

METHODOLOGIES FOR STAKEHOLDER ANALYSIS

FOR APPLICATION IN TRANSDISCIPLINARY RESEARCH PROJECTS
FOCUSING ON ACTORS IN FOOD SUPPLY CHAINS

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1 INTRODUCTION

Transdisciplinary research is becoming more common in research on agricultural and food systems. This guide focuses on stakeholder methodologies that can be integrated into such research. It has been created for use by researchers in the RELOAD project (www.reload-globe.net) and for others who work on related issues.

With many disciplinary backgrounds among researchers involved in this type of research — spanning for example from agricultural engineers to social scientists — common ground for cooperation can be sought through interdisciplinary work. A transdisciplinary approach takes it a step further by not only focusing on collaboration between scientific disciplines, but also by integrating non-academic partners into the research process.

Transdisciplinary research aims at finding solutions to ‘real world’ problems and challenges, and at increasing relevance of the ‘academy’ to ‘the real world’, by cultivating a research practice which has a high potential for meaningful impact. In this way, it often takes on an action-research orientation to create change, and thus relies on the involvement of ‘real world’ actors.

Within the RELOAD project for example, research is meant to be more than producing a report sitting on a shelf. Rather, the goal is to develop a research process which inspires individuals, groups, businesses, institutions and others to improve their coordination, practices, policies, technologies and

“RELOAD proposes to establish a development-oriented inter- and transdisciplinary African-German Research Network in Kenya, Uganda, and Ethiopia to address reduction of Post Harvest Losses (PHL) and enhancing value addition.” (Hensel, 2012)

approaches to how they interact with agricultural products and food so that there are reduced losses and added values. Transdisciplinary approaches actively involve people who can bring about changes within food supply chains by integrating their knowledge, interests, power and values, and by addressing the constraints they have to face. The question of how participants are identified, selected, and engaged in research processes is thus fundamental.

Stakeholder analysis is a methodology to aid in the process of identifying who should participate in a transdisciplinary research project. The core idea is to find people with whom researchers can cooperate most effectively to accomplish goals. Stakeholder approaches have been used extensively in business ethics, environmental resource management and development projects. Their application in transdisciplinary research projects is, however, more recent.

This is why methodologies are required, not only for *identifying* stakeholders and understanding their relationships, but also for effectively *integrating* them in a transdisciplinary research process, for example via stakeholder meetings, feedback seminars, ‘platforms’ for facilitated discussion, and collaborative learning processes.

The goal of this document is to provide an easy-to-use guide to assist researchers within the RELOAD project in planning, facilitating and analyzing stakeholder-oriented processes. Concepts will be introduced first in a general way and then more specifically with regard to potential applications for

transdisciplinary research focused on food supply chains. Topics covered include transdisciplinary research design, stakeholder analysis (including actor identification), and stakeholder integration.

2 TRANSDISCIPLINARY RESEARCH DESIGN

Although theoretical lineages differ, transdisciplinary research has overlap and similarities with research described as action research and participatory research. A key feature is the emphasis on integrating different types of knowledge. Tenets of transdisciplinary research include: searching for solutions to complex problems; creating connections between areas of specialization; connections between 'science' and the 'real world'; joint problem definition; participation and mutual learning; and knowledge integration and collaboration (Wiesmann et al., 2008).

*“Transdisciplinary research aims at generating transformation knowledge: the knowledge needed to change a situation that is perceived as problematic into another, improved one.”
(Kaufmann, Arpke and Christinck, 2013:115)*

As joint learning by academics and non-academics is the core of the process of generating change within transdisciplinary research, the methods to be planned need to allow for iterative evaluation and assessment. A transdisciplinary methodology has been described as a course of action that includes the following steps:

- 1) “Building a collaborative research team that includes stakeholders, and establishing an organizational structure in which responsibilities, competencies and decision rules are clearly defined;
- 2) Creating a joint understanding and definition of the problem to be addressed, in order to ensure that any subsequent research task departs from a common reference point;
- 3) The generation of targeted ‘products’ for all parties involved, whether they be activities, strategies, or less tangible but nevertheless highly valuable outcomes, such as empowerment or learning” (Lang et al. quoted in Kaufmann et al., 2013: 118).

The process should thus lead to outcomes that support change, which here means that people who establish and maintain a system through their actions, or who create a particular situation, are enabled to alter these actions. In food supply chains for example, this applies to those people who cooperate, coordinate or even compete in all steps involved from harvest, to processing, to transport, to consumption. It further applies to all people who set the rules for these activities, or whose actions influence these indirectly in other ways. In order to change their common ‘ways of doing’, joint learning and new perspectives are required.

This is why transdisciplinary research in food systems requires understanding these systems as human activity systems. A research issue such as ‘lack of efficiency in food supply chains’ thus needs a focus on aims, interests, needs and constraints that shape the actions of the people involved in the system.

The outcomes of a transdisciplinary research process include not only new knowledge, but also practical activities or products that help improve the problematic situation the project focuses on.

These are based on the knowledge generated in the research process, which is subsequently embedded into new (or altered) practices (Restrepo et al., 2014). For example, if the actors in a food supply chain develop a joint problem understanding, a shared vision and commitment to a common goal, an interest could arise to jointly engage in a 'value chain' approach. This then could take the form of linking small farmers and their business partners to high value markets (see for example Jäger et al., forthcoming).

3 STAKEHOLDER ANALYSIS

Understanding food supply chains as human activity systems that are established and maintained by human actors compels researchers to know the actors involved in making these systems work. The first step is thus to define the human activity system the research focuses on; the second step is to *identify* the actors who make up this system, e.g. a food supply chain, and to characterize their roles and relationships. The third step is to formulate the specific issue or problem to address. Step 4 of the stakeholder analysis is to *analyze* which of these actors are related to the specific problem or issue that is the focus of the research project. Step 5 consists in the *selection* of whom to actually include as participants in the research. Finally, in step 6, practical ways for integrating these selected stakeholders in the research process are to be considered. These steps are shown schematically in Figure 1.

The term 'actor' refers here to a category of person who performs a certain *function* within a system or process (Long, 1990:9); therefore, identification of *actors* should always be connected to a particular human activity system or process. 'Stakeholder' is a term commonly used to identify those actors who have a *stake or an interest* in an issue; this is why stakeholder identification always refers to the problem or issue addressed. For example, Grimble and Wellard (1997:3-4) define stakeholders as "any group of people organised, who share a common interest or stake in a particular issue or system". Hence, stakeholders can only be identified *in relation to such a specific issue or problem*. This is why 'formulation of a specific issue or problem to be addressed' is presented as step 3 in Figure 1 (before stakeholder analysis), even though in reality defining the issue or problem may evolve from the outset and may be shaped and re-shaped at different stages of the research.

This interest can also be described as *those who are affected by or who can affect* a particular decision or actions (Freeman and Reed, 1983; Mitchell et al., 1997). In general, stakeholders can be grouped in several ways, such as "who is concerned, who finally makes decisions, who works and benefits, and who is actively collaborating" (Gerster-Bentaya, forthcoming 2015: 64).

Approaches to stakeholder identification can be broad or narrow, depending on the nature and scope of the problem or issue addressed in the research. For example, there are issues that potentially concern all people, but they may not recognize the need, or may self-exclude themselves (such as discussed by Warner (2006) regarding water management). In other cases, an interest or stake may be more narrowly defined; for example, if scope and potential impact of the issue or problem are limited.

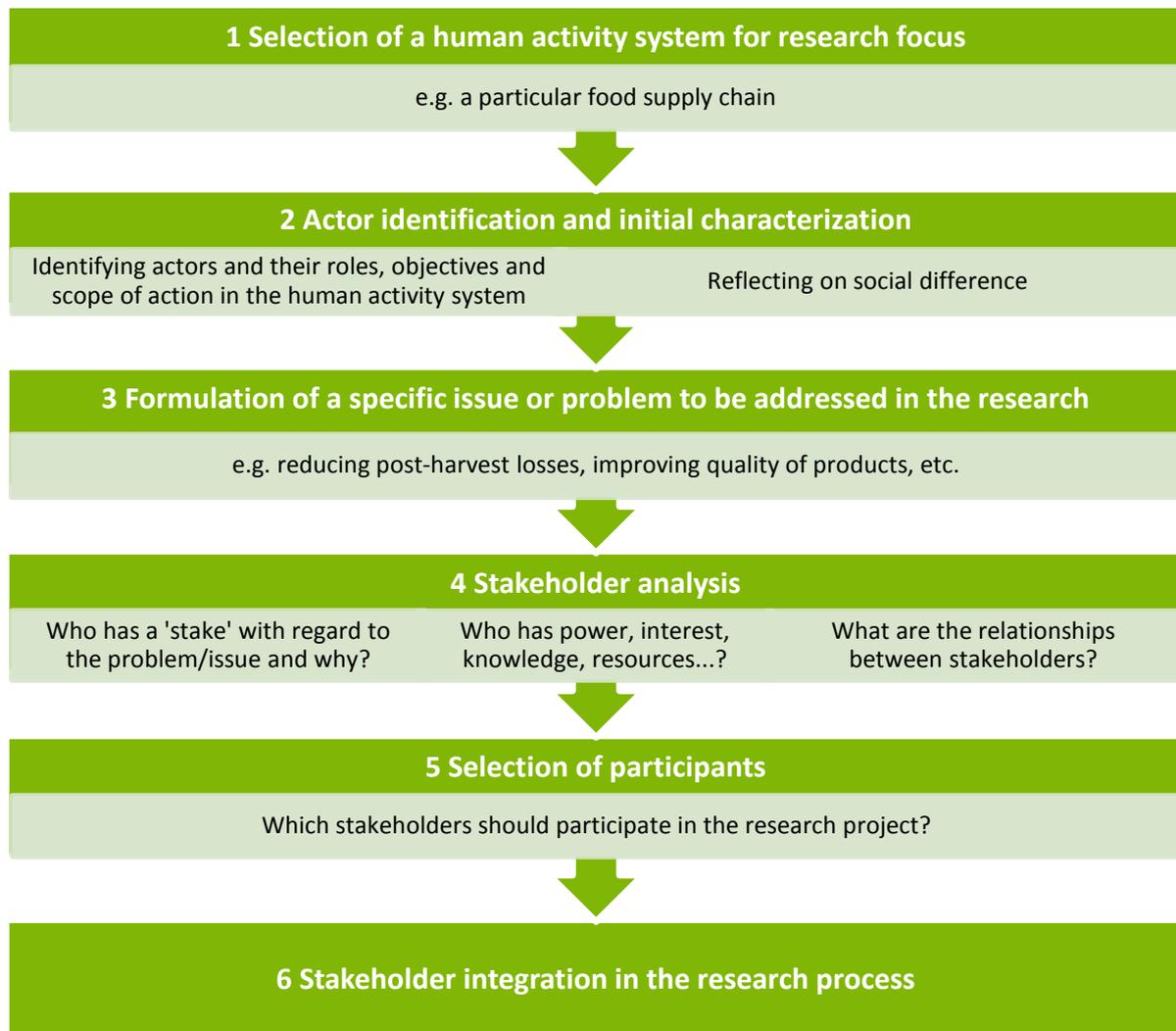


FIGURE 1: STEPS FOR STAKEHOLDER ANALYSIS IN TRANSDISCIPLINARY RESEARCH

Although the term ‘stakeholder’ first gained momentum in the field of business ethics (Friedman, 1983), it was later adopted widely in environmental resource management, community development and governance projects.

In transdisciplinary research, selected stakeholders are brought together to jointly engage in solving the problem or addressing the issue the research project focuses on. Having a ‘stake’ can serve to motivate participation such as when linked to specific interests, perceived benefits, or risks.

3.1 ACTOR IDENTIFICATION AND INITIAL CHARACTERIZATION

Once it is clear which human activity system is the focus of research, e.g. a particular food supply chain or network, then a first step towards identifying participants for transdisciplinary research is to identify the actors. Depending on the research objectives, different approaches to actor identification may be considered.

One way is by tracing who is involved with different stages of the product movement from the ‘producer catchment area’ and into different parts of a food supply chain. Observations in the field,

extensive literature review and interviews with key informants are a way to get started. Informal interviews with people involved at various nodes along the chain will help to learn about the context, as well as their goals and interests, and the constraints they have to face.

Snowball sampling is a method commonly used where initial contact persons are asked for recommendations of people linked to them in their work; or recommendations of other people to talk to 'downstream', towards producers, and 'upstream' towards consumers.

Snowball sampling methods, where one individual contacted in the research process might assist the researcher with locating others relevant for the research, are heavily influenced by the social networks of the people contacted initially. A strength of this approach is being integrated into 'trust networks'. A limitation can be that certain people who may be important to a system may not be referenced as actors, e.g. because of prejudices that exist within a particular community or group (see also section on social differences, below). Snowball sampling thus requires awareness of its limitations, and can be complemented with other approaches as required for the research.

ACTOR MAPPING

There are various ways of representing actors within food supply chains or food supply networks. 'Venn Diagrams', for example, are a participatory tool for establishing actor networks with individual interview partners or small groups. Here, paper circles of various size and colour are used to represent actors of different importance (symbolized by size) and type (e.g. government or private sector). Individuals can be represented by triangular or square paper pieces. The interview partners are asked which institutions and individuals they interact with; the paper pieces representing actors are then arranged in such a way that distances between the elements show whether linkages exist and if so, the intensity of these contacts and cooperation (FAO, 1997). Figure 2 is an example of a Venn Diagram made with representatives of women's groups in Boru Haro in northern Kenya about organizations active in their community and how vulnerable people within their community gain support.

Because paper pieces written on during the Venn diagram exercise are not fixed, these can then be moved and re-arranged as the discussion evolves. Towards the end of the activity, additional information can be integrated, eg. by arrows showing the flow of information or products. In a second step, this actor network analysis can be expanded towards a stakeholder analysis (see Section 3.2).

A further approach to mapping actors in a food supply chain would depart from the various steps in the chain, following the 'flow' of the products from producers to consumers. At each step, one can find out who is actually involved at various nodes or points in the process. By following the path along which the products move, while observing and conducting interviews with people involved, actor maps, matrixes, and other visualization tools can be established based on the insights gained. An example of actors identified in a pastoral meat supply chain in Northern Kenya is presented in Figure 4 (p.7).

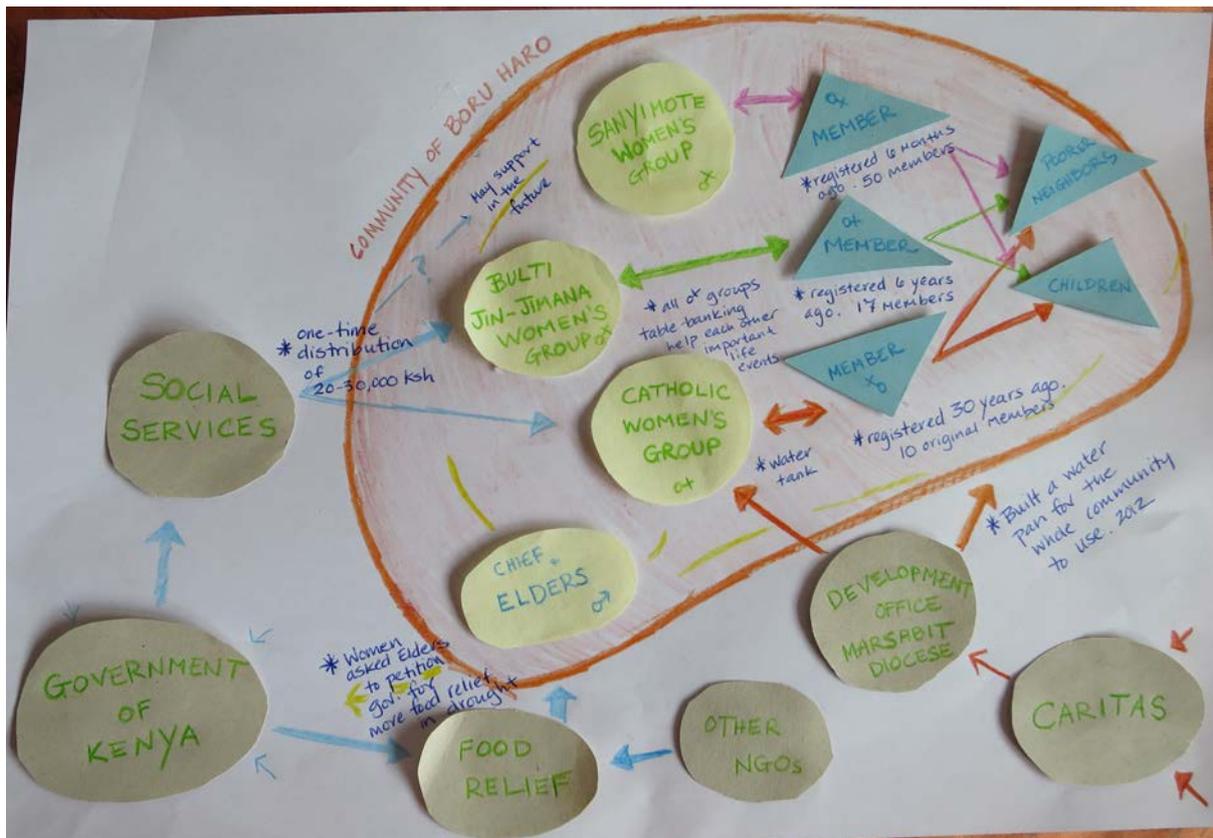


FIGURE 2: EXAMPLE OF A VENN DIAGRAM MADE WITH WOMEN’S GROUP LEADERS IN BORU HARO, MARSABIT COUNTY, KENYA

INITIAL GROUPING AND ASSESSMENT OF ACTORS: ACTOR MATRIXES AND PROFILES

When tracing the relationships between actors along the chain, a log such as the following example (Figure 3) made in Excel® can be useful. The actor groups are separated into different sheets and then the contact information for individuals within each group can be tracked within the rows.

A	B	C	D	E	F	G	H
Date	Name	Contact	Code	Primary Market	Alternative Market	Actors they deal with	Notes on interactions with other actors
	Butchers	Traders	Producers	Brokers	Alternative products	Government	NGOS and Associations

FIGURE 3: MATRIX FOR IDENTIFYING INDIVIDUALS WHO MAKE UP ACTOR GROUPS

The relevant information noted in each column will differ depending on project focus and should be tailored accordingly.

Actor profiles can be a helpful tool for initial characterization of actors, e.g. with regard to their functions and roles within the human activity system the research focuses on, their objectives and relationships (Table 1).

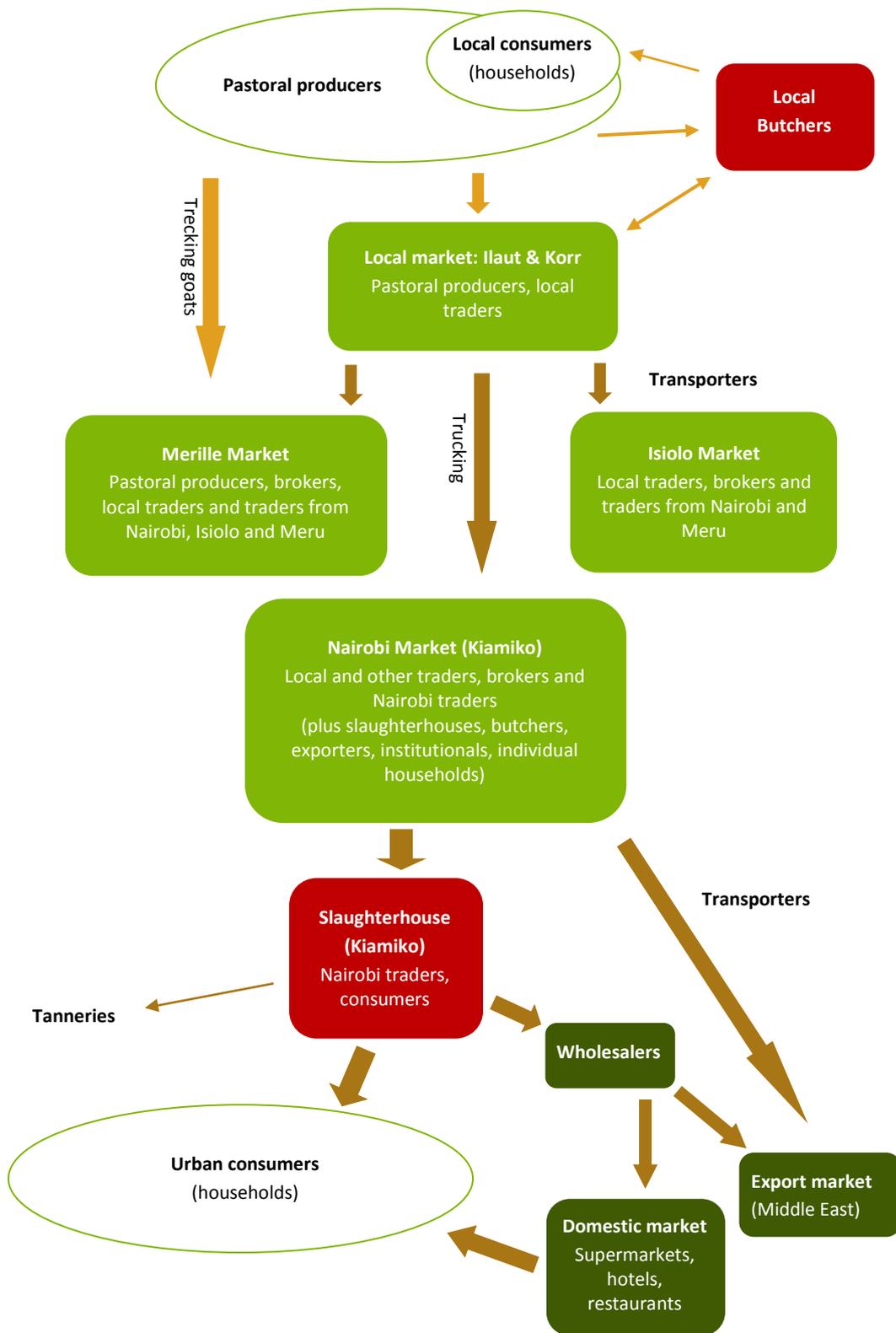


FIGURE 4: EXAMPLE OF ACTORS IDENTIFIED IN A PASTORAL MEAT SUPPLY CHAIN IN NORTHERN KENYA

TABLE 1: ACTOR PROFILES

Attribute	Example Questions
Actor	<ul style="list-style-type: none"> • Who are individuals within the actor categories?
Agenda	<ul style="list-style-type: none"> • What are the mandates, missions, and objectives of this actor?
Arena	<ul style="list-style-type: none"> • In which part of the system is the actor present and active? • Where exactly does the actor perform his/her actions (e.g. in which locations)? • Which is the scope of these actions?
Alliances	<ul style="list-style-type: none"> • Which relationships exist with other actors in the system? • Which other actors does the actor cooperate with? • What is the cooperation based on (e.g. information exchange, use of common resources, institutionally regulated dependency)?

Adapted from Zimmermann and Maennling (2007:16)

REFLECTING ON SOCIAL DIFFERENCE

Looking at actors whose activities make up, for example, a particular food chain means to focus on those who are a part of the process from harvest to the point at which the food reaches those who will eat it. There are many different aspects we consider when deciding which actor (or what type of action) is ‘relevant’ to the system. Some actors might be less ‘visible’ to us as researchers; furthermore, they might also not be visible to (all) other identified actors. For example, local traders who take milk from their village to the next collection point, may have plastic transport containers cleaned and washed by other people, e.g. the trader’s mother or sister. This action may strongly influence milk quality and its importance may be underestimated by the local actors.

Gendered exclusion and marginalization can occur at multiple levels. For example, explicit forms of discrimination against women function primarily on a local scale, making it difficult for women to participate in certain activities. However, gender inequality also works on national and global scales, e.g. where structural agrarian change and related policies constrain and further disempower women in agriculture (see for eg. Mullaney, 2011).

Not only gender differences, but also other social categories, such as age, ethnic group, education, and wealth, may have an effect on a person’s standing. Moreover, possibilities to access and use resources, perform certain activities, or collaborate with others, may depend on these social categories. This does not only apply for the relations between people *within* the local context, but also requires consideration for their visibility to and relationships with external ‘experts’.

A broader approach to actor identification can be drawn upon strategically to avoid unintentional exclusion of actors and is not contradictory to having narrow criteria for their actual inclusion in the research project later on. Transdisciplinary research in food supply chains could also lead to new opportunities for those who are presently disconnected from other actors or who have fewer possibilities to profitably engage with markets. Any change envisioned in the research process could

lead to re-distribution of benefits, risks and power among the actors. Knowledge on how social difference relates to the issue/problem addressed in the research could thus increase the project's excellence and impact. This is why reflecting on how social differences should be integrated into the research during initial phases, and should also be addressed in each of the subsequent steps.

3.2 FROM ACTOR IDENTIFICATION TO STAKEHOLDER IDENTIFICATION

As mentioned above and shown in Figure 1, moving from *actor* identification and characterization towards *stakeholder* identification requires that the issue or problem to be addressed in the research has been clearly formulated. Once actors have been identified and initially assessed and the issue/problem in focus is clear, those that are *stakeholders* can be identified.

Discussions for stakeholder identification can be planned either with people belonging to the same actor group, or with representatives from different actor groups together. These invited partners can discuss connections and disconnections between the identified actors, and identify those who have an interest or 'stake' in the project. A list, 'map' or Venn diagram of actors should already exist at this point in time. The discussion about stakeholders could thus start with identification of missing actors. The people present could be asked to explain the map/diagram and could then be asked questions such as: "Who is missing?" or "Who should be added?". This process could again be supported by visual tools, such as Venn Diagrams or Net-Maps.

VISUAL TOOLS FOR ASSESSING STAKEHOLDER NETWORKS

Venn diagrams (described in Section 3.1) can be used for stakeholder analysis in a second step, by highlighting those actors that are important for the issue/problem to be addressed, and by further describing their power, interests, resources and relationships. For this purpose, the papers used in the earlier part of the activity could be complemented with papers of different colors and sizes, and arrows or other items can also be used to highlight these aspects.

A Net-Map is a quite similar tool particularly focusing on identifying actors in social networks who can be considered for stakeholder analysis (Schiffer and Peake, 2009). Arrows are used to highlight relationships, such as flow of products or information; 'influence towers' made by piling flat stones, coins or other items indicate power differences.

In both Venn Diagram and Net-Map activities, the discussion and debate between stakeholders participating in these exercises regarding who and what is important, what connections exist, what potential connections could contribute to an aim and why are an important part of the outcome. In this way, the results of these activities go beyond what is assembled on the group paper. Furthermore, it should be kept in mind that stakeholder networks depend on the participants' perspective; for example, women and men may use different pathways for accessing information or marketing their products, so that importance of certain potential stakeholders and power issues may be perceived differently. If addressing such differences is the focus of the research, it is advisable to do this type of visualisation exercise separately with different groups of participants, e.g. women and men, small and large producers, etc.

3.3 DETAILED ASSESSMENT OF STAKEHOLDERS AND STAKEHOLDER CATEGORIES

Once identified, the various stakeholders' power, resources and relationships, as well as issues of social difference, can now be assessed in more detail. Table 2 can help guide this analysis. For example, 'power' relates to the influence a person has, which can be based on very different capacities. On the one hand, it can refer to a certain official function or authority, e.g. in the case of a government official, or it can be based on material resources the person possesses or has control over. On the other hand, it can also be the collective power of groups such as when people pool their resources in groups or may strategically leverage attention to an issue. Knowing such details could also help identify the possible contributions of different stakeholders to a research project; or to address obstacles that may limit their interest and engagement. Again here, visual tools, such as the stakeholder matrix for assessing differences in power and interest, can be useful for facilitating the discussion (Figure 5, p. 12).

Given the various foci and definitions present in stakeholder analysis, a variety of stakeholder typologies exist. The most common differentiation is between 'primary' and 'secondary' stakeholders:

Primary stakeholders are directly involved with the issue/process. For our field of research, primary stakeholders can be defined as actors along the supply chain — they have their hands on the product, for example, farmers/pastoralists, traders, and processors. Here, the post-harvest losses of this particular supply chain occur, and (coordinated) changes in the actions of primary stakeholders could reduce losses, create additional value, or both. Primary stakeholders could thus be the actors involved in a food supply chain, from producers to consumers, if they have relevant power, interest, resources and relationships relating to the issue/problem the research focuses on, e.g. reducing post-harvest losses. Similarly, actors present in a particular hot-spot area where most post-harvest losses occur, and who have power, interest, resources and relationships to reduce these losses, can be considered primary stakeholders.

Secondary stakeholders are indirectly affecting or being affected by an issue/process. Secondary stakeholders in research relating to food supply chains could include those who influence the primary stakeholders by setting rules, or controlling access to a resource or to a market, e.g. government officials or policy makers. Further included are those who are affected by the activities of primary stakeholders such as competitors engaged in other food supply chains, or consumers, e.g. villagers who may purchase non-marketable products at a reduced price. Various types of diagrams exist that could help to graphically assess and represent stakeholders of different categories (Zimmermann and Maennling, 2007:15; see Figure 6 on p. 13 as an example).

Once in the field, one might discover that there are individuals who fit in multiple categories. For example, a producer might also be a trader. A trader or a food processor may also be involved in politics. A government official may also be a producer. Such issues may be reflected in the amount of influence attributed to a person. It could also be that the role of an individual changes between the time of identification and subsequent fieldwork stages, e.g. by taking up an employment or changing livelihood strategies. This is why stakeholder analysis should be considered as an iterative process and needs to be repeated as the project evolves (see also Section 3.4).

TABLE 2: ISSUES, GOALS AND QUESTIONS FOR A STAKEHOLDER ANALYSIS

Issue	Goal(s)	Questions to be addressed
Power	Examine power differences between actors that may be important for the issue/problem to be addressed	<ul style="list-style-type: none"> • How does the actor influence other actor's role and scope of action? • How is the actor influenced by other actors with regard to his/her role and scope of action? • What is the actor's authority in terms of: <ul style="list-style-type: none"> ▪ Setting objectives and norms? ▪ Allocating or denying resources to other actors? ▪ Defining others' tasks and responsibilities? ▪ Controlling access to knowledge/information? ▪ Allocating rewards/recognition/sanctions? ▪ Channelling messages to superiors and external bodies?
Interest	Describe the actors' interest(s) in relation to the problem/issue the project focuses on	<ul style="list-style-type: none"> • What is the actor's interest in the issue/problem? • What prior experience does the actor have on the problem/issue to be addressed? • What potential benefits and risks arise for him/her if the issue is addressed/the problem is solved? • To which degree are the actor's interests coherent or conflictive with other actors' interests? • What options exist to increase the actor's interest and engagement, or to dismantle obstacles?
Resources	Identify material and non-material resources different actors possess or have control over	<ul style="list-style-type: none"> • What relevant resources does the actor have at his/her disposal (e.g. knowledge, expertise, skills, material resources)? • What potential contributions could arise from this? • Which resources are missing that may be needed to effectively address the issue/solve the problem?
Relationships	Describe the relationships between actors, e.g. with regard to distance, degree of trust and/or conflict	<ul style="list-style-type: none"> • Which actors cooperate with each other? • Which actors compete with each other? • Which actors tend to be disconnected from other actors? • Which degree of trust/mistrust is there between the various actors? • Which conflicts exist and how explicit are they?
Social difference	Identify differences in actors' power, interest, resources and relationships that relate to social categories they belong to	<ul style="list-style-type: none"> • How are differences in power, interest, resources and relationships related to age, gender, ethnic group, educational background or wealth? • Are any strategies necessary to avoid exclusion of certain groups of actors? • Which empowering measures may be required?

Adapted from Zimmermann and Maennling (2007)

STAKEHOLDER MATRIX: ASSESSING STAKEHOLDERS' POWER AND INTERESTS

A stakeholder matrix can be created to differentiate stakeholders by, for example, power and interests relevant to the specific issue or problem addressed. The tool can also be used for assessing two other issues, e.g. resources and interest, or who is an 'enabler' or an 'influencer' upon a project (Kennon, 2009:15).

Figure 5 shows exemplarily how stakeholders (represented by ovals of different colors) are differentiated by their power and interest relating to the problem/issue the project focuses on. Stakeholders being assigned to the different quadrants (A,B,C,D in Figure 5) could then be addressed differently by project activities (Zimmermann and Maennling, 2007:29).

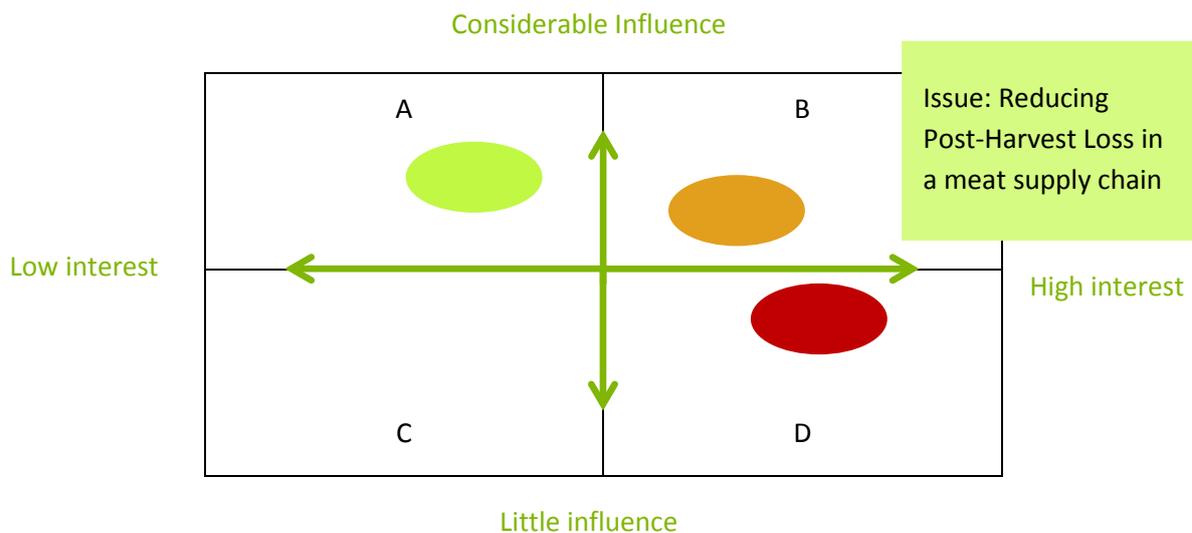


FIGURE 5: EXAMPLE OF A STAKEHOLDER MATRIX

VISUALIZING STAKEHOLDER CATEGORIES: ONION DIAGRAM

Onion diagrams are ways of representing stakeholder relationships specific to a project, issue or problem. The following figure (Figure 6) is an example of an onion diagram for categorizing a sample of stakeholders involved in a milk supply chain in Nakuru County, Kenya.

Here, the center is defined by the issue or problem in which these stakeholders are interested, associated with and affected by. The first circle is for the primary stakeholders and the second circle is for the secondary stakeholders.

The lines are used to indicate the relationships between the stakeholders where a single line is used to show relationships with a high level of exchange (of information, capital, food, supplies, etc.) and two lines are used for between stakeholders who have a contract governing the relationship. A dashed line is used when relationships are weak, and a question mark is added if the relation is unknown. An explosive symbol or a thunder clap can be used to indicate relationships which have known conflict (Zimmermann and Maennling, 2007:15).

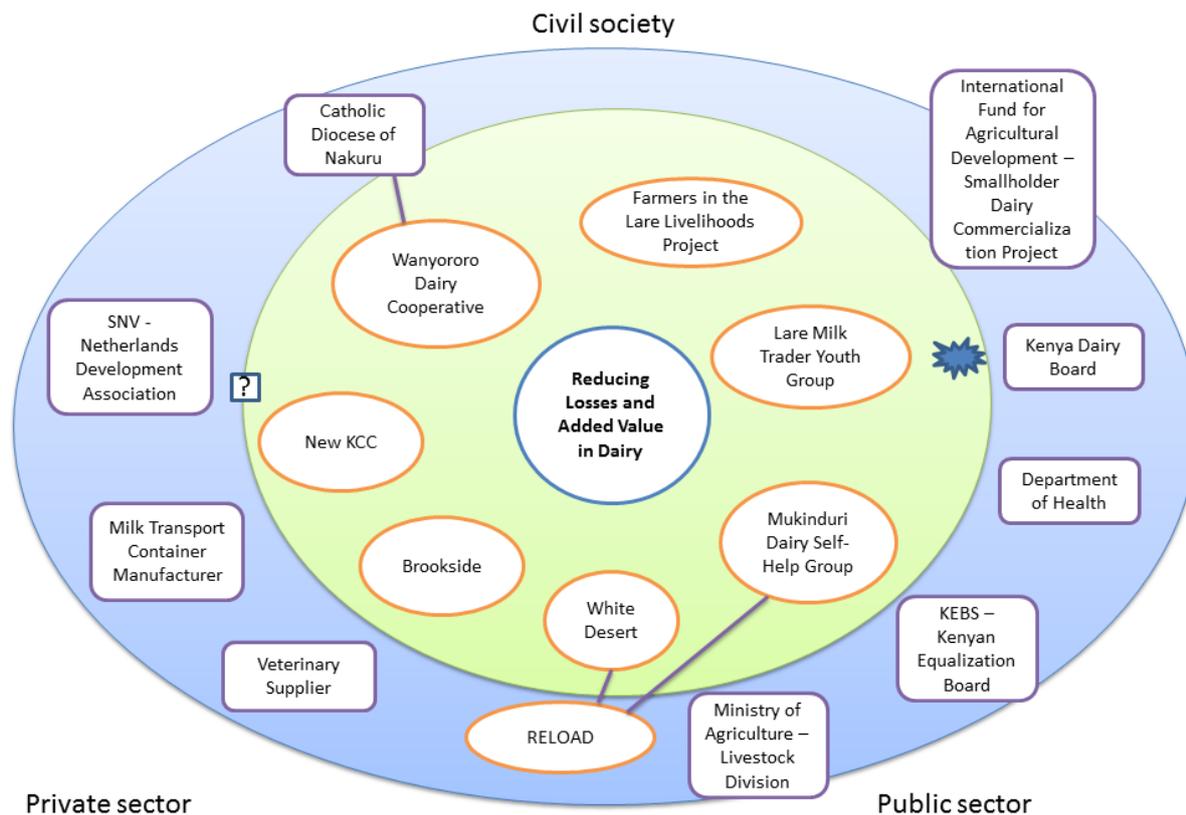


FIGURE 6: ONION DIAGRAM OF A SAMPLE OF STAKEHOLDERS IN NAKURU, KENYA, 2014

3.4. STAKEHOLDER PROCESSES AND PROJECT DESIGN

As mentioned above, stakeholder analysis is an *iterative* process; it should be integrated at various stages of the project over time, as there may be changes in the context, the institutional surroundings, and regarding individuals and their respective roles.

“The ‘stakeholder landscape’ is by no means a stable one. It constantly changes according to interests, changes in external conditions, and the different phases of the process”
(Zimmermann and Maennling, 2007: 9).

Furthermore, it is also important to allow for sufficient flexibility in order to incorporate the perspectives, questions and priorities generated by stakeholders in the course of the project. This flexibility needs to be planned for in the research design to be feasible. As certain aspects of a research design may need to be fixed in advance, e.g. depending on scientific or donor requirements, other aspects, which are known to have need of input from stakeholders, can be approached in such a way that decisions and detailed plans can be developed jointly.

4 STAKEHOLDER INTEGRATION IN TRANSDISCIPLINARY RESEARCH

Integrating stakeholders in transdisciplinary agricultural research is a practice that aims to increase the relevance and impact of the research in view of a 'real world' problem addressed. Once the actors are identified that make up the human activity system of focus, and their goals, relationships, interests and power are assessed with regard to a specific issue or problem, then decisions need to be made regarding whom to integrate into the research and how. This is why in this chapter we will go beyond what is usually understood by 'stakeholder analysis'; and shift the focus towards the selection of participants in a transdisciplinary research project. Moreover, some approaches for working with these non-academic stakeholders in a research project are presented.

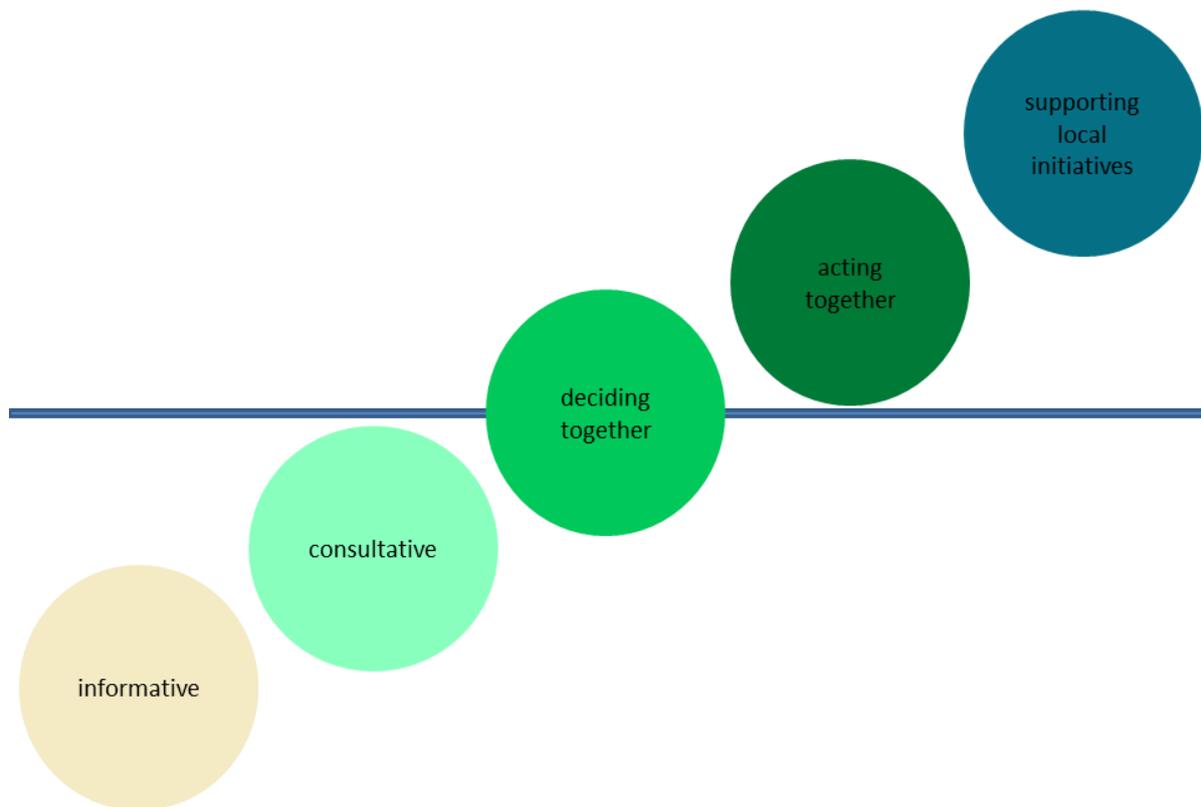
In agricultural research for development, participation of farmers and occasionally other stakeholders has been practiced and discussed for more than 25 years. However, this participation takes many forms. Wilcox (1994) distinguishes five different levels of participation: informative and consultative participation; deciding together; acting together; and supporting local initiatives (Figure 7, p. 15).

Transdisciplinary research means more than just collecting information from stakeholders. Rather, it is a research process that aims to facilitate change. This requires that the *stakeholders themselves* can gain new knowledge and insights in order to develop new types of actions (Christinck and Kaufmann, forthcoming). Hence, a transdisciplinary research project needs to integrate stakeholders in a way that goes *beyond* informative and consultative levels of participation. What is required is that researchers decide together and act together with stakeholders in the research process; this could also involve supporting local initiatives.

4.1 SELECTION OF STAKEHOLDERS FOR PARTICIPATION IN A RESEARCH PROJECT

How many of the identified stakeholders will be included as participants will depend on the size and scope of the research project and the time and resources available for working with stakeholders. Well-managed processes are an important factor influencing outcomes, so that reflection needs to include not only what is a desirable goal, but also what is feasible, given various constraints. These considerations will also influence the process of selecting research participants.

If the research project will involve a high number of participants, it is possible to do random sampling *within* a clearly defined stakeholder group. On the other hand, if only a small group of participants is needed for an advisory focus group or for in-depth activities, then careful selection criteria should be developed in relation to the needs of the project. Example criteria for selecting participants from within a stakeholder group can include good listening skills, effective oratory skills, and ability to work for a common ground. The previously established stakeholder matrixes, diagrams and maps can be helpful for prioritization.



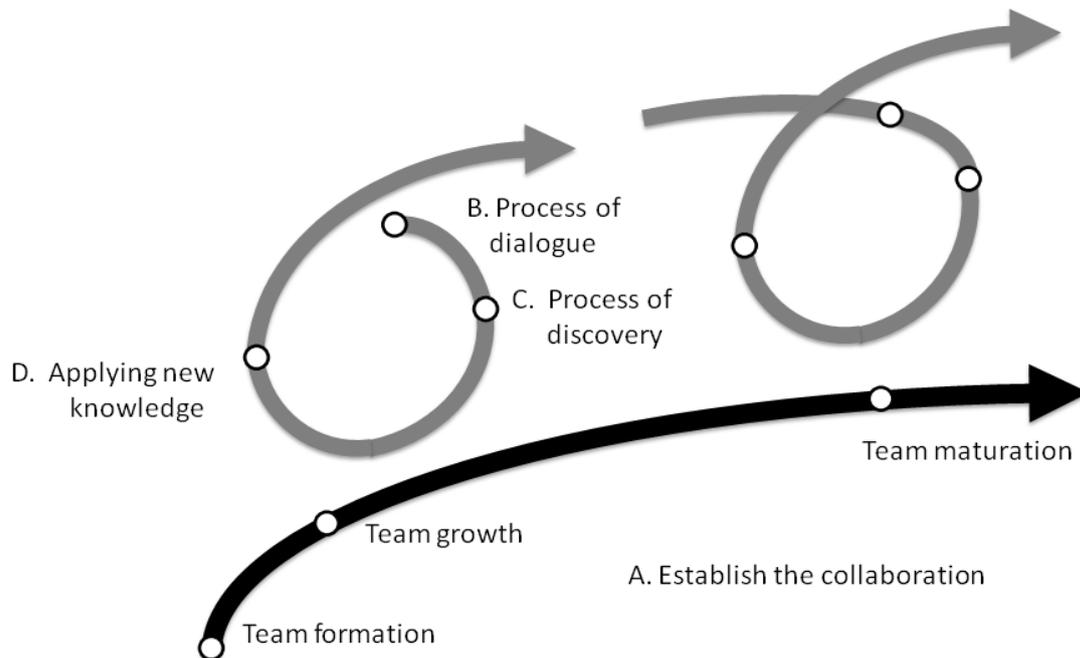
Adapted from Wilcox (1994)

FIGURE 7: DIFFERENT LEVELS OF PARTICIPATION

It is also possible to establish a participatory system for research participant selection, once an initial (diverse) stakeholder group has been invited into the research. This usually requires that these stakeholders are already involved from the earlier stages of the process, when the issue/problem the project focuses on is formulated and first ‘boundaries’ between groups of (potential) stakeholders are established (Reed et al., 2009:1946; see steps 3 and 4 in Figure 1). Otherwise the process of selecting participants from stakeholder groups may not be guided by transparent and explicit criteria that are shared by all involved. As Reed et al. (2009) explain, “participatory approaches to stakeholder analysis can be costly in terms of researcher and stakeholder time. However, they have the capacity to build trust and relationships and uncover potential biases”.

4.2 COLLABORATIVE LEARNING AND ACTION WITH STAKEHOLDERS

Restrepo et al. (2014) conceptualize collaborative learning as consisting of four consecutive steps: *Establishing the collaboration* (phase A) is an important precondition for all subsequent activities and influences their outcomes. It entails identifying relevant stakeholders, institutionalizing the partnership, and agreeing on goals and approaches. *Dialogue* (phase B) includes communication, integration and synthesis of different types of knowledge. The process of *discovery* (phase C) is intended to actively fill knowledge gaps and build capacities. It may include for example trials and practical experiments, both with regard to physical products or technologies, or new processes or organizational structures. *Applying the new knowledge* (phase D) is the basis leading to individual or collective actions where the new practices are consolidated (see Figure 8).



Source: Restrepo et al. (2014)

FIGURE 8: FOUR PHASES OF THE COLLABORATIVE LEARNING APPROACH AND ASSOCIATED PROCESS OF TEAM DEVELOPMENT

This model has its theoretical foundations in various adult learning theories, including experiential, transformative, social and expansive learning approaches. It is further closely related to action research that focuses strongly on actors' capacities to improve or refine their modes of action (see for example Sagor, 2000).

Collaborative learning and action processes could be facilitated (1) *within* a particular stakeholder group; (2) *between* stakeholder groups; or (3) *within and between* stakeholder groups, for example in multi-stakeholder platforms that include multiple actors/stakeholders involved in a food supply chain (see Figure 9).

MULTI-STAKEHOLDER PLATFORMS

Multi-stakeholder platforms are one way of institutionalising the collaboration with stakeholders in a transdisciplinary research project (see also Figure 8, Phase A). The model for setting up such platforms depends on the level and scale of the activities envisioned (Adekunle and Fatunbi, 2012). In the first place, multi-stakeholder platforms bring together selected participants from different stakeholder groups, who belong to one activity system, e.g. a particular food supply chain.

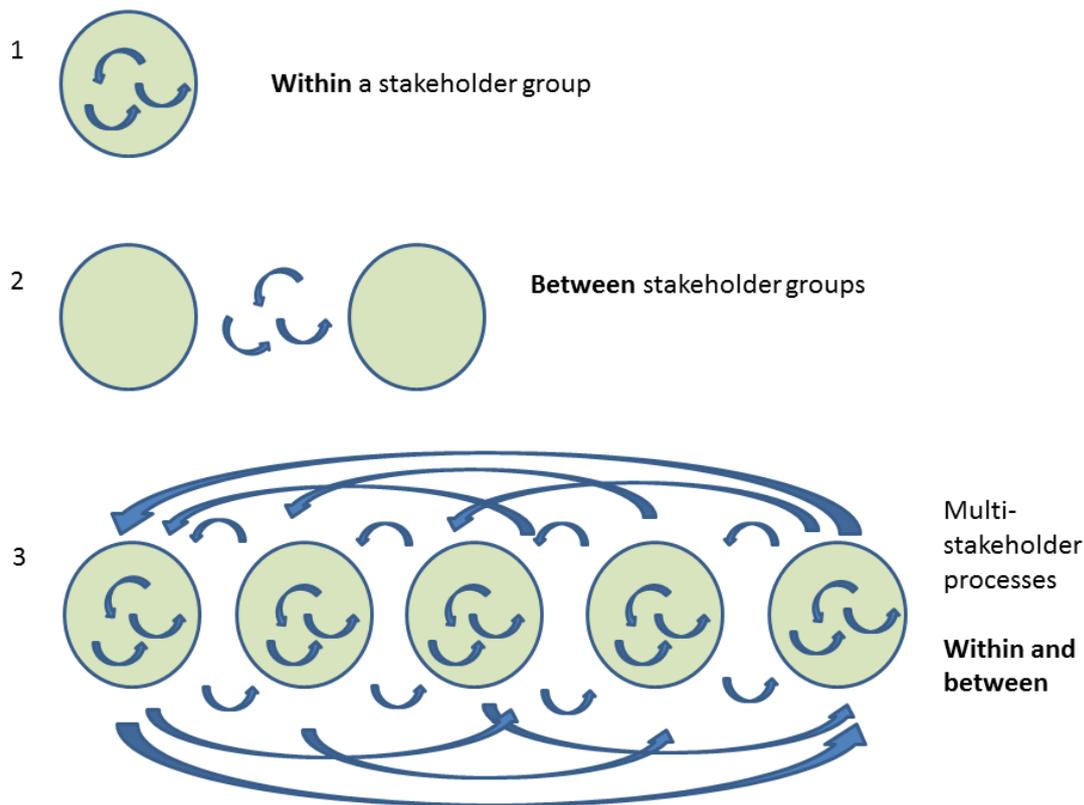


FIGURE 9: DIFFERENT LEVELS OF COLLABORATIVE LEARNING AND ACTION WITH STAKEHOLDERS

However, if the research project works with more than one such activity system, e.g. food supply chains for various products, or in different countries, it may be found useful to bring together stakeholders from the various activity systems, e.g. if they perform similar activities but with different products, or with the same product but in different countries or regions.

For example, representatives of the same stakeholder group, such as transporters from different platforms, could come together for a meeting and discuss how they could bring forward collective action in relation to the issue/problem the project focuses on. Another option could be to bring together representatives selected from several multi-stakeholder platforms, e.g. for discussing policy issues that concern them all.

As there are multiple options for designing such stakeholder platforms, it is important that the organization matches the issue/problem the project focuses on, and the level at which the issue/problem will be treated.

4.3 FACILITATION

Facilitation involves the process of designing and running meetings and of ‘easing’ it towards achieving the goals aimed at. A facilitator should thus take a leadership role *with regard to this process*, while at the same time restraining him/herself from influencing it towards particular decisions or outcomes.

The process of facilitation can thus be planned ahead of time, but the outcomes of the participatory process will not be known until group decisions have been made. As a facilitator, effectively guiding structure while attentively listening to participants and ensuring democratic decision-making is a dynamic process which requires courage and preparation (Kativu, 2011). The facilitator needs the capacity to fine-tune and adapt facilitation to balance participant and researcher needs. The person who is in the role of facilitator must not always be the researcher. It can be someone else with experience brought into the project specifically for this role.

There are general guidelines for meeting facilitation (e.g. Aorta Collective, 2014) and for participatory action planning for groups (e.g. Hails, 2008; Taha, 2010). These emphasize issues such as setting ground rules for communication, creating an agenda, pre-meeting communications with participants, as well as processes for enhancing dialogue and decision-making.

The main benefits expected from stakeholder dialogues are to achieve more efficient, solid, viable and sustainable solutions in cooperation compared solutions developed individually. Particularly, they should increase the quality and credibility of processes, smooth the process of implementation of agreed upon strategies and increase the participant's commitment (Keunkel, 2011:5-6). Facilitation is thus required for tapping the full potential of stakeholder dialogues; it can have a large impact on success or failure.

PARTICIPATORY COMMUNICATION TOOLS

Besides general discussions, participatory communication tools that are summarized as Participatory Rural Appraisal (PRA) or Participatory Learning and Action (PLA) can help leverage 'tacit' knowledge that is embedded in action and practices and not easily communicated. These tools include, for example, transect walks, problem trees, ranking and simulation exercises, and seasonal calendars. Ideally these tools are a vehicle through which participants can learn from each other while researchers learn about the knowledge held by the local actors/stakeholders and their ways of decision-making.

A number of guides exist that explain the different PRA tools, and for different purposes or fields of application (see for example, Waters-Bayer and Bayer, 1994). A more in-depth reflection on specific aspects of the application and use of these communication tools is offered by a journal called Participatory Learning and Action (PLA) Notes, published by the International Institute for Environment and Development (IIED) in London (visit <http://pubs.iied.org/search.php?c=part> for free download).

OTHER KNOWLEDGE SHARING TOOLS

Knowledge sharing can include many more tools, besides PRA tools. Tools that include online interaction, such as wikis and blogs, are growing in importance, as the internet becomes more accessible in some rural areas, even in lower-income countries. They can be used to complement known approaches for knowledge sharing within and across groups. A number of international development organizations such as the Food and Agriculture Organization of the United Nations (FAO) contribute to a website with an overview of such methods (<http://www.kstoolkit.org/>), including online and offline tools from different background and fields of practice.

FEEDBACK SEMINARS

A feedback seminar is a planned event during which a researcher can share the results of research with those who contributed to the research process such as through interviews, focus groups, and farm tours. Most commonly, this would only happen at the end of a research project to report results. However in a transdisciplinary process, it would happen more frequently. The advantage of sharing *preliminary* results is that the feedback can be integrated earlier in the prospective analysis, writing, and related presentations.

Researchers have a lot to gain from feedback seminars. The feedback received can be used to re-frame data analysis, deepen the level of interpretation and counter-check accuracy. It is also important for participants to see whether the research project ‘keeps on track’ and works towards relevant outcomes.

Even if not all participants choose to attend a feedback seminar, creating ‘space’ for feedback can be an important element in building trust¹ between researchers and local stakeholders and for enhancing information exchange among the stakeholders. These feedback seminars can also be presented by stakeholders who, in the process of the collaborative learning approach used in this type of collaborative research, have acquired information or conducted activities, from which they can inform other stakeholders and the researchers. Their participation increases transparency and helps the project to move forward.

5 CONCLUSION

Transdisciplinary agricultural research strives to understand food systems as human activity systems, shaped by human actors. Incorporating perspectives and knowledge of those who act within a system, of those who influence these actions and of those who are affected by them have a large potential to improve the impact of research. Transdisciplinary research addresses ‘real world’ problems, such as in the RELOAD project with a focus on post-harvest losses as an aspect of food and nutrition insecurity in East Africa.

Whereas most agricultural research continues to be based on an implicit concept of technology diffusion, which regards farmers as more or less passive ‘adopters’ of knowledge and technologies generated by scientists, contemporary research regards change of practices and innovations as social processes in which people’s perceptions and interpretations thereof play a crucial role for shaping their actions. Changes can thus occur if people engage in learning processes that allow them to acquire new perceptions and interpretations, resulting in altered actions (Restrepo et al., 2014).

Based on the recognition of knowledge and technology diffusion as a social process, Badstue et al. (2012) state that “the question is no longer whether or not to include participation by farmers and other actors: it is simply un-avoidable. The issue is rather: how and when in the process to do so?” As argued by Roba et al. (in preparation), the overused term ‘all relevant stakeholders’ can be used to

¹ Trust building results from a well-managed process and is one way of avoiding ‘research fatigue’ (see also Restrepo et al., 2014). This results when participants conclude that nothing was achieved from the interaction, and that time, energy and goodwill were taken but not reciprocated.

obfuscate the myriad choices made by researchers in selecting those who are included in a study of food supply chains, thereby sidelining others.

This paper contributes to clarifying these questions for the particular situation of transdisciplinary research in food supply chains. Methodologies for stakeholder analysis and integration, partly being developed in other fields, can be adapted and used for this purpose. They can be considered for integration in research activities at various phases of a project. By doing so, research becomes more closely linked to the interests, goals and resources of stakeholders, and can take important constraints and limitations into account. Moreover, awareness can grow that changes in food systems can lead to different outcomes and benefits for different groups of people; deepening our understanding in this regard is necessary to avoid potentially adverse or exclusionary effects of 'improvements' in food supply chains.

This guide is thus a starting point for integrating stakeholder methodologies into research done within the RELOAD project to increase its impact. The references cited can help to gain deeper insights on issues of particular interest. For consultation regarding stakeholder processes within the RELOAD project, please contact Dr. Margareta Amy Lelea at DITSL.

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ANNEX: WORKING WITH PEOPLE FOR QUALITATIVE RESEARCH

For those who have experience with qualitative research in the social sciences and humanities, the following will be redundant. Although it is best if you can take courses in qualitative research methods, or work with colleagues who have experience working with people, the following brief summaries offer a starting point to supplement with further readings.

CONSENT PROCESS

When working with people in your research, consent needs to be established at various steps. For example, consent to participate in the research project is not the same as consent for audio recording or photography. Consent should never be assumed. Rather the researchers need to actively seek consent and re-affirm the rights of those participating in research to ask questions, to stop participating, etc. at regular intervals as a way of emphasizing respect and avoiding coercion. This is particularly important when there are high power differentials between researchers and participants.

The following guidelines can be helpful²:

- 1) To be informed of the area, subject or issue of research focus.
- 2) To be informed of research procedures.
- 3) To be informed of potential risks, if any, of the research.
- 4) To be informed of possible benefits to expect, or not to expect.
- 5) To be encouraged to ask questions concerning the study both before agreeing to be involved and during the course of the research.
- 6) To be informed that consent can be withdrawn at any point in the research process; i.e. that it is possible to refuse to participate in the study or to stop participating after the research participation starts.
- 7) To be free of pressure when considering whether to participate in the research.

Consent does not always require written form. It is also possible, for example, to establish oral consent. However, what exactly is required depends on the research topic and the legal situation in the country where the research is being done (and, if different, the country with which the researchers may be affiliated). Where indigenous people are concerned, there may, for example, be specific procedures required to respect their rights and establish consent (Hoeing et al., 2013).

AUDIO RECORDING

The content of stakeholder meetings might be recorded in different ways depending on the level of analysis. When analysis of the process of dialogue and learning is of interest, then the importance of getting as much detail as possible makes audio recording preferable.

If audio recording is determined to be needed for analysis, then additional consent should be sought specifically for audio. A pragmatic option for stakeholder meetings is to explain the way that

² Adapted from the University of California, Davis: Human Subjects Research Protection, 2003.

conversations will be documented, evaluated and used in the research upon invitation, so that consent can be reached prior to the group meeting and not only at the meeting.

In some cases, particularly if there are sensitive or conflicting issues involved, it may not be feasible to audio record a session. If the level of discomfort and unease experienced by participating stakeholders makes it such that they are too uncomfortable to effectively participate, then audio recording should not be done.

TRANSCRIPTION

Audio recordings from focus group sessions, workshops and other meetings with stakeholders can be transcribed as a written text which will appear in dialogue much as the text of a play or theatrical performance. The higher the degree of accuracy of the transcription, the more questions can be asked of the text in later stages. Although ideally every pause in speech and sound is noted by the person doing the transcription, this increases the labor involved, and may offer a level of detail beyond the scope of analysis. For example, in cases where the transcriptionist is also able to offer translation of one or more of the languages spoken, if all of the languages are recorded in the transcript, then the interview can also be analyzed for discrepancies arising from lapses in translation, cultural misunderstandings – where the researcher may think that they have asked one question, and the person interviewed offers an answer to a different question. Or, it could be that the field translator has offered suggestions for answers which influence the responses.

It could be that only the field translation is available, and then only the language of the researcher from original audio is transcribed (such as Kiswahili, Amharic or English). Or, conversely, it could be that the transcriptionist who is able to simultaneously translate will only create text of what was said during a session in the original language of the interviewee in order to achieve a higher level of detail than the summary offered during field translation.

The choice of what transcription is possible in the end is a combination of what resources are available (in terms of time, skill and budget) and what questions are most salient for the analysis. In order of preference:

- 1) Transcription of all languages including note of pauses, sounds (such as sounds of encouragement which are not quite words but convey active listening and understanding to the person speaking
- 2) Transcription of the original language of the person interviewed – both questions asked by a translator and responses by the interviewee.
- 3) Transcription of only the field translation into the language of the researcher.

FIELD NOTES

The act of writing daily field notes is important as a log of daily observations and as a way of reflecting upon the process of the research. Often the pattern of these observations can best be discerned over time. Particularly in exploratory phases of fieldwork, the questions that arise during this period will shape later fieldwork. The daily practice will assist researchers in the iterative process of assessing research progress, consequently enabling more astute adjustments as necessary.

Topics you could possibly include:

- How you are that day? Tired, Energetic?
- Evaluate progress made – where you are that day, versus the overall research plan. Why? What adjustments need to be made? What needs to be changed?
- Observations of activities related to your research from parts of the day where you could not have a pen and paper next to you. What do you see, hear, smell, sense? What do you understand of the situation? How might this have changed?
- Questions? What questions arise for you as you work through the research and deepen your understanding of the topic?

CODING AND FURTHER ANALYSIS OF INTERVIEWS

Coding is a technique for analyzing qualitative interviews. A basic form of coding would be to assign sentences in an interview to central topics or themes of the research. Depending on the number of interviews to be processed and the importance of the analysis for a certain type of research, a variety of options exist for coding interviews. In addition to coding the texts of interviews transcripts, field-notes can also be coded depending on the questions to be analysed.

If there is a small number of interviews and focus groups in your overall research project, you may choose to print the texts and code different sections with symbols or colors manually. However, as the length of texts and the number of interviews, focus groups and other stakeholder meetings increases, then you may want to consider coding the texts for your analysis on the computer.

The simplest way of doing a limited number of codes is by using the highlight option within word processing software like MS Word®. Each color can be linked to a code to emphasize different themes that are important. The ‘find’ function can also be used to search for combinations of words linked to a particular theme.

For computer assisted qualitative data analysis (CAQDA) effective free software is R (<http://www.r-project.org/>) with an extension for qualitative data analysis (RQDA) (<http://rqda.r-forge.r-project.org/>). Training guides are available online. This software is highly recommended.

Software which requires a paid license includes Atlas Ti and NVIVO, among others. Although these may provide more fluid user-interfaces, geo-referencing features (e.g. for associating information from interviews with geographical information) and other strengths, the need for these features must be carefully assessed.

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