge and some of the broader considerations described in this module.

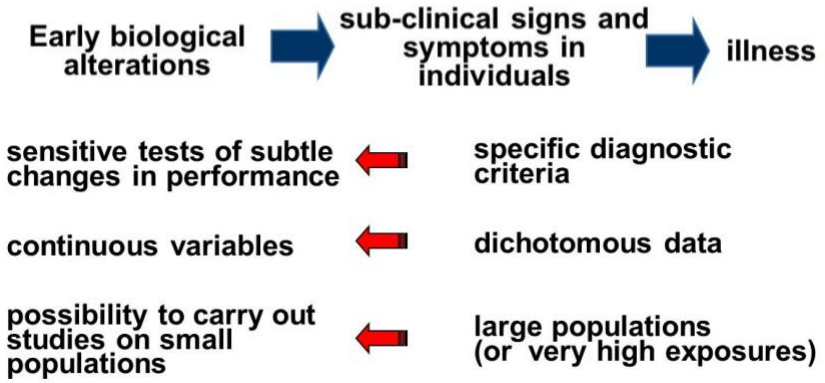


Figure 9: Methodological considerations

The conceptual framework can be broken down into its constituent parts to help identify which types of information are missing and how to go about collecting this information. *Appendix Box 2a* presents a conceptual framework of the interconnecting spheres of influence of a particular health problem in three separate natural ecosystems. The different components of this conceptual framework were then used in turn to help clarify the different types of information and modes of inquiry needed in order to address each of the spheres involved in the problem. This is a tangible example of how the methods for describing or measuring the different determinants or contexts surrounding a health issue differ between scales/perspectives.

Two basic types of inquiry are used in studying health: qualitative and quantitative. Both seek to describe and explain phenomena. One of the distinguishing characteristics between the two is the focus on measurement and numeric data in quantitative methods as well as a strong intent to be "unbiased" and founded on the "objective" observation of facts, events and phenomenon. Quantitative approaches use controlled experiments, representative samples, standardized instruments, empiricism, generalization, positivism, and deduction. Results tend to be generated as numbers, percentages, and generalisations (see Appendix). Qualitative methods, on the other hand, recognize that the observer has an inherent bias and that research is conducted to describe and understand certain groups' experiences, perspectives, etc. Qualitative methods aim to gain an "in-depth" view based on personal experiences, rather than glean generalizations out of means. Five qualitative approaches are commonly used in the social, behavioural and health sciences: narrative research, phenomenology, grounded theory, ethnography, and the case study (Creswell, 2007). For a description of the modes of inquiry of each, similar to that presented for quantitative methods in Box 4, see chapter 4 in Creswell (2007). Mixed methods are becoming increasingly popular (Creswell and Clark, 2011;

Hesse-Biber, 2010) and are particularly well suited to issues being examined with an ecohealth lens, as ecohealth projects often integrate several disciplines. The use of a conceptual framework should help in identifying the overall methodological approach (qualitative, quantitative or mixed methods) the appropriate tools and disciplinary knowledge needed to understand health in a particular system. It is important to recognize the limits of these methods and that the very same health issue can be studied from different angles. Examples of Ecohealth case studies using a combination of methodological approaches can be found in Charron et al. (2012).

Both applied research and targeted interventions – either of which can be carried out using an ecosystem approach to health – require a process, beginning with the conceptual phase (described in the defining, negotiating and framing health sections) and leading through to methodological choices, the empirical and analytical stages, and ending in a concerted effort to render the results of the inquiry or intervention available to interested parties. It is important to note that between all these different steps there should be a back and forth process as the comprehension of the health issue evolves in time. A self-investigation of the process of defining, negotiating, framing and measuring health should be carried out in order to ensure that the best practices have been used in the move from theory to practice (Nguyen, 2011).

Notes:

- *Students might feel uncomfortable with the scope of what is presented here. You can introduce the idea that there is a dilemma between what a student can do and true transdisciplinarity. While it is important to produce good disciplinary research to feed into the overall comprehension of the interdisciplinary framework, this information needs to be somehow integrated at all the different steps of the process.*
- T*o include a section on how to synthesize the breadth of information collected [See Module 3: Complexity].*

ACTIVITIES

Framing and measuring and/or describing health

TOTAL TIME: 90 minutes

DIRECTIONS: If posters [see Transversal Activities] are being used in the workshop or course, this exercise can be followed closely by a poster session as it gives the students experience in refining definitions and constructing conceptual frameworks. It would be best placed somewhere mid-course, when the students have already had time to become comfortable with their posters, but will still have sufficient time to integrate what they have learned into subsequent drafts.

OBJECTIVES: Participants will gain experience:

- Creating conceptual frameworks from working definitions of health.
- Developing a project plan based on these definitions and conceptual frameworks.

- Collaborating with other participants to develop and communicate a project plan.
- Identifying differences in proposals based on the choice of a definition of health.
- Negotiating which *one* proposal they will select to move forward.

STEP 1: Creation of a conceptual framework *(20 minutes)*

- Break participants into groups of 4-5 and provide each group with a different definition of health that the facilitator has collected ahead of time.
- *NOTE:* Definitions of health should provide a breadth of perspectives/priorities (*possible sources: research reports, government reports, organizational pamphlets, the activities in Section 1*).
- Have participants create a conceptual framework that represents "their" definition of health.

STEP 2: Construction of a project plan *(40 minutes)*

Present all groups with the same Ecohealth issue and ask them to come up with a project proposal that is based upon "their" definition of health and includes:

- Working questions
- Expected outcomes
- Selection of modes of inquiry, tools and methodologies for measuring or defining health.
- A list of potential collaborators and rationale for including each.

Note:

- *To emphasize the process of using the conceptual schematic, participants could be prompted to demonstrate how their research questions relate to the conceptual framework and why these particular questions were chosen.*
- *This exercise can be adapted to research by constraining projects to mean "research projects."*

STEP 3: Wrap-up discussion *(30 minutes)*

- Have groups briefly (2 minutes each) present their conceptual framework and project proposal to the larger group
- Debrief discussion as a large group with an emphasis on:
    - Identifying the differences between project proposals developed for the SAME Ecohealth issue but *informed by different definitions of health.*
        - How might the expected outcomes for the different proposals result in different action plans?
        - What biases are inherent in the different health definitions? Is it possible to create a project proposal without these biases? Which ones are you willing to accept?
    - If you had to move forward with one project proposal tomorrow, how would you choose? *(This could be done as STEP 4 if time allows, where*

participants actually have to negotiate a single project proposal).

Note: *Core questions and discussion questions (from above) can be used to inform steps 2 and 3.*

SPECIFIC READING

Briggs D (2003) Indicators: Making a difference: Indicators to Improve Children's Environmental Health, Geneva: WHO

Charron D (2012) Ecohealth: Origin and approach, Chapter 1. In: Ecohealth Research in Practice. Innovative Applications of an Ecosystem Approach to Health, Charron, D (editor). Ottawa: IDRC, pp. 1-30. Available online: http://idl-bnc.idrc.ca/dspace/bitstream/10625/47809/1/IDL-47809.pdf

Creswell JW (2007) Qualitative inquiry & research design: Choosing among five approaches, second edition. Thousand Oaks, California: Sage Publications Ltd.

Creswell, JW and V.L.P. Clark. 2010. Designing and conducting mixed methods research. 2nd edition. Thousand Oaks: SAGE Publications.

CSDH (2008) Closing the gap in a generation: Health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. Geneva: World Health Organization

Fortin M-F (2010) Fondements et étapes du processus de recherches: Méthodes quantitatives et qualitatives, 2e édition. Montréal: Chenelière Éducation, 632 pages

Guerin M, Gosselin P, Cordier S, Viau C, Quénel P, Dewailly E (2003) Environnement et santé publique – fondements et pratiques. Paris : Éditions Tec&Doc. http://www.dsest.umontreal.ca/recherche_rayonnement/environnement_sante_publique.html

Hesse-Biber, S.N. 2010. Mixed methods research: Merging theory with practice. New York: Guilford Press.

Lalonde M (1974) A new perspective on the health of Canadians. A working document. Ottawa: Government of Canada

Nielsen NO (2001) Ecosystem approaches to human health. Cad. Saúde Pública 17:S69-S75

Nguyen V (2011) Understanding the Concept and Practice of Ecosystem Approaches to Health in the Context of Public Health. Master's thesis. Guelph: University of Guelph, p. 185

Webb J (2010) Environmental Contamination of Fish and Humans through Deforestation and Oil Extraction in Andean Amazonia. Doctoral thesis, Montreal: Department of Geography, McGill University

REFERENCES

Charron D (2012) Ecohealth: Origin and approach, Chapter 1. In: Ecohealth Research in Practice: Innovative Applications of an Ecosystem Approach to Health, Charron, C (editor), Ottawa: IDRC, pp. 1-30. Available online: http://idl-bnc.idrc.ca/dspace/bitstream/10625/47809/1/IDL-47809.pdf

Forget G, Lebel J (2001) An Ecosystem Approach to Human Health. International Journal of Occupational and Environmental Health 7:S3–38

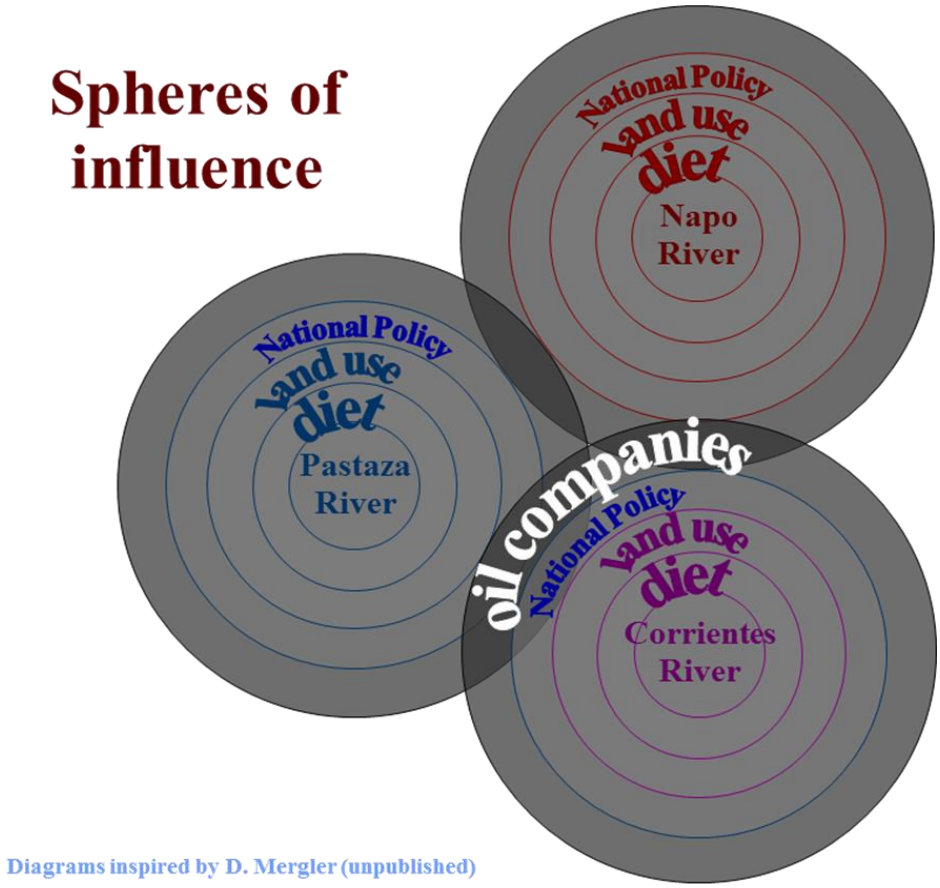
Nielsen NO (2001) Ecosystem approaches to human health. Cad. Saúde Pública 17, suppl:S69–S75

Waltner-Toews D, Kay JJ, Lister NM (2008) The Ecosystem Approach: Complexity, Uncertainty and Managing for Sustainability. New York: Columbia University Press, 383p.

APPENDIX

Box 2a: Use of a conceptual framework to integrate diverse types of information and modes of inquiry

Research on mercury and PAH levels in Amazonian populations used a schematic tool to help organize the spheres of influences affecting contaminant levels and to facilitate the integration of different types of information and methods of accessing this information (Webb, 2010). Variability in the patterns and pace of deforestation within the Upper Amazon provided an opportunity to make comparisons and this research employed an ecosystem approach to analyze the forces that drive decisions on land use and policies that encourage unsustainable land-use practices in three river systems of the Upper Amazon.



Diagrams inspired by D. Mergler (unpublished)

Box 2b: Types of Information and Modes of Inquiry

Types of information: Quality of life, incidence of disease, levels of contaminants, mortality

Modes of Inquiry: Questionnaire, national survey data, levels of contaminants in hair and urine samples

---

Types of information: Types of fish consumed, frequency of consumption, location of fishing, levels of contaminants in fish

Modes of Inquiry: Questionnaires, mapping, levels of contaminants in fish samples

---

Types of information: Types of land use, methods used, spatial distribution of land use, socio-economic profile of land owners

Modes of Inquiry: Questionnaires, surveys, satellite data, GPS points, GIS, contaminant levels in soil of different land use types

---

Types of information: Policies, decision making processes, lobbying power, public opinion

Modes of Inquiry: Review of policies, interviews, media reports, citizen blogs

---

Types of information: Company policies, decision making processes, lobbying power, public opinion, macroeconomic push and pull factors

Modes of Inquiry: Review of policies, interviews, media reports, citizen blogs, economic data

The different components of this conceptual framework were used to help clarify the different types of information (Box 2a) and modes of inquiry (Box 2b) needed in order to address each of the spheres involved in the problem. This is a tangible example of how the methods for describing or measuring the different determinants or contexts surrounding a health issue differ between scales/perspectives.

Box 3: Quantitative Research

Types of quantitative research and information of interest

• **Fundamental research**: Aims at providing new knowledge, independent of the potential application of the knowledge to particular situations.
    - Example: Development of theories and models

• **Applied research**: Aims at finding solutions to practical problems, focused on action and decision making
    - Example: Evaluation of a community intervention

Mode of inquiry

1. Choose the study subject and the preliminary research question
2. Conduct a literature review
3. Elaborate the theoretical and conceptual framework
4. Refine the research goals, research questions (incorporating issues of scale, determinants and context), hypothesis and objectives (explicitly detailed to answer the research question)
5. Methodology
    a. Indentify the underlying principles of the chosen measures
    b. Define the population and the sample size
    c. Write a research plan
    d. Choose sampling strategy and analytical methodology

Box 4: Multiple perspectives on health and food in Inuit communities

O'Neil et al. published a paper in 1997 on the scientific and local discourse of poisoned food in several Inuit communities in Nunavik. Their findings indicate that health policies which exclude traditional knowledge lead to "counter-knowledge as a form of resistance." In other words, Inuit knowledge on what is healthy to eat was turned into a kind of "bio-power" which rejected external warnings and extolled the curative agents in traditional, albeit potentially poisoned, food. Part of the traditional knowledge of the Inuit is knowing which foods to eat and which animals are healthy. The scientist's claim that country meat, in general, might be unfit for consumption was regarded simply as false because it ran contrary to what the Inuit had been taught by their Elders. In conclusion, the authors state:

> Risk communication discussions are based primarily on the problem of providing simplified scientific information to supposedly uninformed recipients. Risk communication strategies continue to ignore both the essential content of Inuit traditional knowledge about the risks and benefits of country food as well as the political act of resistance that is engendered when "contaminant bio-power" is grounded solely in Western scientific knowledge…Communicating about contaminants in Nunavik communities must be seen as the engagement of two discursive formations, each grounded in alternative normative understandings of human-animal-environment relationships.