

# Developing a standardised method to assess development-project performance in Cusco, Peru



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For the last half year, I've been working on this document: the *grand finale* of my master's degree in International Land and Water Management at Wageningen University. As is customary, a story arc has to contain light and dark parts before arriving at the finale. The darker parts happened mostly when I arrived in Peru and realised I didn't have any friends, my apartment was cold, and worst of all, I didn't have any warm water – luxuries common in my Western lifestyle. Thankfully, the lighter parts of the story came afterwards. I made great friends, experienced the beauty of the country, sealed my house airtight, went on field excursions wherein I experienced authentic things I would have never thought existed, did a lot of yoga and climbing, ate delicious and cheap food, felt part of the Pachamama Raymi family, and most importantly, fixed my shower so I had warm water most days. Based on this data, any mathematician (or a toddler with a basic understanding of numbers) can tell you that the positive things outweighed the negatives. I loved my time in Cusco and I think it has made me a better person. Not only academically, but emotionally and socially too.

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## DECLARATION

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I, Sebastian Paolini van Helfteren, hereby declare that this thesis is my work. The best possible care was taken to ensure the scientific integrity of this research. External sources were referenced where applicable, taking into account the validity of these sources. To my knowledge, this thesis does not violate any copyright laws or partake on plagiarism.

*Sebastian Paolini van Helfteren*  
30-01-2020

## A NOTE ON TERMINOLOGY

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As most people in the communities do farming work, individuals from the communities are often referred to in this research as “farmers”. One must keep in mind, however, that some individuals might see farming as a secondary activity. Thus, classifying themselves as something else than a farmer (e.g. construction worker, tailor, etc.).

Also, a differentiation is made between farmers, and municipality staff and field coordinators. The latter group is referred to a group with “higher education” – compared to farmers. Although the education level of all farmers wasn’t measured, and it’s not sure if all farmers have a lower education level compared to the “higher education” group, this simplification was made to simplify writing. Also, the latter group is assumed to have finished a higher education, be it academic, or due to capacity building done by Pachamama Raymi – the NGO supporting the communities.

## ABSTRACT

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In the current development project landscape, a plethora of different organisations are financed by countless financiers. One could ask the question: Is money well spent on these organisations or should better performing development projects receive the money? No robust standardised method exists to assess the performance of development projects. This research developed a score-based method to monitor and evaluate the performance of small- to medium-scale NGOs, taking the Peruvian NGO *Pachamama Raymi* as an example, and holistically comparing the performance of communities supported by the organisation to communities which aren't part of a development project. The method was developed using a bottom-up, community-based, participatory method in which different stakeholders were asked about their short- and long-term needs, values and goals in order to develop key performance indicators used in a survey. The surveys show that the organisation mainly improves the social, human and ecologic value of the communities, compared to communities where no help is offered. Productive and economic value is also improved, but to a lesser degree. Furthermore, comparing scores between different genders shows that both genders benefit from the organisation, but men benefit more. This leads to the belief that the organisation's efforts are capitalised more by men; expanding the gap in gender differences. Such a method can be used to assess the performance of an organisation for comparative purposes – over time, area, method, and community – giving the organisation guidelines for improvement and financiers recommendations on where to invest their money. The research's method and developed indicators are ready-to-use by other organisations – paving the way for a robust and standardised method to assess the performance of development projects.

**Key words:**

*Key Performance Indicators, development project monitoring and evaluation, PESHE values, rural gender differences, community-based participatory research*



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## LIST OF ABBREVIATIONS

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CBPR	Community-based Participatory Research
KPI	Key Performance Indicator
NGO	Non-governmental Organisation
Non-PMR	Not supported by Pachamama Raymi
PESHE	Productive, Economic, Social, Human and Economic
PMR	Pachamama Raymi

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# 1 INTRODUCTION

In 2016, 132 billion dollars were contributed by members of the Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD) in the name of development aid (OECD, 2017). As there are a plethora of different development organisation with many different development methods, one could ask the question: Is this money well spent or should better performing development projects receive the money? No standardised method exists to measure project quality (quality = efficiency + effectiveness) and its value. Yet, stark differences in project quality exist. This implies that much can be gained if project quality can be improved.



Figure 1: Location of Cusco, Peru. Taken from [www.maphill.com](http://www.maphill.com).

Value can be seen as the *impact* that a development project has on the area and people being impacted. Although several definitions exist for impact, the definition by the OECD (2010), will be held for this research: Impact is the “Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended”. Thus, impact is difficult, or nigh impossible, to measure directly. However, indicators for impact can be monitored and evaluated to assess an increment in value brought by a development project. Such indicators can be relatively easy to measure (e.g. increment in money per household) or hard (e.g. gender equality) but should be measured in order to better understand development efforts.

This research will attempt to address the issue mentioned above by (1) finding key performance indicators (KPIs) which are simple and robust, but able to assess a development project’s impact; and (2) testing these indicators on communities supported by Pachamama Raymi (PMR), an NGO based in Cusco, Peru (Figure 1), and on communities not supported by PMR.

## 1.1 Current Situation

In the world of development projects, there is no standardised method to assess and monitor impact and the value this impact brings to the community or region. Instead, projects often internally develop their quality assurance systems which may be biased towards shining a positive light on the project (Cohen, 2016). Resulting in systems which do not consider any input from those subject to the developmental aid. Furthermore, there is no consensus on the definition of development-project goals such as “impact” or “effectiveness”, and on the KPIs that should be used to measure the goals. This is due to (1) development agencies having different objectives (e.g. economic growth, betterment of the social fabric, increase of ecological services, promotion of human rights, etc.), (2) it being difficult to pinpoint what has caused the change, and (3) due to there being many internal and external factors which could influence the measured impact (Burall and Roodman, 2007). However, a body of work already exists regarding the selection of indicators (Cartwright, 2000; Hák et al., 2016; Mitchell, 1996; Niemeijer and de Groot, 2008), but these works focus on different aspects of development work and no cohesion between them exists.

Although standardised methods have been proposed, none are currently broadly used among NGOs to assess development on a local to regional level. One must take into account the operational scale at which the project is working when choosing KPIs – i.e. Indicators that are meant to assess the performance of a national project might not be useful for a more local scale (Mitchell, 1996). Not only due to the difference in geographical scale, but also due to the *project contents* which can vary greatly

dependent on scale. E.g. a local project might focus on household farm gardens, while a national scale might focus on a large-scale irrigation system. Both need different indicators to assess performance.

For example, the United Nations have a plethora of indicators to assess the progress of Sustainable Development Goals (SDG) (United Nations, 2016). However, the scale of this project and its goals are generally large (national, or even global). Another phenomenon is that frameworks to assess impact only look at the impact caused by a certain type of development paradigm (e.g. Aid for Trade) (Adhikari and Ghisu, 2011). As this research's study area is focussed on a project around Cusco, Peru, managed by the NGO Pachamama Raymi (PMR) which focusses on a local to regional scale; using such large-scale indicators depends on the organisation and its internal administration, and might not be preferable. From the financiers side, Multilateral Development Banks (MDBs) are developing systems to rate projects based on quantifiable and verifiable evidence and focussed on results (Cohen, 2016). However, MDBs are perceived as poorly responsive to change, non-transparent and excessively bureaucratic (ibid.). The same can be said from NGOs (Arhin et al., 2018; Burger and Owens, 2010; Elbers and Schulp, 2015).

PMR is an NGO that focuses on eradicating rural poverty in the Peruvian Andes by focusing on preventive health measures, self-esteem, the social fabric, and income, through reclamation of degraded resources. PMR uses a methodology called Pachamama Raymi (the same name as the organization). The four principles of this method are: (1) the definition of achievable clear goals, (2) inter-education, meaning learning from each other, (3) the motivation to achieve advances in adoption of new innovations, and (4) strengthening local actors to internalise the processes and achieve a greater dynamic in development (Van Immerzeel and Cabero, 2003). More information about this method can be found in Van Immerzeel and Cabero (2003) and Zeisser Polatsik and Tupayachi Mar (2014). As this research will be done for PMR, their project will lie in the focus of this study. The area is also suitable for this research as there are many rural villages which were already subject to the development work of PMR, as well as villages which haven't been subject to it. This gives room for comparison.

## 1.2 Desired Situation

As described above, there is no standardised method to assess and monitor the impact that a development project has had on a local to regional scale. Such a method would be useful to compare projects, show financiers the value per dollar of what they have spent, and help projects strategize future steps. Furthermore, such a method would give insight in how to improve development projects and the methods used, resulting ultimately in the improvement of lives of those who are impacted by the project.

Ideally, a standardised method should be robust enough to be used to assess the quality of development projects independent of cultural, economic, and institutional realities. KPIs measured should be *universal*; meaning that, that which is measured should be indicative of impact independent of other factors. Additionally, the KPIs should be simple enough that they are understandable by a layperson and can be used in surveys for the people subject to development efforts. KPIs should thus be simple and robust, but able to describe a complex reality.

## 1.3 Problem Definition

The standardisation of a method to assess impact brought by a development project is challenging. This is due to there being (1) many types of projects that (2) operate at many different scales in (3) many different places and where (4) different cultures are the norm.

Focussing on (1) the many types of projects first, it is evident that one generally cannot use the same KPIs for projects with different goals. For example: a project that focusses on reforestation might need

KPIs which focus on ecological value (e.g. vegetation cover in a region), while one that focusses on women's rights might prefer to focus on aspects of social value (e.g. percentage of educated women). This becomes more complicated for projects, such as PMR, which take a holistic approach to development. These types of projects usually consider ecological, economic, social and motivational aspects of value. Thus, as this research will focus on the standardisation of a method to measure quality of these different type of projects, chosen KPIs must be adequate to measure a wide range of values.

Secondly, focussing on (2) the different operational scales, it becomes clear that a standard method that can be useful at both household level and global level is practically impossible, or so broadly interpretable that they become impractical. Such a multi-scale method would consist of an agglomeration of standard methods for different levels instead of being one standard method which can be used, impartial of the operational scale of a project. However, this research will focus on a local to regional scale; this is in line with development projects similar to PMR and development methods such as the *Plan Intégré du Paysan* (PIP) (Kessler et al., 2016).

Lastly, projects are realised in (3) different places where (4) different cultures are the norm. Therefore, the standardised method should be applicable in different places and cultures. This may be complicated, as different locations do not only exhibit diverse climates and ecosystems, but also different economic and political situations. Furthermore, regarding different cultures, it is important to note that culture defines ones' way of experiencing the world. E.g. asking a northern European what is most important to them can yield different results compared asking the same question to someone living in sub-Saharan Africa. This leads to the difficulty of KPIs needing to be adequate for most places and most cultures. Ecological KPIs are often dependent of the dominant ecosystem. Yet, by understanding ecological processes and the systems that govern these processes, different areas can be compared. Social, economic, and motivational KPIs, on the other hand, are more dependent on the subjective experience of those who are being monitored. Again, a systemic approach is needed to compare different areas.

Taking into account the difficulties described above, five different types of value based on Goodwin (2003) and Ekins et al. (2008) will be assessed using adequate KPIs: produced, ecological, social, human and economic (PESHE) value (values will be discussed further in the *Concepts and Theories* chapter below).

## 1.4 Research Objective

This research aims at developing universal key indicators in consultancy with people subject to the development work of PMR and experts at PMR, to assess the performance of the Pachamama Raymi methodology in Andean villages surrounding Cusco, Peru. These KPIs will be evaluated to theorise which indicators can be used as universal performance indicators; as opposed to only being suitable to assess the performance of PMR. Furthermore, the selected indicators will be tested on families and villages to provide PMR with initial data for their monitoring and evaluation practices.

A better understanding of adequate KPIs will hopefully be achieved after this research. Such an improved understanding will help illuminate the way towards a standardised method to assess development impact. Consequently, such a method would help improve development projects by making clear the differences between projects and giving way to projects learning from each other.

Scientifically, this research aims at exploring literature regarding KPIs, using participatory methods to develop KPIs, assessing which indicators can be universally used, and testing the indicators on the reality found in communities in the province of Cusco, Peru. New insights will be added to the existing academic debate on the assessment of development impact using KPIs by the findings that this

research will bring. After assessing which KPIs could be universally suitable, the chosen KPIs could be used in other regions of the world for sustainable land and water management projects comparable to PMR. This would add new insights to this field of research and hopefully result in a more standardised method to monitor and evaluate impact.

Before bringing forth the research questions which will help guide this research to achieve these objectives, the following chapter will discuss the concepts and theories needed to understand the bigger picture. These concepts and theories are the foundation of the research. As such, these are indispensable to understand the research questions.

## 2 CONCEPTS AND THEORIES

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This section discusses the different conceptual and theoretical frameworks taken into account in this research. Although all concepts and theories are applied in the research, some are more perceptible or concretely visible, while others are mostly active in the background. E.g. not actively used to develop interviews, but as important elements to think about while doing the interviews.

The first three concepts and theories elaborated below (PESHE values; key performance indicators; needs, values and goals) are the most concretely evident in the research, as these concepts are the foundation of the interviews and surveys. These are categorised as *methodological definitions*. The latter three (CBPR; sustainable development; asymmetrical power relations), are mostly important as they serve as mental guidelines to make the research more holistic and conscious of factors which could otherwise be unconsidered. These are categorised as *supporting concepts*.

### 2.1 Methodological definitions

This section describes the concepts upon which the largest part of the methodology is built. *Needs, values and goals* (2.1.1) are the main elements measured during this research's interviews. As a result of the interviews, *key performance indicators* (2.1.2) are derived in order to measure the *PESHE values* (2.1.3) through surveys.

#### 2.1.1 Needs, values and goals

The performance of a development project should focus on fulfilling the needs of individuals, allowing their values to be practicable, and promoting the satisfaction of their goals. Recognising needs, values and goals will aid in understanding more holistically what the performance indicators should focus on.

Firstly, focussing on needs, different fundamental theories of needs exist. This research follows the existence, relatedness, and growth (ERG) theory laid out by Alderfer (1969). ERG theory is based on Maslow's theory (1943) but takes out the hierarchical aspect of needs and condenses the theory into three different types of needs:

1. *Existence* needs include all material and physiological needs. A principal characteristic of these needs is the possible division of the need so that, whenever resources are limited, one person's gain is another's loss. E.g. food eaten by one cannot be eaten by another, and if one person gets a salary raise another person often can't.
2. *Relatedness* needs include all needs related to relationships with significant others; these can be friends, family, colleagues, superiors, subordinates, and enemies. These needs are characterised by their dependency on a process of mutuality or sharing of thoughts and feelings. These needs do not rely on a finite resource such as existence needs.
3. *Growth* needs include all needs involving creative or productive effects by an individual on himself or his environment. For an individual to satisfy such a need, problems have to be engaged which call upon existent or newly developed capacities. Overcoming such problems result in sense of wholeness and satisfaction.

Keeping the aforementioned types of needs, Bradshaw (1972) further distinguishes between four different types: normative (defined by "experts"), comparative (defined by a lack of resources in comparison to other groups), expressed (articulated by the individuals in question), and felt (not articulated, or articulated in a way that will not lead to the need being satisfied). In practice, *felt* needs are most difficult to identify and measure; such needs can be unstated by individuals due to shame, taboo and/or unknowing. Although it is also common to focus on wants, this research won't as psychological aspects of individuals is also included in needs; making the distinction between needs and wants less clear (McGregor et al., 2009). Several methods have been established to collect

information regarding what people feel they need to achieve a better life quality (Hagerty et al., 2001). Theory suggests that responses concerning needs are affected by the level at which the questions are framed (i.e. questions at individual, family, and communal level return different answers) (Bradshaw, 1972).

Secondly, the broadly defined concept of *values* is relevant in all areas of human life. Values include preferences, avoidances, what is deemed right or wrong, valuable or not, useful and useless, and so forth (Edel, 1953). A distinction can be made between individual values and community values. By understanding which values are important for a populace, it becomes clearer for a development project to work in a more holistic way which also considers the most important values; and thus, can work to better the ability to act upon these values. Also, understanding *why* values are important to people can help in understanding where a project should focus on.

Lastly, goals can be divided into short and long-term goals, and then also into individual and communal goals. Lavers (2007) states that “goals are deeply rooted in the cultural values of the community and will often reflect existing power relations based on gender, race and age.” This makes goals interesting to research as they can give insight into what people find important enough to maintain as an objective for the short or long-term.

### **2.1.2 Key performance indicators**

In order to make complex projects monitorable, this complexity has to be simplified. Simple and measurable indicators help in this simplification. The US EPA (1996) defines an indicator as: “a sign or signal that relays a complex message in a simplified manner”. As a future application of this research would be making a tool that is applicable on different projects, it is important for the indicators to be universal, not specific. Although one could rightly say that people are different all around the world, it is assumed that there are aspects of human nature which are largely independent of culture. Such aspects often have to do with the *essentials* of humans and human societies. It is important to understand that the way in which such a social fabric manifests is culture and time dependent; this makes it quite the challenge to find indicators which are deemed *universal* (Mitchell, 1996).

Goodwin (2003) makes the point that indicators (called quantifiable proxies by Goodwin), do not always tell the whole story. Analysis of indicators can often lead to important variables being left out because these were not quantifiable or because of survey time-constraints. Also, it’s important to keep in mind that measures which aim at combating low levels of a certain kind of value and which yield positive results, are not always successful because they have remediated the low value level as shown via an indicator; in some cases, external factors have been improved which cause the positive result. Such measures might indicate a correlation but cannot be used to explain the causality.

Several conceptual frameworks exist to define KPIs. Often these frameworks focus on a specific value instead of all five values. E.g. Niemeijer and de Groot (2008) have created a framework for selecting environmental indicators, while Krlev et al. (2014) show an approach for social indicators. Thus, adequate frameworks should be selected or thought of when selecting indicators. Frequently, indicators are selected without keeping in mind criteria which the indicators should satisfy, resulting in a selection based on relatively arbitrary decisions (Niemeijer and de Groot, 2008).

Less focussed on the specific values, the framework presented by UNECE (2013) is used as a foundational conceptual framework for the selection of KPIs. This framework helps in understanding three dimensions of sustainable development deemed important to keep in mind. These principles are: “*human well-being of the present generation in one particular country (referred to as ‘here and now’), the well-being of future generations (‘later’) and the well-being of people living in other countries (‘elsewhere’)*”.

1. Starting with the *here and now*, this refers to the state of being of individuals at that particular moment. As well-being is variable dependent on what is regarded as important by an individual at that particular time, indicators measuring the *here and now* can be a mix of subjective and objective measures. Distinguished themes in this dimension are health, subjective feelings of well-being, nutrition, consumption and income, labour, housing, education, leisure, safety, water, land and ecosystems, air quality, and institutions.
2. The *later* refers to the well-being of future generation which is affected by the resource use of current generations. Ideally, enough PESHE values should be left for future generations to maintain a sustainable existence. Distinguished themes in this dimension are physical capital, knowledge, liquid capital, energy, land and ecosystem, climate, air quality, water, labour, education, health, institutions, and trust.
3. *Elsewhere* is the dimension which deals with transboundary effects. The reach of such effects can be international or in the smaller scale between communities. E.g. one country depleting resources of another, or one community affecting the market of another community. Themes in this dimension are consumption and income, energy and non-energy resources, land and ecosystems, climate, labour, water, knowledge, physical and liquid capital, and institutions. This dimension has less relevance with this research as most indicators are meant to assess the situation at particular communities. However, the pressures that a community can have on others is important to keep in mind.

### 2.1.3 PESHE value

A large part of this research assumes that, for a community to be sustainable, one should focus on and increase PESHE value (Figure 2). Based on Goodwin (2003) and Ekins et al. (2008), this research differentiates between five kinds of value:

1. Productive: Physical assets generated by applying labour on ecological value to achieve the means of a flow of goods and services.
2. Economic: This value refers to money and its relationship with ownership and change of assets, as well as the ease with which goods can be exchanged.
3. Social: This value refers to the reserve of trust, shared values, socially held knowledge and mutual understanding that facilitates the coordination of activities. Social capital is not a single entity, instead it consists of various different entities that have two things in common: (1) they are related to social structures, and (2) within the structure, the entities facilitate actions of actors (Coleman, 1988). Coleman (1988) discerns between different forms of social value: (1) obligations, expectations, and trustworthiness of structures, (2) information channels, and (3) norms and effective sanctions.
4. Human: This value refers to the capabilities and skills of individuals that allow them to act in new ways (Coleman, 1988). These often have an element of inherited characteristics but can also be shaped or improved by means of education, upbringing, or life experience. According to Coleman (1988), human value can also be affected by social capital, e.g. parents' knowledge (human value) can be shared if the familial relationships (social value) are healthy.

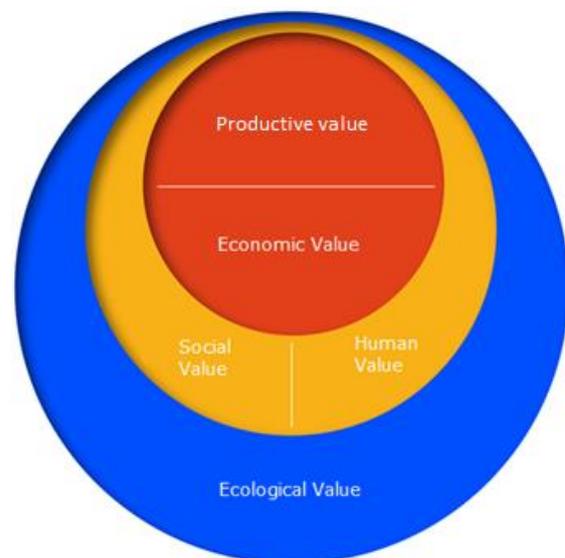


Figure 2: PESHE values as described by Goodwin (2003) and Ekins et al. (2008). Modified from <https://www.forumforthefuture.org/the-five-capitals>

5. Ecological: The physical goods and ecosystem services that a pool of natural resources can deliver.

All values have the commonality of being productive (Coleman, 1988). I.e. making use of the value results in the possible achievement of a certain end. Yet, when speaking in terms of these kinds of value, it's important to keep in mind that one does not imply that nature and human beings are just a form of capital – a productive resource. Ecological value is not a synonym for “nature”. It's not necessary to take such a reductionistic approach; although a painting has a produced capital value, this does not mean that that is all it is. (Goodwin, 2003)

## 2.2 Supporting concepts

This section describes the concepts which support the research in a more subtle way. Keeping these concepts in mind is expected to result in a more socially responsible research. Understanding *community-based participatory research* (2.2.1) is essential to understand what is expected of the community in the long term and to define the type of research executed. As there are many definitions for *sustainable development* (2.2.2), it's important to clearly define it and keep this definition in mind during this research's development. Lastly, as this research comprises many interactions in a survey or interview context, understanding the effect of *asymmetrical power relations* (2.2.3) on social interactions is of utmost importance to reduce the negative effects during the practical work.

### 2.2.1 Community-based participatory research (CBPR)

The paradigm of “participatory” research has changed the role of scientists and their relationship with communities. Rather than the scientist being an observer doing “helicopter research” (i.e. flying in, taking information, and leaving nothing behind), disregarding native knowledge, reinforcing passivity in subjects, and obscuring their voices (Deloria, 1994; Gaventa and Cornwall, 2001), CBPR expects the scientist to engage in the community. The main difference between the different terms to describe “participatory research” (e.g. *rapid rural appraisal (RRA)*, *participatory rural appraisal (PRA)*, *participatory impact monitoring and assessment (PIMA)*, etc.) lies in their methodologies; which, although similar, can be slightly different (De Koning and Martin, 1996). Generally, such participatory methods are based on three interconnected goals: research, action, and education. Thus, as Hatch et al. (1993) describe, participatory research should consist of community members passing on their expert knowledge and experience to researchers, so researchers can transfer tools for communities to analyse and make informed decisions to improve their lives. This is all done to both pursue mutual knowledge and allow researchers, institutions, and/or community members to apply the knowledge on the communities.

According to Herweg and Steiner (2002), the impact of a project can be considered differently depending on the stakeholder assessing it and her or his interests. I.e. a farmer with an economic interest might consider the impact of a measure differently than a policymaker with an ecological focus. Therefore, to harmonise different interests, it's necessary to involve different stakeholders when selecting KPIs. A participatory approach can help in (1) ensuring that stakeholder's requirements are met, (2) a better understanding of the environment and affecting factors is obtained, (3) knowing which data is available, (4) making roles and responsibilities in the community better defined, and (5) institutionalising and giving a sense of ownership over the project process and results (USDA, 2013). By being in close contact with the stakeholders, the stakeholder's wants, needs and underlying issues can come to light. Furthermore, the central role stakeholders gain through CBPR gives them an opportunity for empowerment and local capacity building. Developing indicators without stakeholders may result in a derailment, stalling and/or refusal of the project (Herweg and Steiner, 2002), showing the clear importance in the inclusion of stakeholders in the development of monitoring tools.

Ideally, a CBPR researcher should build long-term meaningful relationships with community members. Yet, this can be made difficult due to time constraints and academic tenure (Goodman, 2001). The negotiation-based and all-inclusive nature of CBPR makes the process time intensive; resulting in participatory research requiring many iterations along the methodology to adjust research elements to suit the different stakeholders' ideas. Such adjustments are done to better suit e.g. the interviewees representing of the community. However, this raises the question: who represents the community? Often CBPR includes a selection of stakeholders which are already in a "higher level" of society compared to those they represent (Jewkes and Murcott, 1998). Following this, Green and Mercer (2001) pose the question: are these representatives able to properly represent the community? CBPR should thus include as many types of people to prevent problems of misrepresentation.

### **2.2.2 Sustainable development**

The concept of sustainable development is also important to define adequately. Robert et al. (2005) references several ways to define sustainable development; one of these ways describes sustainable development as the "ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). This is the definition that will be used by this research. However, with such a broad definition, one must keep in mind that the large range of possible interpretations. People have different goals and sensibilities and might not agree on what to sustain (Norrthon, 1995). These goals are also not fixed, according to Callens and Tyteca (1999). Instead, sustainable development goals should be dynamic; continuously monitored and improved.

### **2.2.3 Asymmetrical power relations**

Regarding the act of interviewing, it's important to keep in mind the asymmetrical power relation in interviews brought forward by Kvale (2006). There is an inherent hierarchy in an interview as explained by the following elements:

1. The interviewer rules the interview: the researcher determines everything in an interview; the time, topic, questions, which questions to follow upon, and the context of the interview which sets the interest and rules of the conversation.
2. The interview is a one-way dialogue: the interviewer poses the question and the interviewee is expected to answer. There generally is no conversational back and forth between both parties.
3. The interview is an instrumental dialogue: interviewing is a tool used to serve the researchers interests. A good conversation is not the goal; instead, the interviewee is expected to deliver data to be analysed by the researcher.
4. The interview may be a manipulative dialogue: the researcher might want to extract information out of the interviewee in a way that it's not clear for the interviewee what is *actually* being looked for in the answers.
5. The interviewer's monopoly of interpretation: as interview results are generally not interpreted by more people, the interviewer is the lead interpreter and as such can contextualise all gathered data according to his or her own conceptual schemes.

Yet, this asymmetry also gives the interviewee perks:

1. Counter control: the interviewee can use several techniques to deflect, or not answer, a question. This can be done by talking about something else than the researcher is asking, giving obscure answers, answering what the interviewee believes the researcher wants to hear, posing questions back to the interviewer, and even withdrawing from the interview.
2. Membership research: in case the interviewer wants to verify interpretations with the interviewee, the interviewee can have emotional barriers towards the critical interpretation

of what was told. Also, limitations in the ability to think abstractly about what was said can bring difficulties in this co-interpretative approach.

## 2.3 Summary

The concepts and theories described above serve as a foundational canvas upon which this research is developed. Nuances and additions can be made to the canvas, but the foundations are essential for the realisation of the research.

To demonstrate the practical use of these concepts and theories they can be amalgamated into a broader framework shown in Figure 3 as follows:

Understanding the *needs, values and goals* of the different stakeholders leads to the development of *key performance indicators* which in turn are used to evaluate *PESHE values*. However, categorising the different types of values helps the research take a more organised form and allows the research to better classify the *needs, values and goals*. This whole process is done from a *CBPR* method wherein different stakeholders are included at different moments of the research, so that the organisation's results lead to the *sustainable development* of the area. A development that yields involved farmers and the long-term general improvement of the area. Lastly, it's important to keep in mind the *asymmetrical power relation* between researcher and stakeholders across the breath of the research, to minimise the negative effects of such power differentials.

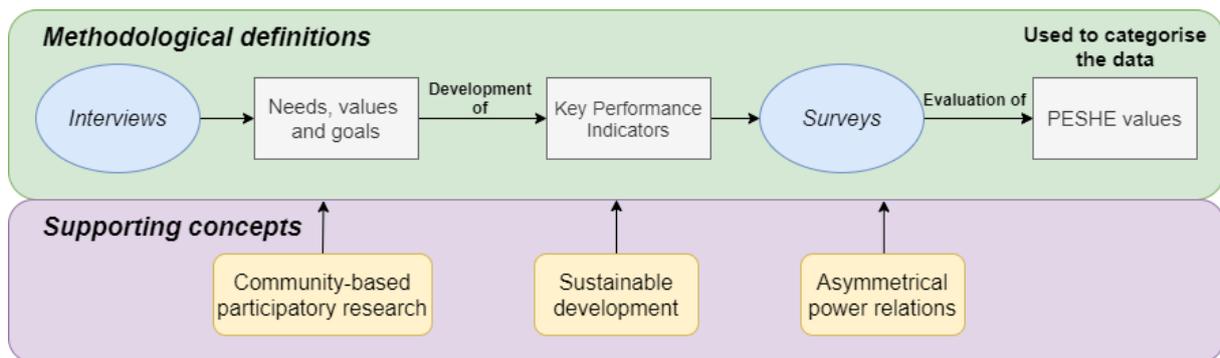


Figure 3: Amalgamation of different concepts and theories to create one overarching framework which is the foundation of the whole research.

### 3 RESEARCH QUESTIONS

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The research will be split in two phases. The first phase will focus on developing KPIs. The first research question is the main focus of the first phase.

**Question 1 (RQ1):** According to the different stakeholders, which KPIs are most adequate to assess PESHE values for assessing the performance of PMR?

After phase 1, knowledge gained by answering the first question will be used to build the surveys which will be used to collect PESHE values for the second research question. This is the second phase.

**Question 2 (RQ2):** Using the chosen KPIs to measure PESHE value:

- (a) How do PESHE values vary between PMR and non-PMR communities?
- (b) How do PESHE values vary between men and women for PMR and non-PMR communities?

Before attempting to answer the questions in chapter 5 *Results*, the next chapter will illustrate the methodology used to get to these results.

## 4 METHODOLOGY

The research consisted of two main phases, each with their own research design (Figure 4):

The first phase was a literature research as well as interviews in which the most adequate KPIs were sought out in consultancy with stakeholders. The second phase consisted of a survey research in which the KPIs were used to measure the PESHE values in communities where PMR has been active and communities where PMR has not been active – henceforth referred to as PMR communities and non-PMR communities, respectively. The communities are seen as an agglomeration of households, which in turn are composed of individuals. Thus, both individuals and households will be the unit of analysis, dependent on the PESHE value in question.

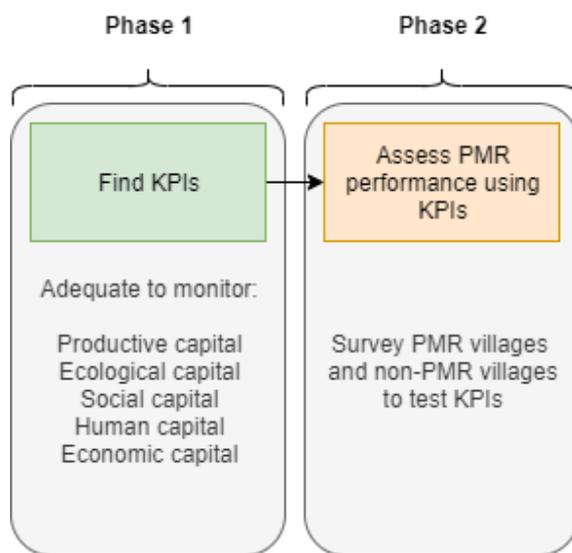


Figure 4: Overview of the research design.

Before taking an in-depth look at the methodology for these phases, (1) the study area will be illustrated, (2) general guidelines followed during the practical work – based on the (2.2) *supporting concepts* – will be addressed, (3) the testing phase of the interviews and surveys will be explained and (4) rules for the storage and analysis of data will be clarified.

### 4.1 Study area

The study area for this research consists of two districts: Huanoquite and Pichigua; both districts of the Cusco region. These areas were chosen as PMR is working in these districts, and thus has available transport to communities. However, this does not mean that all communities in the districts are being helped by PMR. For both districts there is a clear distinction between the dry (April – October) and rainy season (November – March). During the former, extreme droughts are common, while the latter is characterised by heavy rains and severely worsened accessibility due to mudslides.

The majority of agriculture in both study areas is based on traditional technologies. Only in low-laying, flat areas, is agriculture more technologically advanced as the territory allows machine access and the use of irrigation technologies (López Gallegos, 2012a). However, in most territories, agriculture is rainwater-fed. General information on these districts can be found in Table 1.

Table 1: Study area general information. Peruvian National Institute for Statistics and Informatics (INEI) (2017)

District	Huanoquite	Pichigua
Average altitude (m a.s.l.)	3391	3870
Total surface (km <sup>2</sup> )	362.67	288.76
Population (hab)	4867	2839
Population density (hab/km <sup>2</sup> )	13.42	9.83

### 4.1.1 Huanquite

Huanquite lies in the province of Paruro, and it's characterised by inter-Andean valleys, high peaks, and rivers. The principal economic activity of the 19 rural villages found in Huanquite is agriculture (alfalfa, potato, maize and wheat) and animal husbandry (cattle, sheep and guinea pigs). According to a 2007 census, 91.4% of the population in the Espinar province is poor, with 58% being extremely poor. (López Gallegos, 2012b)

The communities in Huanquite selected for this research are Rocoto, Coror, Chanka and Marucra (Figure 5). The first two are communities supported by PMR, while the latter two aren't. All communities have comparable bio-physical factors. However, the non-PMR communities are closer to Huanquite which is a larger city. PMR has been working on these communities for 2 years.

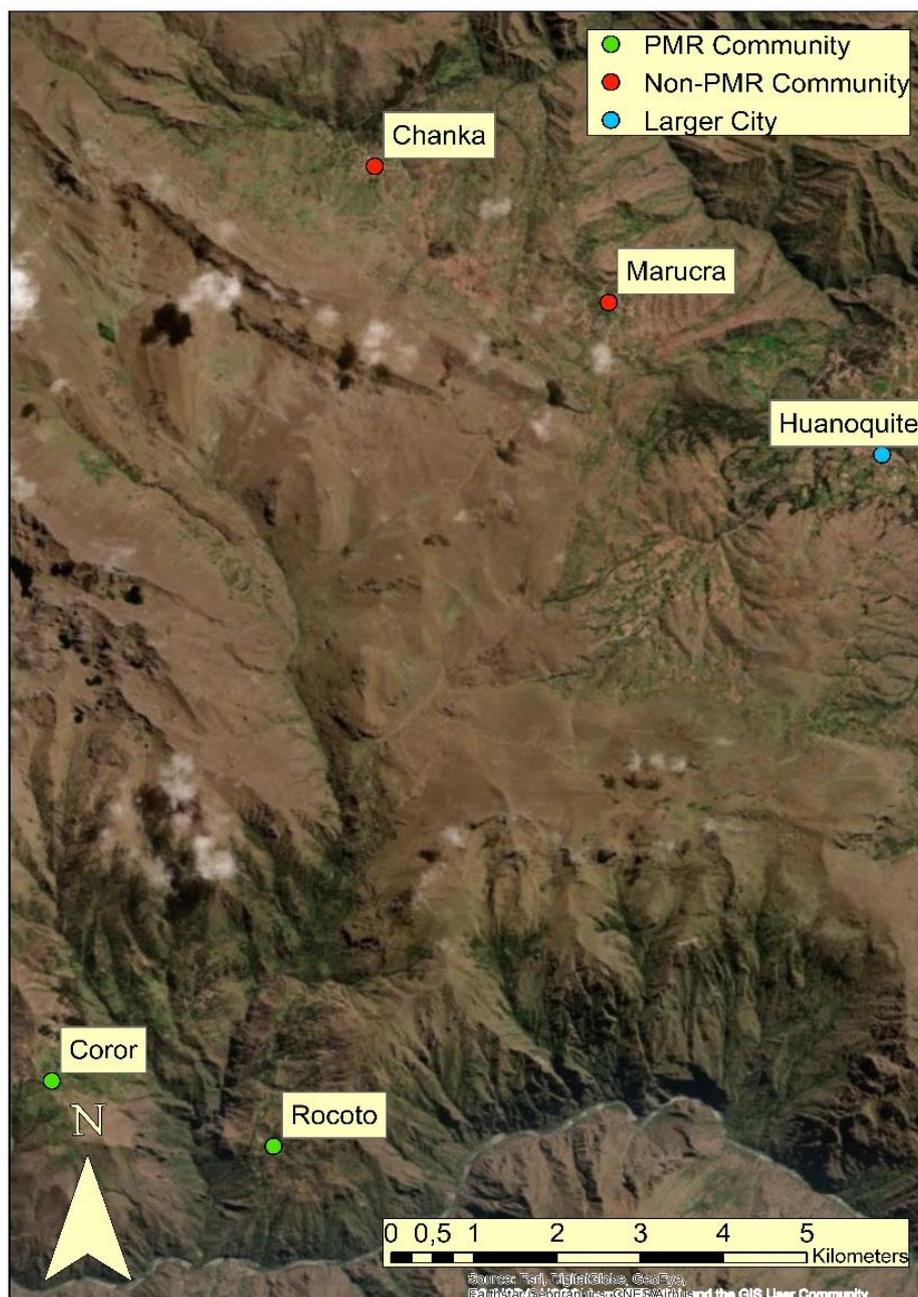


Figure 5: Overview of Huanquite and the researched communities.

### 4.1.2 Pichigua

Pichigua lies in the province of Espinar. The area is characterised by its dry, high-laying plains (*pampas*) and general lack of water on hilltops. The principal economic activity of the 8 rural villages found in Pichigua is agriculture (foraging oat and potato) and animal husbandry (sheep and llamas). Although no specific data could be found regarding poverty levels in Pichigua, 64.4% of the population of the province is poor – of which 31.1% is extremely poor. (López Gallegos, 2012a)

The communities in Pichigua selected for this research are Chañi Pichigua, Ccahuaya Baja and Mamanoca (Figure 6). The first two are active in PMR, while the latter is not involved with PMR. All communities are comparable when looking at bio-physical factors. Furthermore, Ccollpamayo served as a testing ground for surveying. PMR has been working on these communities for three years.

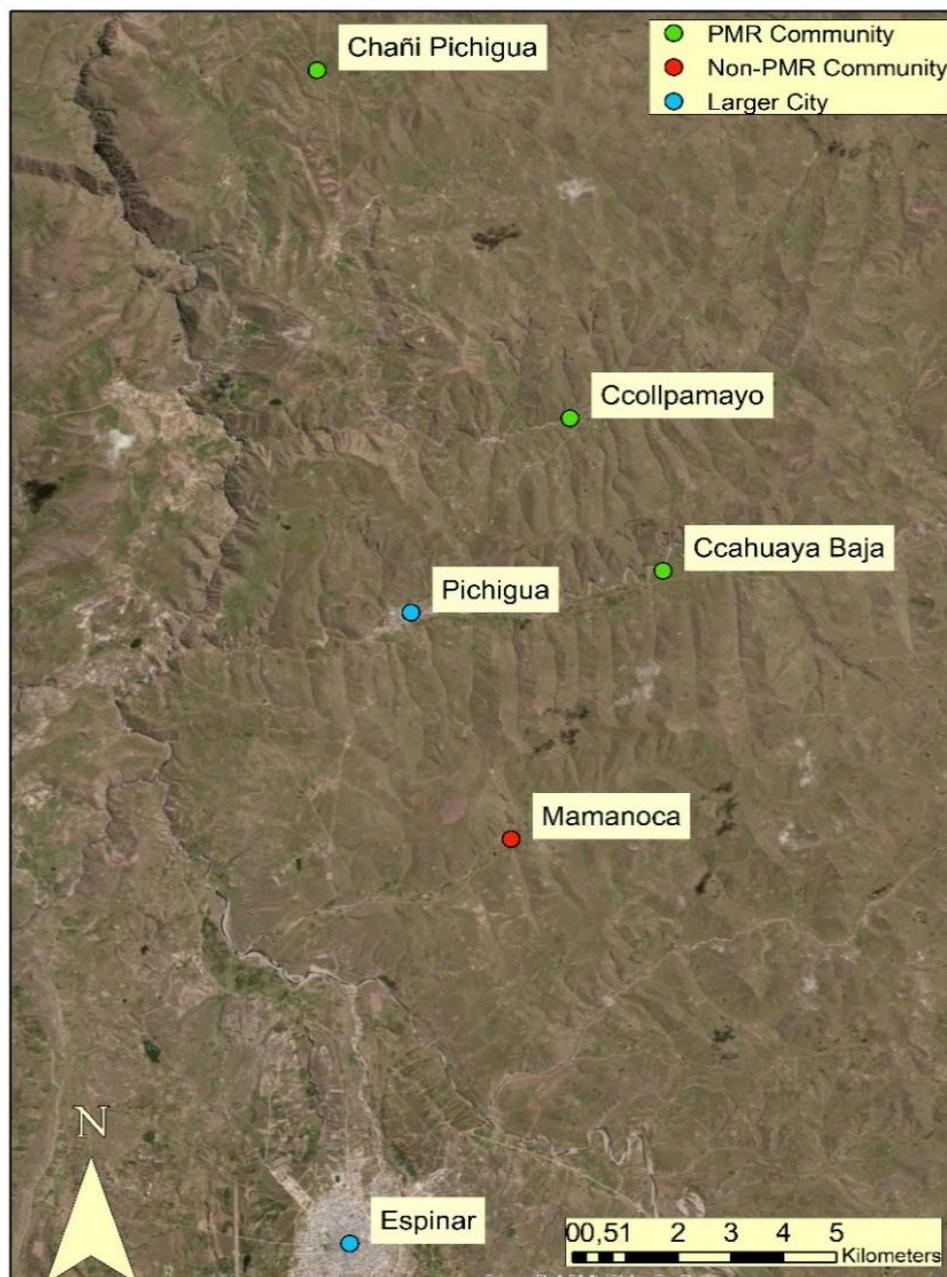


Figure 6: Overview of Pichigua and the researched communities.

## 4.2 General interviewing and surveying guidelines

Before the interview or survey took place, the research details were explained to the interviewees. Also, confidentiality of the results and anonymity was discussed to put at ease any issues the individual might have, as is advised by Britten (1995). Although anonymity is possible for the surveys, it's not preferable as, in the future, personal data is important for comparative and trend evaluation purposes. For the interview, it was explicitly stated that a response was not necessary if the interviewee felt uncomfortable with any question or direction the conversation had taken. According to experienced PMR staff, it's important to keep the conversations amicable and not to mention that the interview is for an evaluation (O. de Gana Romero, personal communication, 13-09-2019). By saying that it's an evaluation, the interviewees and coordinators can become nervous and scared of the interview; resulting in an indirectly censured interview. This is in part due to possible negative experiences that interviewees might have with surveyors, and also due to the aforementioned asymmetrical power relation between researcher and respondent.

Active discussion and creative thinking were encouraged during the interviews that took place in the first phase. Therefore, follow-up questions were posed whenever something wasn't completely clear, or deemed interesting to investigate further. To stimulate creative thinking, some follow-up questions consisted of asking the interviewee to "imagine a certain situation" about the discussed topic. Contrary to the interviews, during the survey which takes place in the second phase, it's important to work quickly and efficiently to gather as much data as possible in the available time. Thus, further discussion with the respondent regarding the survey questions was limited but accepted to give the respondent a positive feeling during the survey. Consequently, no follow-up questions were asked during the survey; discussion was only started when the respondent started it.

As a variety of skills are needed to make the interview as efficient as possible and to allow the interviewee to talk comfortably (e.g. ability to listen attentively, neutral body language, nodding, giving encouraging feedback, smiling, strategic silence, etc.) (Gill et al., 2008), these were practiced during the testing phase of the interviews and applied during the interviews and surveys.

Once the interview finished, the participants were thanked for the effort and asked to express any remaining thoughts. This gives the respondent the last word as well as giving the opportunity to see to any issues the respondent would have in mind (Kvale, 1996).

It was deemed preferable to survey the units of analysis in a relatively superficial way (horizontal), as opposed to very thoroughly (vertical). Thus, more households in a village, and as many villages as possible are preferred. This is mostly for statistical relevance of the results. Although individuals will be interviewed, questions about the household will be asked – diffusing the line between both units of analysis.

## 4.3 Interview and survey testing

Before going into the field to interview and survey the bulk of the interviewees, it's important to test the schedule on subjects with a similar background as those the interview was designed for (Gill et al., 2008; Kelley, 2003). Thus, five pilot interviews and four pilot surveys were realised. The interviews were tested on three farmers, one communal president, and a municipality civil servant of the district of Lares, which lies in the province of Calca, and area different to the study area. While the test surveys were done on three farmers and one communal president from Ccollpamayo, Pichigua. This was done to establish any flaws in the method and to revise if the interview and survey was clear at different levels of understanding. These pilots also helped with the familiarisation of the interview and survey, leading to smoother practices. Finally, the interview and survey were improved according to the information gathered and tested again. The results of the test interviews were used as data, as to not waste possibly valuable data. This iterative process was repeated for every farmer. Furthermore,

respondents were asked for commentary to improve the interview and survey. However, this did not yield positive results as the pilot respondents did not give any constructive commentary on the interview.

Testing occurs by asking the questions of the interview and survey prototypes, and focussing on the following aspects per question:

1. How often interviewees ask to clarify the question: this could be a lead that the question is too vague or not relevant enough for their background.
2. How often interviewees give answers which do not fit the posed question: similar as above, unclear questions can lead to the interviewee giving irrelevant answers. This could also be caused by the interviewee not daring to show they don't understand the question.
3. How often different interviewees give very similar answers to the same question: this could lead to the question being too broad which can lead to interviewees answering the most obvious thing that comes to their mind; or the opposite, wherein the question is too specific, leaving room for a limited set of answers.

These aspects were not noted per occurrence. Instead, the interviews and surveys were changed dynamically on the spot so they would better suit the interviewees better, and the changes were noted on the questionnaire. At the end of the day, the interviews and surveys were improved so the next batch of respondents would have an improved experience.

## 4.4 Storage and analysis of data

As qualitative data, such as interviews, are generally subject to be analysed in a biased way, Mays and Pope (1995) suggest a theoretical basis explained below to reduce the bias and make the analysis process clearer and thus, more transparent.

The interviews were recorded for later reference, and notes were taken during the interview whenever possible. After the interview, all information deemed relevant to the research was digitised. Although it's common to try to validate data by triangulation, this was only done for the *communal goals* as these are discussed by individuals in group meetings, making it necessary for these to be identical in a community. Other answers relate to personal opinions and thus cannot be triangulated in any sensible way. Surveys were not recorded and transcribed; instead, the answers were documented in the survey form.

As such qualitative research is subject to a limited number of samples, or case studies, the possibility to generalise the results becomes an issue. To counter this issue, the context of the interviews and notable similarities and differences between case studies was noted. Miscellaneous observations were also noted down; e.g., perceived mental state, living environment, exaggerations, etc. This context was stored as metadata for all interviews.

The presentation of qualitative research is often difficult because of the sheer volume of data. Consequently, qualitative results often consist of narratives that rely on the reader's trust in the methods used. To counter this problem, all raw digitised data was presented as a separate file to the main document for the reader to revise if necessary.

## 4.5 Phase 1: Finding KPIs

KPIs were found through several methods: Firstly, a literature review was done to get a general idea of criteria that should be satisfied when developing KPIs, as well as existing indicators already used in development projects, and frameworks to categorise the different indicators. This literature review also consisted of looking at existing monitoring indicators already developed by PMR. Indicators found

were critically assessed so they maintain relevance to the development work done by PMR. Secondly, through the assessment of different stakeholder's opinions on their needs, values, and goals, KPIs were derived by looking at how often stakeholders would mention these opinions.

### **4.5.1 Selection of interviewees**

Two types of interviews were selected for this research, individual and focussed group interviews:

1. Individual interviews: This method of interviewing consists of interviewing an individual to research his or her views, experiences, beliefs, or motivations about a certain topic. These interviews were done in a semi-structured way, meaning that the interview consists of key questions that lead to a certain subject of interest which the interviewee and interviewer can discuss about to reach more in-depth responses (Gill et al., 2008). Contrary to a structured interview, a semi-structured interview allows for the elaboration of answers, which was deemed important for this research as the formulation of KPIs is a process of discovery which in some cases requires abstract thought – which could not be expected from an individual without previous knowledge of the question.  
One must keep in mind that in some cases, the interviews were not completely individual. Instead, family members or friends would sometimes be in the same area and join the interview. Additional, valuable, input was attained from the additional interviewees. For cases where there were more than two people, it was first asked if the interview could be done elsewhere, without the company, or the interview was deemed a focussed group discussion.
2. Focussed group discussions: This type of semi-structured discussion has a lot in common with less structured individual interviews (Gill et al., 2008). However, a focus group is a monitored discussion about a certain topic which is guided, monitored, and recorded by a moderator. Such discussions are useful to research collective views, experiences, and beliefs; as it is based on group interaction (Kitzinger, 1995). Group discussions are most adequate for open ended questions which can lead to discussion in the group.

Farmers, which represent a common family, were chosen based on their availability and on who the project coordinators deemed interesting to interview. It was not deemed necessary for interviewees to correspond to the study area, as more opinions from different areas is preferable to opinions limited to the study area. Although the choice was thus based on the subjective preference of the coordinator, trust was placed on the coordinators as it was assumed that they know the area and its people best. In the case that there was a clear preference of a type of family chosen by the coordinator (e.g. only families which have won contests or have an extremely positive view on the organisation), the coordinator was asked to demonstrate a case different to his preference. Trusting and becoming well acquainted with the coordinators, is thought to ease and increase the success rate of a request to visit other families to those preferred by the coordinator.

Local authorities were also interviewed as these individuals are seen as an important source of issues that play at the communal level. According to a case in Zimbabwe described by Bernard Manyena (2006), local authorities are close to community pressures and as a result are more prone to think in the long-term. Furthermore, the United Nations Conference on Environment and Development (1993), also promotes the involvement of local authorities in fulfilling the organisation's objectives as local authorities are "*the level of governance closest to the people*" and "*play a vital role in educating, mobilizing and responding to the public to promote sustainable development*".

PMR field coordinators were interviewed as these individuals have visited and analysed many families' households and properties, as well as communal activities. The coordinators are also closely involved with PMR and its methodology, making them adequate stakeholders to discuss indicators with.

Lastly, the monthly PMR meeting was used as an informal focus group type of interview. In such meetings most members of PMR are present, including field coordinators from different areas. PMR staff has much experience in different communities and thus is seen as a valuable source of information. Although it would be preferable to select the group – making it varied to get as many opinions as possible, or homogenous to exploit shared experiences – this pre-existing group is counted as a “naturally occurring group” according to Kitzinger (1995). A naturally occurring group was deemed practical for this research as it reduces the logistics needed to assemble a meeting and does not take more time from the participants than needed.

This non-random, systematic sampling method was chosen to select groups of people which possess characteristics which are relevant to this study, as suggested by Mays and Pope (1995).

In total, ten individual interviews and one focussed group discussion were done. Individual interviews were done with five farmers, two communal presidents, one municipality civil servant, two PMR coordinators. Of these respondents, all except for one farmer came from Huanquite. The other farmer was visiting the office and came from Ccochacochayoc, Challabamba. The focussed group discussion, on the other hand, took place in the office with PMR staff. This was a relatively unorganised discussion as many things were discussed at the same time. However, valuable information came from this discussion.

#### **4.5.2 Interview design**

The interview, in whichever form it takes place, is meant in principle to understand what communities need, want, or expect from an NGO to promote or add value to during a development project. I.e. understanding what a development project should do to perform well according to the communities’ inhabitants. To compartmentalise the results for analytical clarity and to lead the interview in an orderly fashion, the differentiation between PESHE values was used as a framework.

Following the guidelines of Gill et al. (2008), the design of the interview questions was done so that questions would yield as much useful information as possible. Besides the initial questions for documentation purposes, questions were open-ended, understandable, and neutral. To build confidence and put the interviewees at ease, the interview was built so that the questions start relatively easy and gradually progress to more difficult topics; as advised by Britten (1995).

Interviews started with questions regarding social value, followed by human value. These subjects are deemed adequate to start with as they are related to each other and regard the interviewee’s social relationship to others, their personal inherent capabilities, ambitions, self-esteem, etc. – subjects which are relatively easy to discuss as they consider themselves. Following these subjects, the interview changed to the theme of ecological value. The environment and its resources are of utmost importance for most individuals in the communities as many live from the land. Thus, these questions were considered relatively easy to answer as it directly relates to the services provided by the environment and how the interviewee would like a project to assist in promoting these services. Next, the productive value became the subject of discussion. It’s was expected that in general, the interviewee understands his current assets and how a development project can help in improving, increasing, and promoting new physical assets. The subject of economic value was planned as last subject as it is a sensitive subject regarding the clearer subject of the economic situation of the individual – a subject that needs trust to explore and an openness of the interviewee to collect honest answers.

Focussed group discussions took place in locations discussed beforehand. Based on the guidelines set by Kitzinger (1995), when possible, sessions took place in a comfortable setting, with the group sat in a circle to promote equality, and ideally with available refreshments. The planned maximum time for

such a discussion was of one and a half hour. At the beginning of the discussion, it was clearly stated that the aim of such a gathering is the healthy discussion between the participants. An interventionist style of moderation was held to actively promote discussion and maximise the efficiency of the collective conversation.

As different stakeholders have different levels of knowledge, the extraction of KPIs from stakeholders occurred in different ways. Directly asking rural families for indicators would require the explanation of abstract concepts such as PESHE values; while PMR staff is already well acquainted with the development of indicators. Thus, whenever the stakeholder is not knowledgeable on the field of indicator development, KPIs will be derived through an indirect way. This indirect method of deriving interests and needs which could be transformed into KPIs, consisted of listening to the stories that the people tell which were guided by key questions. E.g. if a farmer says that a lack of market access is preventing economic growth, an indicator related to this story is the degree of market access that a community has and the importance of economic growth.

The open questions asked during the interview were designed to be simple and possible to answer without an explanation of the different types of values. In general, the questions for all values can be divided into three categories. These categories are based on McGregor et al. (2009) and the Texas Education Agency (2013).

1. Needs: These questions relate to things that the interviewee sees as necessary and essential to maintain or improve their livelihoods and the community.
2. Values: Concepts, attitudes, activities, beliefs, and feelings that are most important to the individual or community.
3. Goals: Things planned to do in the future, usually to improve the individual or community's position.

The questioning process for the *needs* was inspired by the Global Person Generated Index method developed by Camfield and Ruta (2007), and consists of asking interviewees to nominate up to five things they need regarding the aforementioned values. A maximum of five elements was held to (1) reduce the amount of collected data, and (2) focus on the essential elements. If the interviewee nominated less than five things after motivation to mention more, the interview was continued with less nominations. Yet, instead of asking directly to nominate five things, the question was posed in a more open manner to give the interviewee the autonomy to decide themselves which things they find most interesting, without having to force themselves to mention elements which aren't deemed as important. However, as in some cases the interviewees would not feel motivated to mention more than one thing, follow-up questions were asked to motivate the mention of more elements.

The questioning process for the *values* and *goals* was more straight-forward. In short, the most important values at individual and communal level were asked, as well as the reason why these values are important. Regarding *goals*, the short- and long-term goals were questioned at individual and communal level, followed by enquiring which obstacles stands between the actor and the goal. The specific list of questions asked are shown in Annex I. It's most important to bring the message of the question across instead of dictating the question literally.

### **4.5.3 KPI criteria**

Before selecting KPIs, it's important to clearly identify the goals of the research and to have a framework on which to base the selection. Criteria should also be defined clearly, be understandable to all stakeholders, unambiguous, practical and nonbiased (US EPA, 1996). The framework explained in this section is based on criteria which KPIs should meet. This is done to have a standardised and

transparent method of the selection. Some criteria are based on literature, while others are based on practical preferences set by stakeholders which will use the KPIs.

For the development of custom and standard performance indicators, the United States Department of Agriculture (USDA) (2013) recommends that indicators meet the following criteria:

1. Direct: The relevant result should be measured exactly, as closely as possible.
2. Objective: No doubt should be possible on how to interpret or measure the indicator. What is being and how it's measured should be unambiguous and precise.
3. Adequate: All elements of a result should be sufficiently captured by the indicator.
4. Practical: The data needed for the indicator should be possible to obtain in a timely and efficient manner.
5. Limited: The number of indicators should be maintained at a necessary minimum.
6. Realistic: Collecting data for the indicators shouldn't need too many project resources.

The US EPA (1996) has a more specific set of criteria to select indicators. Firstly, the US EPA differentiates between five main criteria, and then subdivides these criteria into smaller criteria.

1. Validity: which dictates that criteria should be of social and environmental relevance, appropriate scale, integration of multiple impacts, representative, and sensitivity
2. Interpretability: which consists of criteria needing to be interpretable and on there having to be a trend evaluation.
3. Timeliness: which dictates that criteria should be timely/anticipatory.
4. Understandability: which dictates that criteria should be understandable, documented, and consistent over time.
5. Cost consideration: meaning that criteria should be cost effective, measurable, have a minimal environmental impact, and data should be available or acquirable.

Besides the criteria mentioned above, *importance among stakeholders* (shortened to *importance*) was created to consider the frequency indicators were mentioned with during the interviews. This is deemed the most important criterium as it's in the research's interest to heavily consider the relative importance stakeholders have towards certain subjects.

According to US EPA (1996), criteria can be used to rank indicators so as to select the most important ones. A common technique, the weighted numeric index, consists of adding a weight to every criterion which denotes its relative importance. Then, ranking the indicators based on how high they score considering the accumulative weight of all fulfilled criteria. Two common numeric index approaches are:

The additive model, which equalizes the influence of all elements of the equation (Equation 1):

$$Score = (S_1 * W_1) + (S_2 * W_2) + \dots + (S_n * W_n) \tag{Equation 1}$$

Where: S = Score assigned to an indicator for a certain criterion  
 W = Weight allotted to the criterion

The multiplicative model, which emphasizes differences among factors (Equation 2):

$$Score = (S_1 * W_1) * (S_2 * W_2) * \dots * (S_n * W_n) \tag{Equation 2}$$

#### 4.5.4 Selection of KPIs

Every one of the PESHE values was divided in five different subcategories. The subcategories themselves were mostly derived from literature, but in some cases also from interviews if a certain subject would be mentioned frequently and not yet be accounted for in the literature. Per subcategory, three key indicators (i.e. questions) were selected following the method mentioned below. This assures that only the most qualified indicators are asked during the survey, and that the survey is kept relatively short. In total, 75 questions (5 values, 5 subcategories, 3 questions;  $5*4*3=75$ ) were created for the survey needed in phase 2.

The final selection of the KPIs – including their wording and specific goal – was based on criteria described in above. Of the criteria mentioned, the following five were selected to evaluate the indicators: *objectivity*, *validity*, *interpretability*, *understandability*, and *importance*. Not criteria mentioned in the previous section were selected to simplify the process, as some of the criteria were not deemed relevant for the evaluation, and because some criteria share too many similarities. Furthermore, criteria like practicality and cost consideration are important but are assumed of all chosen indicators; i.e. practicality and costs do not differ for the different indicators as all indicators are based on questions asked during interviews.

For the *importance* criterium, the number of times a subject related to a sub-criterium was mentioned, was counted as follows: Per interview, every mention of a subject was counted only once; independent of how often an interviewee would repeat something previously said. If certain mentions could be attributed to more than one subcategory, all relevant subcategories would be noted.

Per proposed indicator, a score from 1 to 5 was given for every one of the five selected criteria. The score itself was chosen by the researcher, based on how many of the sub-criteria are fulfilled by the indicator. The sub-criteria are depicted in Annex II. It's also important to evaluate how *well* an indicator fulfils the different sub-criteria per main criterion. This is relatively subjective to the researcher's opinion but is necessary as there are different degrees to which an indicator can fulfil a sub-criterion. E.g. one of the sub-criteria for the *validity* criterion is "Social and Environmental Relevance". This sub-criterion is open to interpretation, making the process inherently subjective. For the *importance* criterion, the score was given per subcategory, instead of per indicator. This was done as the indicators themselves are very specific and improbable to be mentioned literally by the stakeholders. For the *importance* criteria, Table 2 was used to select the score – e.g. if among all interviews a subcategory was mentioned 1, 2, 3, or 4 times, a score of 2 was given to that subcategory.

Table 2: Score per times mentioned of a certain subject.

Mentions	Score
0	1
1+4	2
5+8	3
9+12	4
13+	5

After a score was attributed for all criteria for all indicators, the final score was calculated using the additive model (Equation 1). This final score allows for the comparison between indicators and leads to the indicators with the highest scores being the most adequate. This model was used as it's preferred that the influence of all criteria is equalised. This equation requires weights to be attributed per criterion. The lowest weight (0.1) was attributed to *interpretability* as – although important for the researcher – all indicators were initially formulated to be interpretable by the researcher. Still, there are some indicators which are more difficult to interpret due to possible inherent ambiguities in the subject matter; making the criterion necessary to include in the assessment of indicators. The highest

weight (0.3) was attributed to *importance among stakeholders* as a principal aspect of research is the focus on stakeholders' opinions. Furthermore, a score of 0.2 was attributed to all other criteria; resulting in a sum of weights of 1.

Another important aspect to keep in mind when selecting KPIs is the fact that sustainable development projects are multidimensional. Thus, performance assessment should not be based on one unique sustainability indicator; instead, Callens and Tyteca (1999) and US EPA (1996) suggest to use indicators which are composed of more than two partial indicators that focus on different parts of a common theme. E.g. instead of having one indicator for economic value, economic value should be measured through different indicators such as income, outcome, and debt.

There are many indicators which make use of relatively complicated formulas. Indicators used by this study do not make use of such methods as it's preferable that the indicators were measurable in-field and by anyone who can read the questionnaire.

## **4.6 Phase 2: Assessment of performance**

The second phase consists of a survey in which the selected KPIs were used to measure the PESHE values in PMR and non-PMR villages. These responses were then analysed and for the bulk of the quantitative results of this research.

### **4.6.1 Selection of respondents**

For this phase it's important for there to be as many respondents as possible to give a statistically more significant result. Thus, respondents were chosen based on availability for both PMR and non-PMR communities. Five respondents were chosen per community as this was the maximum amount that time allowed in most cases. These respondents came from different social statuses and levels of success within the PMR contexts.

In Pichigua, two PMR-communities and one non-PMR community were selected based on their bio-physical comparability. While in Huanquite, two PMR and two non-PMR communities were selected as these were also comparable. Per community, a total of five surveys were realised. Thus, 15 surveys were done in Pichigua and 20 in Huanquite.

### **4.6.2 Survey design**

The survey was designed to be quick and direct in collecting data. As such, questions are short and need minimal or no context explained beforehand. The pilot surveys greatly improved the understandability of the questions. Most questions make use of a scale of five possible answers. The answers range from very negative (1) to very positive (5), with neutral in the middle (3). The formulation of these answers depends on the question; e.g. some answers are related to relative quantity, other to frequency, etc. In one case, the question consisted on having the respondent answer which home improvements he or she had out of a selection of five possible answers. In this case, every answer given added one point. I.e. if the respondent only had one of the five improvements a score of one was attributed; while having all five improvements yielded a score of five.

The survey starts with the documentation of the person, production type, basic terrain information, and questions regarding current and past experiences with organisations and what these organisations did in the area. Afterwards, the bulk of the survey starts with questions related to productive value, followed by economic, social, human, and ecological value. The final survey form is shown in Annex III. The version of the survey shown in the annex contains references for the questions. However, all questions were principally created using information from the interviews, afterwards sources were

searched for additional validity of the question. If no reference is mentioned, the only source is the interviews.

### ***4.6.3 Calculation of performance***

After all data was collected for the different indicators, these data were transformed to different scores needed for the analysis of the data using the additive model (Equation 1). Firstly, a weight of  $1/3$  was attributed per indicator to give all indicators the same weight per subcategory as there are three indicators per subcategory. This weight symbolises the importance of the indicator as perceived by the analyst. Weights per subcategory should always add-up to 1.

With the weights defined, a score is calculated per indicator by multiplying the value acquired during the survey (1-5) with the weight. This is done to standardise all results and to allow for the agglomeration of data needed for the comprehensive visualisation of the data. Lastly, a total score was calculated per subcategory by summing the different scores. This calculation allows for the comparison between individuals and, if averaged among individuals, between communities.

## 5 RESULTS

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Following the method described in the previous chapter, fieldwork was done and the following results were gathered. This chapter starts by looking at the changes done to the interviews and surveys as a result of the testing phase. Then, the different subcategories derived from literature and the interviews are elucidated. These subcategories form the basis of the key performance indicators which were selected using the different criteria described in section. Then, the performance assessment is depicted; wherein communities and genders are compared in different levels of abstraction.

### 5.1 Interview and survey improvements

During the pilot interviews, the process and the questionnaire was improved to better suit the stakeholders' level of understanding. Initially, the interview consisted of asking the interviewee for five aspects of every PESHE value and then selecting the three most important ones. This was simplified, as seen in Annex I, as it became clear during the pilots that many people could not name more than three aspects, and afterwards did not know which they found most important or based their choice on no clear criteria. In later interviews, the relative importance was not asked directly. Instead, the aspect that was most talked about was assumed to be most important and asked if this was the case.

Most farmers needed additional explanation regarding e.g. "the social aspect of your life". Thus, it was decided to give examples and a general, very short, explanation of what was meant with this, using examples. If the interviewee still did not understand what was meant, more explanation was given. The given examples were relatively broad as with more specific examples, some interviewees would repeat the example and use it as their own. Although it could not be said with any certainty if these answers were copies of the examples of their own opinion, a broader example reduced the possibility for this issue.

The question regarding which values were most important for the community was not posed to most farmers, as the pilot interviews showed that peasant farmers would usually not know what to answer. Contrariwise, community presidents and municipality staff would generally respond that it logically differs per person but would then generalise which values were important in the communities based on their experience.

Focussing on the surveys, most improvements dealt with the wording and possible additional explanations needed to make the question clearer for farmers. Various questions were initially written in a complicated manner, which might be deemed more complete from a research point of view, but was too confusing for most respondents to understand. In such cases, a simple version of the question was preferred as it's more important to be understood in such a case – as long as the essence of the question is held.

### 5.2 Interview results: selected KPIs

Based on interviews with the different stakeholders (Annex IV) and literature, the following subcategories were created to subdivide PESHE values. Furthermore, factors that can influence the different subcategories are mentioned. These selected KPIs form the basis to answering the RQ1 regarding which KPIs are deemed most important by stakeholders.

#### 5.2.1 *Productive value*

Indicators for productive value can be categorised in five different types. These categories are based on what is deemed important for productive value to entail.

1. Yield: the produce of a family created by investing labour in productive means. Such yields can be direct, such as agricultural produce and animal produce, but also crafted, such as artisanal products.
2. Quality: the degree of excellence of the yield. Quality can be maintained at a high standard by using good materials, taking good care of the products, having expertise in the creation of the yield, and producing the least amount of subpar produce.
3. Practices: the type of agricultural practices applied by the farmer. Such practices can help increase yield and quality of the product created by the family.
4. Employment: these indicators relate to the stability, availability and satisfaction with labour force needed to maintain or increase the productive value. Employment influences yield and quality as well as the possible practices a farmer can do.
5. Territory and assets: the productive capacity of territory and the availability and possibility to access assets needed for the production value. This influences yield, quality and the types of techniques that can be applied on the field.

### **5.2.2 Economic value**

Indicators for economic value can be categorised in five different types. These categories are based on the main types of flows of money that are relevant for families in general, and on the ease of accessibility to acquire new assets.

1. Income: the measure of revenue earned by the family through the sales of goods or services. These indicators relate to the actual income of the family as well as their satisfaction with the income. Income is influenced by yield, quality and employment.
2. Debt and loans: although loans can help in investments, these can also lead to debts which can severely handicap a family in their decision-making process and impede growth. These indicators relate to the amount of debt, dependency on them and reliance on loans of a family. Debts and how the families deal with them are influenced by the income and expenses of families as well as their economic education.
3. Expenses: for a family to improve their lives, it's also necessary to spend money. These indicators relate to expenses necessary for the family, the spread and distribution of these expenses. Expenses are mainly influenced by agricultural practices, debts, education, and facility development.
4. Savings: savings can help a family in the times of need, thus maintaining sufficient funds stored is preferable to having no savings. These indicators relate to the amount, stability, and importance of savings. Savings are mainly influenced by income, expenses, and economic education.
5. Accessibility: market accessibility is important for the exchange of goods and services. These indicators relate to the accessibility of markets for families to buy and sell products. Accessibility is influenced by the infrastructure surrounding the community.

### **5.2.3 Social value**

Social value is by definition difficult to measure; social networks, the strength and type of relationships in these networks, the difference in definition of social capital, add to the difficulty of creating indicators for social capital (Grootaert, 1998). Thus, a framework is needed to give clarity in how this research looks at social value and how it will be assessed. This research follows and adds on to the framework described by Samuel et al. (2014), which in turn was inspired by Montaña and Kasprzyk (2015).

1. Trustworthiness: Trust is the foundation of all relationships (Samuel et al., 2014). Trusting neighbours creates an arena needed to exchange resources freely (Coleman, 1988) and to improve collective efficiency (Kawachi and Berkman, 2000). According to theory, to foster

trust, it's important for a community to be homogenous and/or to have a shared history (Szreter and Woolcock, 2004) and to have frequent interaction (Li et al., 2005). Indicators related to this aspect relate to feelings of trust amongst individuals in the community, between communities, and relevant institutions.

2. Neighbourly reciprocity: the expectation of social support due to neighbourly reciprocity is important for the functioning of a group of people and for the assuredness of individuals (Bernosky de Flores, 2010; Bourdieu, 1986; House et al., 2003). Indicators related to this aspect relate to willingness to help and be helped by others. This is influenced by trustworthiness, household composition, available assets to help another, and dominant norms (Perren et al., 2004).
3. Sense of community: this aspect is relatively vague compared to the previous two. It has to do with the caring between individuals which results in a feeling of group identity (McMillan and Chavis, 1986) and a sense of belonging (Bourdieu, 1986). A sense of community also results in individuals sticking to the social norms and thus increasing cohesion in the community – even if this cohesion is deemed negative for health, environment or other communities (Etzioni, 2000). Indicators for this aspect are related to the subjective feeling of being in a good place to live, attachment to their community, influence on the community, integration and fulfilment of needs, and an emotional connection to the community.
4. Shared norms: these found the basis of commonly-held beliefs about the behaviour that is to be expected from others (Knight, 1992). Being able to predict, to a certain degree, how others are expected to act in common social situations allows for a common understanding among actors on what is right and wrong to expect from others (Knight, 1998). This leads to actors being able to have an expectation on the likelihood that others will act according to the shared social norms. This is influenced by the homogeneity of the community, social control mechanisms assuring shared norms, spontaneous and informal random creation of norms, and shared history (Helbing et al., 2014).
5. Equality of opportunities: although most literature discusses inequality between men and women, the concepts can be extrapolated to other minority groups (Miller, 1984). Inequalities created by a lack of equal opportunities result in inherent differences in power between groups of people, which lead to an unequal distribution of resources such as income, time, and information (Mathur-Helm, 2005). Such inequality can also manifest in a more emotional level; i.e. feelings of rejection, inferiority, disconnectedness with their community (Miller, 1984). Both types of effects of inequality on individuals can severely hamper self-development. Furthermore, equality of opportunity is positively correlated to job satisfaction and perceptions of fairness (Witt, 1991).

### **5.2.4 Human value**

Human value can be divided into five components which focus on the most important aspects of human value.

1. Health: this component focusses on the essential elements that keep humans alive. A development project's primary concern before anything else should relate to remedying poor health and bad safety (Lindahl et al., 2015). Indicators related to this component relate to personal health and hygiene, nutrition, etc. These are influenced by health education, accessibility to health services, and external factors which might decrease or increase the probability of certain diseases.
2. Facility development: this component looks at housing and the relationship between human capital and the facility in which a person lives. Underdeveloped countries focus on improving the healthy living conditions of houses as it is seen as a determinant of reducing crises scenarios. Indicators related to this component relate to living conditions, building quality,

available facilities, comfort in own home, etc. This subcategory is influenced by income, expenses, savings, and education on home improvement.

3. Education: this component looks at the capacity and skills of individuals which allow them to progress. Investing in education and skill building is both highly productive and it also yields increasing returns, making it of utmost importance for the development of an individual (Teixeira and Tavares-Lehmann, 2014). Opportunity recognition and exploitation is important for the entrepreneurial development of an individual (Kuckertz et al., 2017). Indicators related to his component have to do with education level, possibilities for further education, availability and quality of trainings, etc. Education is influenced by the availability of education services, parents' education level, perceived importance of education and income.
4. Opportunity recognition and exploitation: opportunity is commonly described by combining three elements: (1) potential economic value, (2) newness, and (3) perceived desirability (Baron, 2006). This general definition is not completely relevant in the rural community setting of this research; meaning that not all three elements must be fulfilled in a rural environment for an action to be deemed as *opportunity recognition*. I.e. some families might recognise an opportunity which might not be new (e.g. inspired by another family) but can still be potentially economically valuable. Furthermore, the recognition of opportunity has to do with the process of identifying opportunities and acting upon them, which is a critical part of the entrepreneurship process. However, one cannot expect all individuals to act in an entrepreneurial fashion (Nicolaou et al., 2009). Yet, with capacity building, opportunity recognition can be stimulated in communities.
5. Self-efficacy: this is commonly defined as an individual's belief in his or her own abilities and how these can deal with different situations. Self-efficacy is related to confidence and how an individual can control his or her own motivation, social environment, and behaviour. (Bandura, 1982)

### 5.2.5 Ecological value

The US EPA (1996) and Niemeijer and de Groot (2008), use a framework commonly used for the development of ecological indicators; namely, the Pressure-State-Response (PSR) framework (Figure 7). This framework ties together the relationship between (1) human pressure on the environment, (2) the environmental state, and (3) society's response to a changing environment. From these three aspects, five types of indicators are distinguished in this research. The distinction between these types of environmental indicators can be used to categorise different indicators when selecting them. These categories are mainly influenced by education and understanding of the importance of ecosystems and the sustainable management of these.

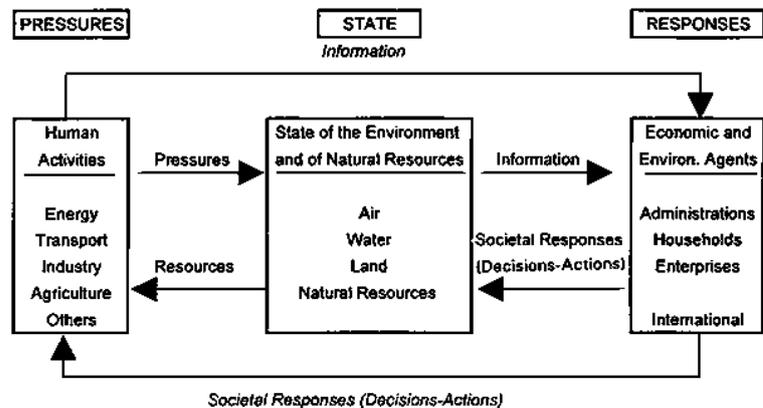


Figure 7: PSR framework. Taken from US EPA (1996).

1. Environmental pressure: these describe the exerted pressure on the environment, including quality and quantity of resources, by human activities. Such pressures can be further subdivided into direct pressures (pressures exercised directly on the environment) and indirect pressures (background indicators that reflect human actions that result in direct environmental pressures).

2. State of the environment: this is related to the maintenance of the “natural” state of the environment and the perception individuals have on the pristineness of their surroundings.
3. Social response: these describe the collective and individual actions that humans might do to mitigate, halt, reverse, adapt to or prevent environmental damage.
4. Resources: these describe the quantity and quality of natural resources, both in stock and used. These indicators relate to the availability of resources, the dependency of individuals on resources and the sustainable management of such finite resources.
5. Resilience: this relates to the preparedness and perception towards climate change. These types of indicators are not directly related to the PSR framework but can be seen as a currently important aspect of the state of the environment.

### 5.3 KPI criteria

Once the interviews had taken place, the different KPIs derived from these interviews could be evaluated by means of the criteria mentioned in section 4.5.4 *Selection of KPIs*. Annex V depicts the different scores for the criteria for *validity*, *interpretability*, *objectivity*, *understandability* and *importance*. The final score, calculated using Equation 1, is also shown. The subcategories selected per value and the frequency these were mentioned by the different stakeholders are depicted in Table 3.

First looking at *importance*, a substantial interest in a certain element is defined as those subcategories with 10 or more mentions and a lesser interest as those with 5 or less mentions; Table 3 shows that for productive value, there is a clear interest for yield, practices, and territory and assets, while employment isn't seen as very interesting by most. For economic value, income and accessibility were mentioned most frequently, while savings was mentioned the least of all subcategories. For social value, social participation was most important among interviewees, followed by sense of community. Regarding human value, health and safety, facility development and education are all seen as very important. Lastly, focussing on ecological value, pressure, state of environment, and social response are all deemed very important while there's less interest in resilience.

*Table 3: Count of subcategory mentions. Subcategories mentioned more frequently are deemed more important by the stakeholders. Other subcategories which were not mentioned frequently enough and were not deemed important by literature were not selected for this research.*

Value	Subcategory	Mentions
<b>Productive</b>	Yield	11
	Quality	8
	Practices	13
	Employment	5
	Territory and Assets	11
<b>Economic</b>	Income	15
	Debt and loans	7
	Expenses	6
	Savings	2
	Connectivity	13
<b>Social</b>	Trustworthiness	8
	Social participation	11
	Sense of community	9
	Shared norms	8
	Equality of opportunities	6
<b>Human</b>	Health	12
	Facility development	10

	Education	14
	Opportunity availability and recognition	9
	Self-efficacy	8
<b>Ecological</b>	Pressures on the environment	10
	State of the environment	12
	Social response	11
	Resources	7
	Resilience	3

Based on the subcategories shown in Table 3 and further information mentioned in the interviews, the survey for phase 2 shown in Annex III was developed. The specific indicator questions can be found in this survey. The survey was translated to Spanish for fieldwork.

## 5.4 Survey results: performance assessment

Based on the surveys, the following results were obtained. First, different PMR and non-PMR communities are compared in order to answer RQ2a. Secondly, the difference in PESHE values are compared for men and women in order to answer RQ2b. Lastly, a more in-depth look is taken to explore the data further.

### 5.4.1 Comparing communities

Aggregating all responses per community yields the scores found in Figure 8-A, Figure 8-B and Table 4. Figure 8-A shows that Mamanoca, the only non-PMR community in Pichigua, generally performs worse compared to the PMR communities in all aspects. Although the economic value in Mamanoca is close to that in Chañi and the productive value of the former is relatively close to both PMR communities, Mamanoca performs worst on all values. On the other hand, Figure 8-B depicts the scores for the communities in Huanquite and shows a less stark difference between communities. However, both Marcura and Chanka which are the non-PMR communities, do have lower scores compared to the PMR communities for productive, ecological, and social value; for human value, Chanka and Coror score equally and Marcura scores lowest. Coror scores lowest for economic value, with both non-PMR communities occupying the middle places among the four communities.

Table 4: Performance assessment scores for all communities. Non-PMR communities are in red.

Community	Pichigua			Huanquite			
	Chañi	Ccahuaya	Mamanoca	Rocoto	Coror	Marcura	Chanka
<b>Productive</b>	3.6	3.7	3.2	3.8	3.8	3.3	3.4
<b>Economical</b>	2.9	3.3	2.8	3.1	2.8	3.0	2.9
<b>Social</b>	4.2	4.5	3.2	4.5	4.2	3.9	3.7
<b>Human</b>	3.9	4.2	3.0	4.0	3.7	3.2	3.7
<b>Ecological</b>	3.1	3.5	2.3	3.4	3.2	2.9	2.9

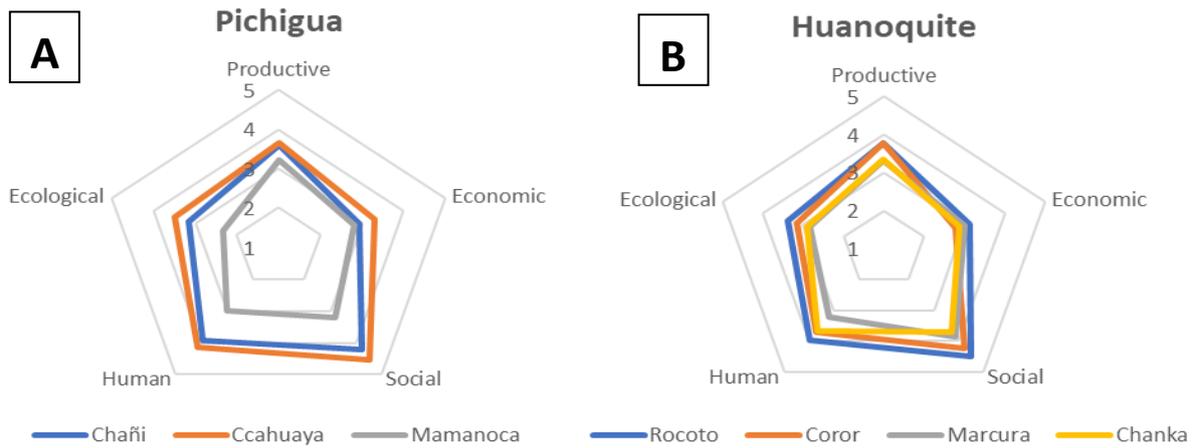


Figure 8: PESHE scores per community for Pichigua (A) and Huanoquite (B). Mamanoca, Marcura and Chanka are non-PMR communities.

Averaging the PMR and non-PMR communities per district yields Figure 9. This figure shows that, in average, non-PMR communities score lower than PMR communities. Both PMR sets score similarly for all PESHE values. Contrariwise, the non-PMR sets score significantly differently from each other. However, all averages score relatively similarly for the economic value, and to a lesser degree for the productive value. The scores for all sets depicted in Figure 9 can be found in Table 5.

### PMR vs. non-PMR per district

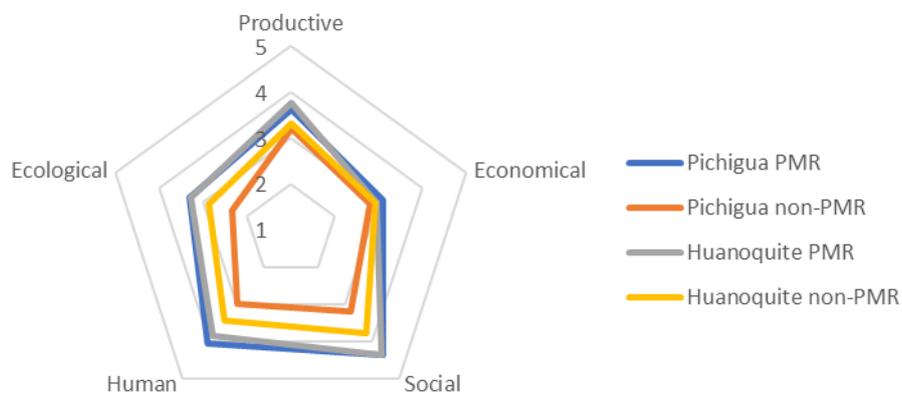


Figure 9: PESHE scores agglomerated based on the participation to PMR.

Table 5: Performance assessment scores for PMR and non-PMR communities. These values are depicted in Figure 9. Non-PMR communities are in red.

Type	Pichigua		Huanoquite	
	PMR	non-PMR	PMR	non-PMR
Productive	3.6	3.2	3.8	3.3
Economical	3.1	2.8	3.0	2.9
Social	4.4	3.2	4.4	3.8
Human	4.0	3.0	3.9	3.4
Ecological	3.3	2.3	3.3	2.9

### **5.4.2 Performance per indicator**

Figure 10 below consists of a combination of different images. Each image shows the average score among all individuals for a certain subcategory. These scores are subdivided into PMR and non-PMR for comparison. Starting with Figure 10-A, for productive value, PMR participants score higher (between 0.4 and 0.6) than non-PMR respondents – except for *territory and assets* for which non-PMR scores 0.1 points higher. Figure 10-B, for economic value, shows that PMR scores higher for *income* (0.6), *expenses* (0.3), and *connectivity* (0.1); for *savings* both score the same; while non-PMR scores higher for *debt and loans* (0.3). Figure 10-C, for social value, shows that PMR scores higher for all values. Increases in score range from 0.2 for *shared norms* to 1.1 for *trustworthiness*. Figure 10-D, for human value, shows that PMR scores higher for all values. Score increase varies between 0.4 for *health* and *self-efficacy*, and 1.1 for *education*. Lastly, Figure 10-E, for ecological value, again shows that PMR scores higher for all subcategories with scores ranging between 0.2 for *state of the environment* and 1.1 for *social response*. Scores corresponding to the subcategories and the difference between PMR and non-PMR, are found in Annex VI. This data shows that PMR scores better for most subcategories, and the difference is larger in values which are the main focus of the organisation (social, human and ecological value).

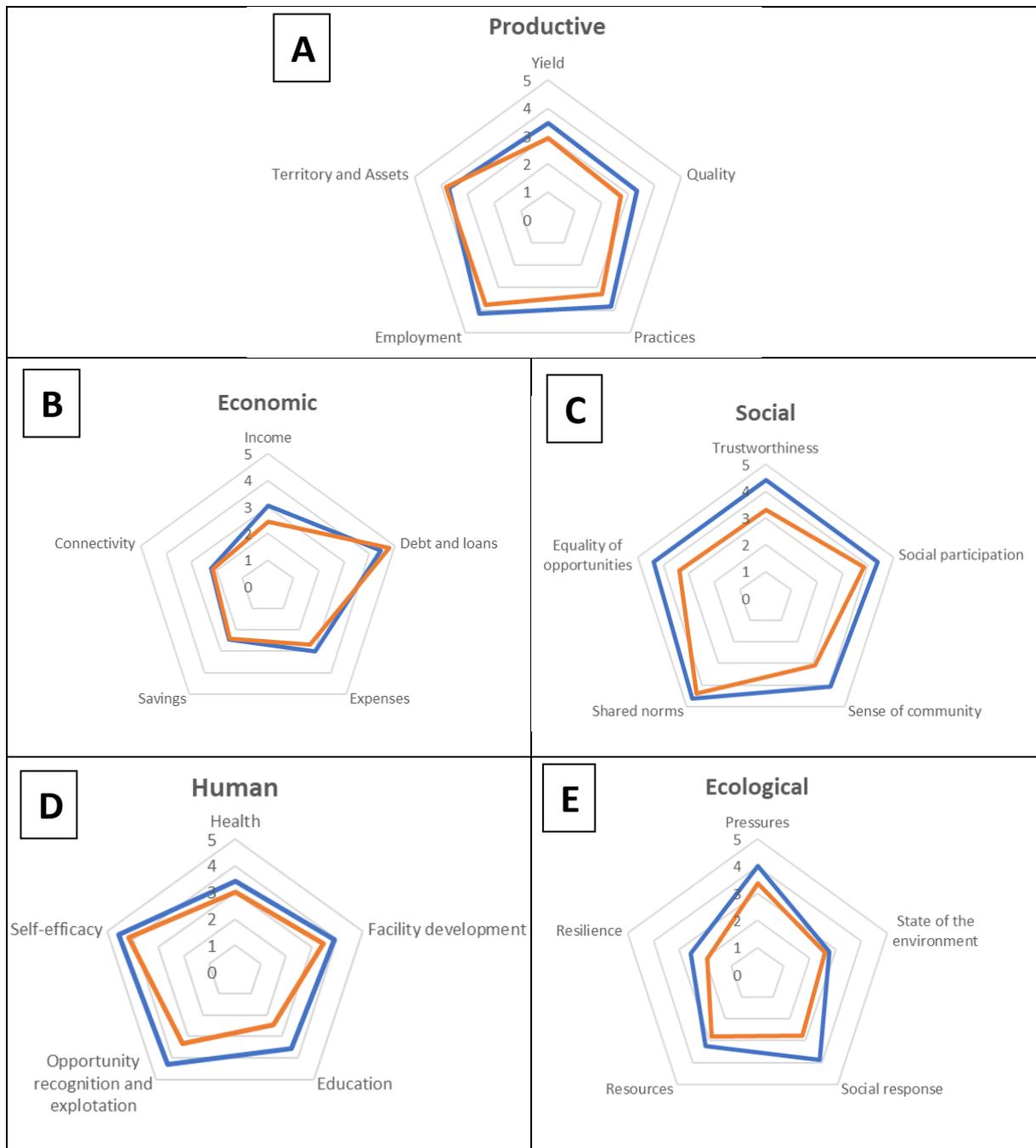


Figure 10: PESHE values per type of value. Blue corresponds to PMR communities, while orange corresponds to non-PMR communities.

### 5.4.3 Comparing genders

Figure 11 and Table 6 shows the average score for the measured genders across all assessed communities – without considering participation to PMR. Here, women score lower for all values. The difference between men and women for social, human and ecological value is 0.3, while it's 0.2 for productive and economic value.

In total 13 women and 22 men were surveyed. Of these 13 women, 3 correspond to PMR and 10 to non-PMR communities. For men, 17 correspond to PMR and 5 to non-PMR communities.

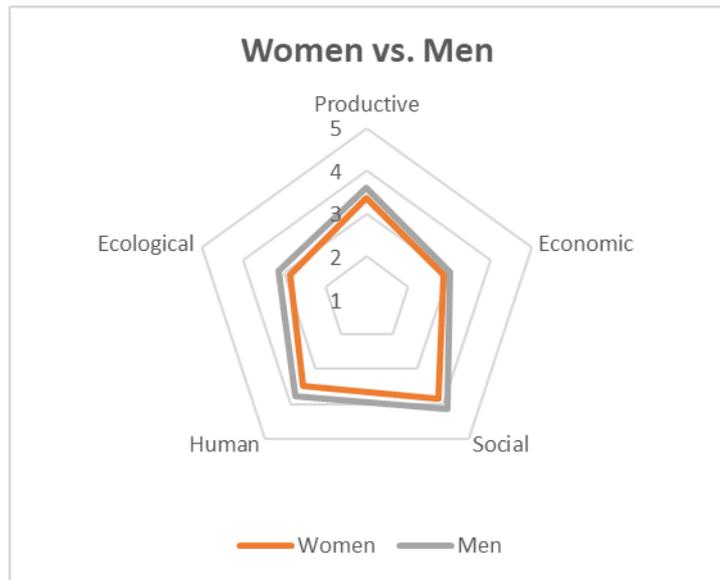


Figure 11: PESHE score comparison between women and men. Not taking into account PMR participation.

Aggregating data based on gender and participation to PMR yields Figure 12. This figure and Table 6 show an increase in all values, except economic, for all PMR participants. For economic value women both score the same (2.9), while male participants of PMR only slightly (+0.1) improve their score. Furthermore, focussing on the PMR participants: (1) men score higher than women for productive, economic, and ecological value, (2) both score equally for social value and (3) women score higher for human value. Looking at the non-PMR respondents: (1) men score higher for economic value, (2) both score equally for productive value, and (3) women score higher for social, human and ecological value. Although for non-PMR communities, women seem to score better in average, this is completely reversed after support from PMR.

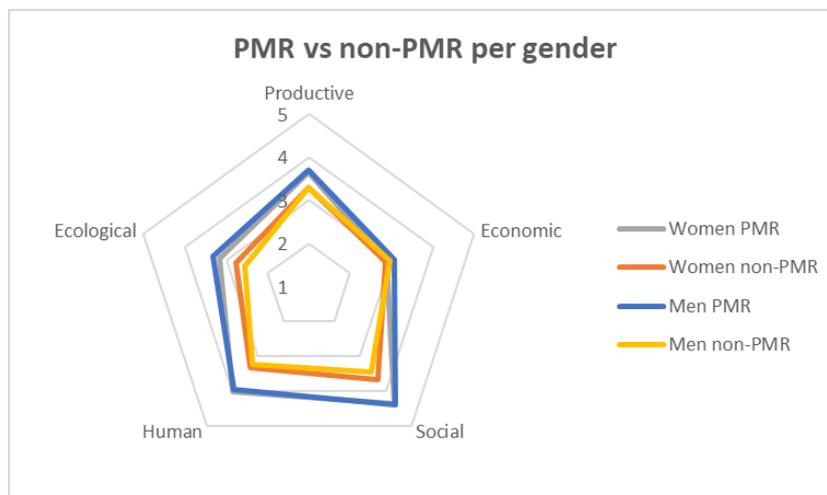


Figure 12: PESHE score comparison between women and men, separated into PMR and non-PMR respondents.

Table 6: PESHE scores for women and men, corresponding to Figure 11 and Figure 12.

			Women		Men	
	Women	Men	PMR	non-PMR	PMR	non-PMR
<b>Productive</b>	3.4	3.6	3.6	3.3	3.7	3.3
<b>Economic</b>	2.9	3.0	2.9	2.9	3.1	3.0
<b>Social</b>	3.8	4.2	4.4	3.7	4.4	3.4
<b>Human</b>	3.5	3.8	4.0	3.3	3.9	3.2
<b>Ecological</b>	2.9	3.1	3.2	2.8	3.3	2.5

## 6 DISCUSSION

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This section discusses all aspects of this research in depth. Firstly, both interview and survey results are discussed. Then, the methodology and datasets are discussed; starting with the interviewing and surveying methods, and followed by the pilots, the KPI criteria, the selection of respondents and the comparability of communities. Lastly, different recommendations are given which would improve further research. Throughout the recommendations, PMR is given recommendations on how to improve their functioning.

### 6.1 Results

#### 6.1.1 Interviews

During the interviews it becomes quite clear that there is a clear distinction between what people of different levels of education find most important. Relating the results to the UNECE framework described in section 2.1.1 *Key performance indicators*, shows that farmers are mostly focussed on immediate results and problems that affect their daily life (the *here and now*) – except for the education of their children (the *later*). This was not only clear by the responses given by the farmers, as short-term problems and solutions were mentioned the most, but also by field coordinators which talk about the prominent focus on immediacy within farmers (Interview 4). This phenomenon has also been confirmed by literature (Boussard and Petit, 1967; Wood, 2003). According to both papers, the main reason for the mentality of short-term gain in exchange for long-term loss is due to inherent conditions of uncertainty under the poor. Immediacy affects the results of this research as the KPIs were in part derived from the needs, values and goals mentioned by the farmers. As needs and goals can more clearly have a temporal aspect (i.e. short- and long-term needs and goals), the developed KPIs that use information from these responses can have a bias towards measuring short term elements of the different measured values. However, as not only farmers were interviewed and literature was consulted during the development of the KPIs, the effect of farmers' immediacy on the selected KPIs is deemed irrelevant.

On the other hand, individuals with higher education such as PMR field coordinators (Interview 4 and 9), teachers (Interview 1 and 7), and municipality staff (Pilot 5 and Interview 6), tend to have a better understanding of long-term phenomena and more abstract concepts (the *later* and *elsewhere*) – which is in line with the research by Bernard Manyena (2006) and the United Nations Conference on Environment and Development (1993). E.g. these individuals include into their needs, values and goals (1) the strengthening of communities and families by educating and orienting families in themes of interpersonal relationships, women rights, improved local education, and self-perception; (2) communal problems caused by machismo, alcoholism, domestic violence, and immediacy; (3) lack of education in adults which causes ecological and social problems as well as mismanagement of their economies; (4) lack of organisation between communities and organisations, causing an inefficiency in the use of resources available to improve the communities. No farmers referred to the *elsewhere*; showing the disconnect that exists between the farmers' lives and thinking outside of their community. For an explanation on the dichotomy made in this research between the terms *farmer* and *higher educated individuals*, please refer to *A note on terminology* on page iv before the Abstract.

Another difference between the needs expressed by stakeholders is related to the theory of need by Alderfer (1969) and Bradshaw's (1972) distinction of needs – both explained in 2.1.1 *Needs, values and goals*. Focussing on Alderfer's theory first, farmers primarily focus on *existence* needs (e.g. food, income, shelter, etc.) and in some cases also on *relatedness* needs (e.g. social interaction, participation, sense of community). Higher educated interviewees seem to focus on all types of needs, including *growth*. However, farmers also showed importance to one type of *growth* need. Namely, education. Looking into Bradshaw's distinction of needs, the most common types of needs that was expressed were *normative* and *comparative* needs. This is according to theory as such needs are relatively easy

to express. *Felt* needs, on the other hand, were normally not discussed by farmers. Higher educated interviewees did express these needs “in the name of the farmers”. E.g. no farmer discussed alcoholism or domestic violence, while municipality staff and PMR coordinators did. This is thought to be because for the latter group, these issues are not personal.

Table 3 shows that for productive value, the interviewees focus more on quantity than quality – contrary to the focus of PMR campaigns which explicitly aims at reducing the number of e.g. unproductive animals (Zeisser Polatsik and Tupayachi Mar, 2014). Also, the subject of improving their practices by installing irrigation systems, sowing a larger variety of crops, and reducing risk by buying animals is mentioned relatively frequently. Aspects related to employment weren’t mentioned as frequently, as most farms are run by the family and seldomly need external employees. However, the subject of national migrant work was relevant for several families as there weren’t sufficient employment possibilities in their communities. Lastly, territory and assets were an often-mentioned subject as in some regions (Lares, most notably) many families had land right issues. Also, soil fertility was a point of interest in many communities. Interviewees also frequently mentioned the lack of suitable farming equipment, impeding higher yields and better quality of their produce. For most interviewees it was relatively easy to talk about productive value as production is a central point of agricultural life. Another discussion point tied to Table 3, is the assumption that because stakeholders mention a certain thing frequently, it is thus “important”. This might not always be the case as they could be repeating slogans and ideas brought over by organisations and other social groups. Still, this assumption is deemed necessary for this research to make importance quantifiable and frequency of mentions is deemed an acceptable measure of importance.

Looking at economic value, the dichotomy between short- and long-term thinking becomes clear. Short-term economic concepts, such as income and connectivity are mentioned more frequently as these affect farmers the most in daily life. A lack of connectivity due to bad roads poses a great problem as it not only affects economic processes such as access to markets, but it also affects education, access to health facilities, and access to better employment possibilities. Thus, as is also the case with other subcategories, some subcategories can be placed within other values – blurring the distinction between subcategories. This does not affect the interpretation of the results as long as a clear distinction is made regarding how the subcategory is viewed in the research (i.e. in which value is the subcategory placed). For most interviewees, talking about economic value was relatively easy as it’s a main issue of importance for most people to get out of the poverty dominant in the study areas.

Social participation was the most frequently mentioned subcategory in social value, as working together as a community is deemed important. Importance attributed to being well organised was rather prominent in the communities. This is also closely tied to a sense of community and shared norms which was also mentioned relatively frequently. Furthermore, interviewees spoke about the importance of being able to trust those in their communities and the importance of sharing norms. Trust between parties is essential for growth and economic development (Knack and Keefer, 1997; Putnam et al., 1994; Schmidt, 2003), linking both economic and social value. Thus, focussing on social value not only strengthens the links between families and communities, but it also has a tangible effect on the economic situation and general development of communities as it “can improve the efficiency of society by facilitating coordinated actions” (Putnam et al., 1994, p. 167). The theme of equal opportunities most mentioned by interviewees with a higher level of education (Pilot 5 and Interview 5). Amongst farmers, men generally did not mention anything related to differences in opportunity between different echelons in society. Women however did mention such issues more frequently. E.g. women not having a voice in communal meetings (Pilot 4 and Interview 8), machismo in communities causing inequality for women (Pilot 5). Generally, interviewees spoke less about social value as it’s a relatively abstract concept.

Regarding human value, subcategories related to long-term thinking were more prominent compared to other values. E.g. education and facility development. Most farmers hope their children become professionals, for their children's future as well as the possibility of their children taking care of them later in life. It's unclear if farmers are interested in the improvement of their living conditions as an immediate reaction to their current condition, as a way to assure they have a more comfortable future, or both. Farmers' comments did not give a clear indication on the intention. Among others, comments included "there isn't good sanitary infrastructure" (Interview 7), "there is a lack of maintenance of sanitary services and no drinking water at home" (Interview 10), and "improving houses is important" (Interview 2). Both facility development and self-efficacy are focusses of PMR, and the language used by farmers gave hints of PMR's influence. However, self-efficacy was the least mentioned human value subcategory – it was mostly mentioned by interviewees with higher levels of education. Furthermore, personal health and the accessibility to health services was an often-mentioned subject. This is intuitive as it directly relates to the wellbeing of families and because of the clear lack of such services in the study areas. Lastly, opportunity availability and recognition were mostly mentioned due to an understanding of the lack of opportunities in the interviewees' environment. The opportunities farmers generally desired had to do with (1) leaving or having their children leave to bigger cities in search of better education and jobs (Pilot 5, Interview 5, 8, and 10), and (2) better local education (Interview 1, 4, 6 and 9). Interviewees spoke with relative ease about human value as it has to do with their own capabilities, children, and bodies.

Lastly, regarding ecological value, the subcategories (1) pressures on the environment, (2) state of the environment and (3) social response were mentioned the most. However, these three subcategories are closely related to each other which makes the distinction thereof relatively difficult. This made counting the number of mentions tricky and in some cases, a single commentary could be counted to all three. E.g. "The environment is kept well maintained by the community" (Interview 3), this sentence includes both the state of the environment (well maintained) and social response (kept by the community). Resources were mentioned less frequently as many did not see the environment as an explicit source of finite resources. Yet, in some cases this subject would be expressed related to a cultural respect for the environment in which "one returns what he takes" (Interview 8). Finally, regarding resilience, the relatively abstract concept was not directly referred to. Instead, experienced climatological uncertainties were mentioned by some farmers. Generally, there seemed to be an inherent respect for the environment by the interviewees. This is thought to be mostly attributable to the Andean religion which focuses greatly on a respect for nature. However, besides simply saying that they respect nature, interviewees could not talk in depth about the environment and they generally repeated themselves frequently.

All the above mentioned points lead to a better insight in the nuances behind an answer for RQ1 and in the importance of the involvement of several stakeholders in a community-based participatory research. To answer RQ1, an adequate list of KPIs to assess PESHE values according to different stakeholders are those found in Annex III, which are built of short- and long-term needs, values and goals.

### **6.1.2 Surveys**

Based on the different results shown in 5.4 *Survey results: performance assessment*, PMR communities generally score higher than non-PMR communities. The main increase in score between both types of communities lies for social, human and ecological value. Furthermore, looking at the difference in score per gender shows that both genders have an increase in most PESHE values after interaction with PMR. Yet, looking deeper into the data shows some peculiarities discussed below.

Table 4 and Figures 8 show that for both districts, RQ2a can be answered as follows: PMR communities perform better for productive, social, human and ecological value. However, in some cases non-PMR

communities perform better or equally than PMR communities. E.g. In Huanquite, Coror and Chanka both score 3.7 for human value; and both Chanka and Marcura score higher than Coror for economic value. These differences could be attributed to a plethora of reasons: (1) the sample size not being large enough for an adequate representation of the populace, (2) the effect of PMR has not had enough time to change the situation of the communities, (3) previous organisations having a significant influence on the non-PMR communities and (4) their proximity to a larger town. These will be further explained henceforth.

1. Due to time limitations, a maximum of five farmers were interviewed per community. Although an effort was made to not focus on one socioeconomic group or gender, the small sample size can result in an exaggeration of certain scores if the group is not heterogenous. I.e. If most respondents of a non-PMR community, by chance, are relatively motivated and rich, this has a large positive influence on the final score.
2. PMR's support consists of improving social, human, ecological and to a lesser degree productive value in order to help the farmers improve their economic value. Thus, economic value increase is a later effect of PMR's support. Logically, it takes longer for economic value to increase noticeably. Future research can look at changes in PESHE value in communities where PMR has finished their work, or where PMR has been working for a longer time. It's expected that economic and productive value increases further the longer PMR has worked on an area.
3. As shortly touched-upon in *6.1.1 Interviews* and further explained in *6.2 Methodology and datasets*, the influence of other organisations can have a traceable effect on the scores. The organisations that had previously worked in Chanka and Marcura mostly focussed on productive and economic value – giving a possible explanation for their generally better score.
4. Both non-PMR communities were significantly closer to Huanquite compared to the PMR communities. Physical proximity to larger economic centres stimulates the development of economic growth (Rodriguez-Pose and Crescenzi, 2008), giving these non-PMR communities an advantage in their economic value.

The abovementioned reasons might also explain Mamanoca's score. Apart from the municipality installing drinking facilities for animals, this community did not receive any support from organisations. Furthermore, although Mamanoca lies geographically closer to a larger city compared to the PMR communities, commoners from Mamanoca have to first travel to Pichigua in order to find transport to Espinar.

Comparing PMR to non-PMR communities per district tells a similar story (Figure 9). Again, PMR communities score higher in general compared to non-PMR communities. Although, averaged by type of community, PMR communities even score higher for economic value, the difference is relatively small for Huanquite (0.1, Table 5). One must keep in mind that in Pichigua, only one non-PMR communities could be surveyed thus, the "average" depicted is Mamanoca's score. This sets Pichigua's non-PMR score at a possible disadvantage as an actual average could not be increased by a well-performing non-PMR community. However, this could also work the other way around. I.e. a badly performing community decreasing the average.

To better understand the specifics of RQ2a the data was explored further. Diving deeper into the data results in Figure 10. This representation of the data can be used by organisations to better understand where their strengths and weaknesses lie in a more specific manner. The main focus of PMR is clearly demonstrated in these figures. Namely, a focus on social, human and ecological value. For all these subcategories, PMR evidently scores better. Human value is improved by (1) an increase in capacity building opportunities, (2) contests focusing on cleaner and more organised homes, and (3) a focus on assuring the families are motivated to change their situation. Social value is improved by (1) increasing trust and a sense of community in and between communities by organising events in which all parties

are invited, (2) giving women more opportunities to develop themselves, and (3) assuring active participation. Ecological value is improved by (1) teaching about the importance of the environment and its current state, (2) planting trees and explaining that “for every tree cut, one should plant two new trees”, and (3) reducing pressure on the environment by explaining the dangers of fire and overexploitation of the environment.

Looking at productive value shows that PMR also generally scores better. This can be attributed to capacity building related to improved production methods, a focus on quality over quantity, and risk spreading by cultivating a larger variety of crops and producing Guinea pigs. The subcategory *territory and assets* score equally for both PMR and non-PMR respondents, as the study area had no significant territorial problems. Economic value shows that some aspects are hard to change for PMR. *Connectivity*, which mainly focusses on the state of the roads and telephone connection, is not at all the focus of PMR which explains the relatively low score and the lack of difference between PMR and non-PMR communities. *Savings* were similar for most respondents: most people found saving important to do but didn't do it because they claimed they didn't have money left at the end of the month. Thus, for people to be able to save they must first have disposable income to save. Improving the general economic situation, is thought to lead to the ability to build-up savings. Focussing on *debt and loans*, shows that non-PMR communities score higher than PMR communities. This is thought to be due to how the questions were posed: a higher score is attributed to having no debts or loans. However, asking for loans and having debts is not necessarily a *bad* thing. Loans can be used as an investment to improve a business, which PMR participants can be doing. Conversely, loans can also be a bad economic decision in the impossibility to pay it back. Context is important in this case. From the interviews, it became clear that families did not have any debts because they didn't know they could loan money, or they knew the dangers of loaning (Pilot 5, Interview 2, 3, 4; Annex IV).

Looking at gender differences in order to answer RQ2b, in average, women score lower for all PESHE values irrelevant of PMR participation (Figure 11). This shows that, in general, the social structure of these communities is one where men have more opportunities, social privilege and economic power. However, these results are skewed as the larger part of the non-PMR respondents were women, while mostly men were willing to do the surveys in the PMR communities. Separating the data for men and women, and also dividing the data into PMR and non-PMR participants yields Figure 12. This figure shows that although both non-PMR genders fare worse compared to PMR genders, non-PMR women score higher in average than non-PMR men. However, this changes for the PMR genders – wherein men fare better in average than women. This change in status is not preferable as women generally are regarded to be less privileged than men in the Peruvian Andes (Pilot 5, Interview 5, 6, and 8; Annex IV).

It is theorised that this change might occur due to men being the frontrunners in the competitions as it is expected socially for them to join and be active. As competitions can result in earning money, some men might see this as a worthwhile task to spend their time in. Participating in such a competition not only gives men the possibility to win, but it also opens paths to learn new things, increase their social value by coming in contact with other participants from other communities, putting more effort in their production, etc. Although the whole family is supposed to be active during a competition, practice shows that men are most frequently the driving force behind the competitions. This is thought to be due to cultural reasons wherein women act less overtly in communal gatherings and in the presence of men. It is also possible that women have more productive-value related responsibilities when there are no competitions, or prospects thereof, active in the area. During interviews, it was relatively clear that women were less willing to be interviewed and that in some cases the men took the lead throughout the whole interview (Interview 10 and various surveys).

To better understand this phenomenon, it should be researched further. Surveying an equal number of men and women would help make the averages more comparable. Also, assuring that also the

genders are equally spread among the types of communities leads to a better comparison. As with other aspects of this research, more research should be done on communities where PMR has already finished working. This might yield interesting results regarding the responsibilities and development of women in comparison to that of men.

## 6.2 Methodology and datasets

### 6.2.1 Interviewing method

For interviews it's important to get to know those subject to the interview (Mays and Pope, 1995). By building confidence and amicability, the interview yields more complete and honest answers. However, due to the choice of selecting more communities, in combination with limited time, trust building was not feasible for this research. This resulted in the interviews being rather abrupt for the interviewees as they would often be "pulled out" of their current activity to do an interview. To reduce the abrasiveness of the interviews and increase trust, a friendly demeanour was maintained, and positive comments were voiced in response to the interviewees' answers.

As PMR works with contests in which the performance of families and communities are measured and given a prize if the performance is good enough, and the interview consist of questionnaires which consist of the interviewees' reviewing their personal situation, responses are susceptible to "social desirability" factors (Black and Hughes, 2001). In other words, respondents can distort their answers to give a rosier picture as this would be more "socially desirable". Another aspect of such factors coming into play can be the appearance and assumed status of the interviewer. In many cases, interviewees would see the interviewer as "*El ingeniero*" (The engineer) – a highly regarded profession. This led to cases in which interviewees seemed to want to impress the interviewer by acting overly positive about most aspects of the interview. Other hints of such socially desirable answers were also experienced in the field. For example, Interviewees 2, 3, and 5 (Annex IV) all spoke extremely positive about PMR, not having any critique on the organisation. Although this isn't necessarily negative, as it shows that PMR's campaigns do bring new ideas to the communities, the purpose of such answers did seem focused on the interviewee wanting to appear as a good participant in front of PMR staff. However, despite these limitations inherent to interviews, such questions may offer the most feasible approach to evaluate the needs, values and goals of respondents and one could counter that social desirability factors are useful to measure what people consider socially desirable (Black and Hughes, 2001); giving way for new research possibilities.

Influences from actors outside of the community are important to keep in mind as these can influence the needs, values and goals of the subjects. Logically, the visions of communities and families are influenced by the vision of PMR and other past and present organisations. This leads to answers which are more in line with the needs, values and goals of organisations and not those of the interviewees themselves. Logically, such visions can match and often do as the interviewees might need an introduction by an organisation regarding certain subjects before understanding the importance of these. However, in some cases, interviewees gave answers using the near-literal phrasing of PMR campaigns. This raises the question: do the interviewees answer honestly or are they just copying the slogans of organisations? Future research might yield an answer to this question, but for this thesis, there isn't much to be done about this issue. The influence of organisations influences the overall result of this research as the KPIs deemed important *by the families*, might be heavily influenced by national and foreign organisations; leading to a clear impact of top-down pressures in a bottom-up method – making the interviewees vectors of top-down ideals. In Huanquite, for example, a previous NGO had worked on improved seeds and agricultural techniques 2-5 years back. This might be an important influencer of farmers' opinions on productive and economic value. However, to truly know if they have been influenced by the NGO, and to what degree, it would be interesting to ask where the farmers have their ideas from.

As some interviewees had no, or a very limited, understanding of Spanish, a PMR field coordinator translated from and to Quechua. This resulted in (1) less control of the interview by the interviewer, (2) less transparency in the answers and how the questions were posed, and (3) the translators guiding the answers. The first point is important as a higher degree of control assures that the interviewer can more easily steer the interview into a direction that is expected to yield more interesting results. In some cases (e.g. Interview 3 and 5) initial answers to certain questions were superficial and posing the question in another manner resulted in deeper answers. This leads to the second point, as the way in which questions were posed is important. The questions themselves were designed to be as simple as possible and not broadly interpretable. However, it's unclear if the questions translate well to Quechua and if the translators kept this in mind when posing questions. Although it's preferable to pose the questions equally among all interviewees to maintain comparability, it's more important to be well understood by the interviewee. Thus, slightly changing the question to better suit the interviewees' understanding is sometimes necessary. It's not clear if the translators did this without changing the question too much. Furthermore, the specific word use of interviewees can give hints that might lead to the interviewer wanting to dig deeper into the subject matter. Not understanding the first-hand answers of the interviewees leads to a lack of understanding of the more subtle aspects of the responses. This leads to the final point, as the translators can guide the answers in two ways: by (a) prompting a desired answer from the interviewee (E.g. "Forestation is important, right?") and (b) giving a summary of the answer, neglecting any nuance in the response. To reduce the effect of these issues, it's necessary for the translator to be independent from the organisation performing the interviews and to be trained in interviewing techniques. Both of these requirements were not met by the translators available for this study.

For future interviews it would be ideal for an independent researcher in close contact with the community to do the interviews. However, as this is relatively difficult to find, PMR field coordinators are preferred to do the interviews as they have regular contact with the subjects. However, a possible negative aspect of this is that field coordinators are very closely related to PMR and the contests. As such, responses could be biased in favour of PMR through the mechanisms described above. The coordinators would need to be trained in interviewing techniques to minimise bias and steering of interviews.

Lastly, an aspect which was difficult to assess adequately, were the communal goals and the verification thereof through triangulation. Although the same communal goals were given by various farmers in the same and neighbouring communities, leading to the belief that these goals were indeed set by the community; some farmers gave answers which did not correspond at all with the answer of others; making triangulation incoherent. This could be due to (1) there being multiple goals and the farmers only recalling some of the goals, the goals not being clear enough which leads farmers to give multiple-interpretable answers, and (3) the farmers not understanding the question. The last is not expected in most cases as it was made very clear that such goals were discussed with community members, during communal meetings, and in collaboration with the communal president.

### **6.2.2 Surveying method**

The surveying method shares all the problems described for the interviewing method above, except for the negative aspects of influence of other organisations as the surveys don't attempt to research the personal needs, values and goals of individuals; but their current situation which can and should be influenced by organisations. Yet, the effect of past organisations does challenge the question if PMR is solely responsible for the answers of the interviewees. For example, in Pichigua other organisations were previously active in the PMR communities, thus already giving these communities a development advantage in the interests of these organisations. In the PMR communities of Pichigua, various NGOs which focussed on forestation and improving general living conditions had been active. For the non-PMR community in Pichigua no such help was found, except for the municipality which installed

drinking facilities for animals. In Huanquite, the PMR communities had been helped by an NGO that focussed on improved seeds and agricultural techniques (previously mentioned). For non-PMR communities, Marcura had been helped by an NGO which focussed on the production of Guinea pigs, while Chanka had been helped by the same NGO as the PMR communities.

Regarding the social desirability factors described in detail above, during surveys in non-PMR communities, social desirability also plays another part. Families in non-PMR communities often want the same help neighbouring communities get and as such might give more negative answers to incite the organisation to help. Yet, this feeling was not experienced clearly during fieldwork. In most cases, non-PMR communities were visibly less well off than PMR communities, making the results more believable.

In exchange for being a quick and quantitative way of collecting data from individuals, surveys done in this research often lack depth in the investigated topic (Kelley, 2003). The inability to dig deeper into the topic can lead to an incorrect interpretation of the acquired data as the answer to survey questions can be dependent on many external variables. E.g. High spending rates can be attributed to economic mismanagement of funds, a negative phenomenon, but also to a focus on paying for the education of the individual's children, a positive phenomenon. To make interpretation less subjective, three questions were posed per indicator subcategory and all question were made as one-sided interpretable as possible.

The current questionnaire relies on a 5-point system for scoring. However, farmers often don't give detailed enough answers to differentiate between e.g. a 4 and a 5. Such a difference is not always necessary, which could make a 3-point system more adequate. Limitations in choice makes the surveying task easier for the surveyor. Also, using physical aids can facilitate the surveying process. E.g. using beads to depict the amount of production. The 3-point system could also work well with such visual aids. E.g. using a thumbs up and a thumbs down (or another culturally adequate symbol) for the best and worst score, respectively. However, for some questions as they are currently formulated, the 5-point system is necessary.

### ***6.2.3 Interview and survey pilots***

Testing both the interviewing and surveying method on subjects similar to those interviewed during collection of the final data is severely important (Gill et al., 2008; Kelley, 2003). Although all questions were designed following set criteria, it became apparent during fieldwork that some questions were still (1) too difficult to understand, (2) too broadly interpretable, (3) dependent on other questions, or (4) irrelevant to their situation. The first mostly relied on convoluted phrasing or the assumption that the respondent had certain knowledge beforehand. The second depends on the question being too vague and thus easy to interpret in a variety of ways. The third issue would arise whenever a question would need another question to be asked first and a correspondent answer, making the question impossible to answer if the respondent answered the priming question differently than expected. The last is caused by questions being impossible to answer without the respondent having to fulfil certain criteria, e.g. a question about animals while the respondent doesn't own animals.

Ideally, more pilots for both interviews and surveys would have been preferable. Also, testing the methodology on more locations in Peru and even in other countries, would be ideal to get a better understanding of the types of KPIs that are generalisable among different cultures. This would make the methodology more broadly applicable.

### ***6.2.4 KPI criteria***

To evaluate the adequacy of the chosen survey questions, a set of criteria were chosen based on literature and the necessity to include the perceived importance by stakeholders (Annex II and V). The

method of assigning a certain score per question is subjective, as an integer value of adequacy is attributed to a question. However, the method was deemed adequate as a robust method was needed to evaluate the questions for transparency. Furthermore, when giving a score to the *importance among stakeholders* criterium, it's difficult in some cases to extract from an interviewees' comment what he or she specifically finds important. This is caused due to vague word use and multiple interpretability (i.e. cases where the different subcategories of a certain value are difficult to differentiate from each other; e.g. ecological value). To improve upon the issue of subjectivity, it would be better to let more people evaluate the criteria and use an average score to better evaluate the indicators. This not only gives more people the opportunity to evaluate the questions and give their opinion in order to improve the questions, but it also assures that an average of people's opinion decides upon the adequacy of the indicators.

In some cases, questions that scored low on *importance* were still kept on the survey. Such questions usually were mentioned less and only by stakeholders with a higher education. Still, these were found important as these questions also included the *later* and *elsewhere*, as described in section 2.1.2 *Key performance indicators*. Some questions were based on literature and utilized when deemed necessary for the improvement of the survey. Although this goes against the community-based approach, some subjects were not mentioned by any stakeholders but deemed too necessary to leave out of the survey. E.g. some themes of resilience were not mentioned by stakeholders but deemed of utmost importance for sustainable development.

The evaluation of questions through criteria also helped in improving the questions. By closely analysing the individual questions, while keeping in mind the different criteria helped in restructuring the questions so they would achieve higher scores. Although some questions were removed, most were rephrased or combined with other questions to yield higher scores.

### **6.2.5 Respondent selection**

Respondents were selected based on availability and by choice of the field coordinators as they knew which people would be willing to answer. This led to a couple of issues. Firstly, the field coordinators preferred men when selecting respondents, forcing the researcher to ask for women to interview and survey. However, women generally preferred not to be subjects of the research. Furthermore, in many communities a lesser percentage of women spoke Spanish, decreasing the pool of possible candidates whenever no translator was available. Secondly, those willing to be subject of the research in the PMR communities were often participants that fared well in the contests and thus got to know the field coordinators better, making them more prone to be selected by the coordinators. Yet, in such cases, the coordinators were corrected. In non-PMR communities this was logically not an issue as the subjects in these communities did not know the coordinators.

For the interviewing phase of this research, it would have been ideal to do a focussed group discussion with community members. Such discussions can lead to interesting insights as people can interact with each other in various ways (Kitzinger, 1995). E.g. become inspired by what other have to say, critique what others say, etc. However, focussed group discussions in the communities were not possible for this research due to a lack of time and the absence of organisation to bring several community members together for this reason. Future research can further improve the KPIs and come to new insights by asking similar questions as those posed in this research, in a group context.

The current situation of a respondent logically influences the answers given. Consequently, due to the random selection of respondents and a relatively small sample size per community, it's possible that the results misrepresent the community's status. I.e. if by chance a majority of above average farmers were selected for a community, the surveys might give an above-average representation of the whole community. Henceforth, it's preferable to have a larger sample size for more general averages. Also,

selecting the respondents based on criteria (e.g. economic situation, participation rate, reputation within the community) might yield more adequate results. However, in this selection method a baseline would be necessary which is more expensive and less immediate than the performed method.

### **6.2.6 Comparability of communities**

In Pichigua, all surveyed communities were very comparable. The communities had similar surroundings, water availability, climate, population, distance from larger cities, and size. However, in Huanquite the communities were also comparable in most aspects except for size, climate and distance to a larger town. Notably, the non-PMR communities were found in a slightly colder area on the other side of the mountain relative to the PMR communities. Also, Chanka was approximately 1/3 larger than the largest PMR community. The main factor that is thought to give the non-PMR communities an advantage is the proximity to a larger town. This proximity facilitates transport possibilities to cities; and availability to markets and health services. The non-PMR communities in Huanquite were relatively developed, compared to the non-POM community in Pichigua. Albeit different, the communities are deemed comparable as a visual assessment and discussion with PMR coordinators, led to this belief. Ideally, the similarities between communities should be as large as possible, but as no other non-PMR communities were available in the area, the choice was limited.

Another aspect that influences the comparability of communities is a seemingly natural disadvantage that some communities experience. This is often due to their location and size. Communities that are too remote are generally less attractive for organisations to help as more costs are involved to get there. Additionally, the more remote a community, the smaller it is and the less people there are to help develop. This also contributes to the negligence of such communities as organisations prefer higher returns of investment, which further increases the inequality between communities. Thus, to improve equality and deliver a more equal spread of development among communities, organisations should not shy off from helping communities which are less attractive. Organisations that focus on transfer knowledge between farmers, such as PMR, should theoretically indirectly help communities which do not form part of the project. I.e. farmers from PMR communities can transfer their knowledge to friends and family in non-PMR communities. Although some farmers in non-PMR communities had heard of PMR, it was not studied if these farmers applied knowledge spread by PMR. Future research could look into the actual spread of knowledge, and how far this knowledge spreads.

## **6.3 Recommendations**

The method and indicators proposed by this research were developed to be used by other organisations as presented in the survey form (Annex III). These indicators are deemed robust and generalisable. However, due to practical reasons, the method could not be used elsewhere than the limited study area. As organisations could use the method presented in this thesis to monitor and evaluate their performance, it's important that this method would work in other countries and in other contexts. Although this was thoroughly kept in mind while designing the KPIs, there are still some aspects of this method which could not be tested. Recommendations for future research are presented in this section.

Firstly, it would be interesting to perform the interviewing phase of this research in other countries with different cultures. Although the questions were designed to look for universal KPIs capable of measuring human needs, values and goals, there is no proof that these are actually globally applicable. The current study area is too narrow to validate the universality of the results. Thus, future research could attempt the methodology presented in this thesis on other cultures to improve on the survey. Furthermore, due to the lack of more multicultural stakeholders, this research was indirectly built on a more Western-leaning ideology. This can bring problems when analysing other cultures as Western and non-Western ideals can vary greatly. For example, for the mainstream Western society, concepts

such as well-being, motivation, self-fulfilment, sufficiency and expression, personal development and autonomy are deemed vital for “correct” societal functioning (Suh et al., 1998; Triandis, 1995). However, this is not the case in all cultures. A clear difference exists between individualistic (Western) and collectivistic (roughly two thirds of the world’s population) (Triandis, 1995). Among others, collectivist cultures base their idea of “correct” societal functioning on maintaining harmony with others, coming to terms with the needs and expectations of others, subordinating one’s feelings if necessary, dismissal of personal emotions if these go against the collective needs (Suh et al., 1998; Triandis, 1995). Thus, keeping these differences in mind, might lead to a different set of indicators for more collectivist cultures.

Secondly, an attempt was made in this research to make the method as transparent as possible. An important aspect herein, is the clarity of the used weights for the questions. Organisations or financers can change these weights to suit their needs. This is appropriate, as long as all involved parties know how the weights have been changed and how this might influence the results. Ideally, such a modification of the method should be done before doing surveys. Doing it afterwards can be wrongly used to generate a higher total score by attributing larger weights to survey questions which have been answered positively. A method that can be used by financers to monitor and evaluate an organisation’s performance should be wholly transparent. This also includes the role of the staff doing the surveys.

It should be clear to the financers *who* did the surveys, the experience that this person has on the field, and affiliations to any organisation. Experience on the field has two sides. Firstly, the added confidence that such a person has on the community can lead to more honest answers. However, a well-known surveyor can also be biased in the way of thinking about the community. E.g. making things seem more positive than they are. Also, an experienced surveyor has probably worked for a longer time with the organisation and as such, might be afraid of losing his or her job if the results are deemed too negative. This aspect also plays on the openness to critique by the organisation (O. de Gana Romero, personal communication, 13-09-2019). Ideally, an organisation should be open to critique and want constructive criticism to improve upon their methods.

Finally, this research would benefit greatly from a larger and more varied sample size. During the interviewing phase, more communities should be interviewed and in more places with more varied bio-physical characteristics. Idem for the survey phase, wherein more PMR and non-PMR communities should be surveyed, but also communities where PMR has already finished working. This might yield interesting results regarding the long-term effect of PMR. Thus, showing financers the effectiveness of the organisation.

## 7 CONCLUSION

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This research attempts to develop a globally applicable method to monitor and evaluate the performance of small to medium scale NGOs, through community-based participatory research. To test this method, the performance of communities supported by *Pachamama Raymi* (PMR communities) was compared to communities which aren't part of a development project (non-PMR communities) via surveys. Survey questions were developed making use of a bottom-up method, to understand the needs, values and goals of different stakeholders in order to create key performance indicators for productive, economic, social, human and ecological (PESHE) value. This research demonstrates the need for sustainable development programs to include multiple stakeholders in all facets of the program in order to achieve a more holistic understanding of the issues surrounding areas in development. Furthermore, it provides ready-to-use indicators to measure PESHE values, as well as a method to create project-specific indicators or improve the provided indicators.

The results of the surveys show that, in general, farmers focussed more on short-term necessities related to their productive and economic value, as well as education. Municipality staff and field coordinators, on the other hand, focussed more on medium- to long-term problems which plague the communities. Contrary to farmers, these stakeholders also looked at problems related to social, human and ecological value. These results show a clear distinction in short- and long-term needs, values and goals of different stakeholders and further elucidate the need to include different stakeholders in such research. Asking stakeholders about their needs, values and goals allows the interviewee to give a broad range of answers related to what they find important in life – as well as giving the interviewer various openings to the thoughts of the interviewee.

At large, PMR communities performed better in all aspects of the assessment except for the economic value; where both PMR and non-PMR communities performed similarly. The largest difference in improvements by the organisation were found for social, human and ecological value – the main focus of the *Pachamama Raymi*. This indicates that the organisation's money and time is being spent according to their promises towards investors – a prime example of what one can analyse using the proposed method.

Looking at gender, the organisation's influence improved the score for both women and men. However, although women score slightly better in average than men in non-PMR communities, men score higher in average than women in PMR communities. This leads to the conclusion that men benefit more from the organisation's efforts – be it due to men participating more due to personal or cultural reasons or due to the organisation not including women enough in their practices. Again, the method proposed by this research proves useful to analyse the functioning of the organisation and brings insight into a problem that was unknown by the organisation.

Future research should mainly look at increasing the sample size and making it more geographically varied. The inclusion of other cultures into the development of the performance indicators might yield more globally generalisable survey questions. Although generalisability was kept in mind for this research and literature was consulted, due to the location of the organisation it was not possible to interview or survey other cultures to test the robustness of the indicators. Still, the proposed indicators are expected to yield interesting and practical results when used in other scenarios for other organisations – Results which can be used to improve the organisation's method and better understand the participants of the development project.

## 8 ANNEXES

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### 8.1 Annex I: Interview schedule

This schedule consists of several steps which should ideally be followed in order. However, in some cases, steps can be skipped or changed in order if the situation calls for such changes. Fluency of the interview has a higher priority than order, as this gives the interview a more dynamic and friendly feel.

1. Introduction of interviewer and research details.
2. Explanation of confidentiality of results and anonymity.
3. Explanation that answers are not mandatory and can be skipped if needed.
4. Beginning of questioning regarding *wants*. All answers should be written down on the spot, for future reference. After every question, the interviewee is asked to rank the things mentioned – this is only written once below as an example.
  - a. Could you name five things regarding the social aspect of your life which you deem necessary and essential for the correct functioning of your community and your livelihood? With social aspect, I mean the relationship between families, trust, cooperation, communication and information flows, etc.
    - i. Could you tell me what the three most important things are that you have just mentioned? Here, the previously answered things are repeated if necessary.
  - b. Could you name five things regarding the human aspect of your life which you deem necessary and essential for the correct functioning of your community and your livelihood? With human aspect I mean things related to capacity, education, upbringing, etc.
  - c. Could you name five things regarding the ecological aspect of your life which you deem necessary and essential for the correct functioning of your community and your livelihood? With ecological aspect I mean the nature that surrounds you and the things you can take out of it, as well as the maintenance of this nature, etc.
  - d. Could you name five things regarding the productive aspect of your life which you deem necessary and essential for the correct functioning of your community and your livelihood? With productive aspect I mean your produce and things that limit of might improve your produce, etc.
  - e. Could you name five things regarding the economic aspect of your life which you deem necessary and essential for the correct functioning of your community and your livelihood? With economic aspect I mean your economic status, income, ownership of goods, etc.
5. Beginning of questioning regarding *values*.
  - a. Which values are most important to you? With values I mean the most important things in your life that motivate your actions.
    - i. Why are these values important for you?
  - b. Which values are most important to the community?
    - i. Why does this community value these values?
6. Beginning of questioning regarding *goals*.
  - a. What are your short- and long-term goals?
    - i. Which obstacles lie between you and your goal?
  - b. Are there set communal short- and long-term goals? If not, why not? Else:
    - i. What are the community's short- and long-term goals?
    - ii. Which obstacles lie between the community and the communal goal?
7. Explain that the interview has ended.
8. Ask if there are any remaining thoughts or issues.
9. Thank interviewee for effort and time.

## 8.2 Annex II: Sub-criteria for KPI criteria

The following sub-criteria are based on US EPA (1996).

<b>CRITERION</b>	
<i>VALIDITY</i>	
<b>Sub-criteria</b>	<b>Definition</b>
Social and Environmental Relevance	Does the indicator express society's environmental values, goals, and concerns by presenting information relevant to a desired policy goal, issue legal mandate, or agency mission? Does the indicator reflect the project message? Can this information be understood by and easily related to the general public and decision makers? Is the indicator seen by the target audience as being important or relevant to their lives?
Appropriate Scale	Does the indicator respond to changes on an appropriate geographic and temporal scale?
Integration of Multiple Impacts	Does the indicator represent the cumulative impacts of multiple stressors? Is it broadly applicable to many stressors and sites?
Representative	Are changes in the indicator highly correlated with changing trends in the information it is selected to represent? Does the indicator present an accurate picture for the message it is intended to convey?
Sensitivity	Can the indicator distinguish small changes in environmental conditions with an acceptable degree of resolution?

<b>CRITERION</b>	
<i>INTERPRETABILITY</i>	
<b>Sub-criteria</b>	<b>Definition</b>
Interpretable	Is there a reference condition or benchmark for the indicator against which to measure changes and trends?
Trend Evaluation	Has the data for the indicator been collected over a sufficient period of time to allow analysis of trends or provide a baseline for estimation future trends?

<b>CRITERION</b>	
<i>OBJECTIVITY</i>	
<b>Sub-criteria</b>	<b>Definition</b>
Bias	Is the indicator's result indifferent of any bias that the researcher might have? Does the indicator rely on a pre-assumed bias?
Evidence	Does the indicator require the answer to be factual and based on evidence?

Proneness to emotion	Is the indicator prone to be answered by emotion, which can tint the factual, instead of factual information?
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<b>CRITERION</b>	
<i>UNDERSTANDABILITY</i>	
<b>Sub-criteria</b>	<b>Definition</b>
Understandable	Is the indicator appropriate for the target audience? Is the indicator presented in a format tailored to the needs of the target audience? Is it simple and direct?
Documented	Is the methodology used to create the indicator well-documented and understandable so that it can be easily communicated and reproduced?
Consistency	Is the information presented by the indicator consistent over time (e.g. are definitions, measurement techniques, and analytical methodologies consistent and comparable)?
Provision of Decision Support	Is the level of information by the indicator appropriate for the target audience to use in decision making?

## 8.3 Annex III: Survey form

GENERAL INFORMATION										
Evaluator's name:					Survey date:					
Province:			District:		Community:			Annex:		
GPS Latitude/Longitude:					GPS taken at:		1 = homestead 2 = field 3 = else: .....			
Respondent's name:					Telephone number:					
DNI:										
Sex of the respondent: Male / Female / Not specified					Age:					
Type of the household:					1 = Dual (male and female spouses) 2 = Female headed, without an adult male decision-maker in the household 3 = Male headed, without an adult female decision-maker in the household			Tick here: 1 – 2 – 3		
How many people live in your household? .....					Composition (number): .... Men / ..... women / ..... children under 16					
Farm type:					Crop production		Animal keeping		Mixed system	Business:
Farm size:	< 0.2 ha (<0.6 topos)	0.2-0.5 ha (0.6 – 1.5 topos)	0.5-1 ha (1.5 – 3 topos)	> 1 ha (>3 topos)	Number of plots within the farm:					
Has the respondent heard of Pachamama Raymi?			Yes / No		Does/has the respondent participate(d) in a contest of Pachamama Raymi?			Yes / No		
Are there any other institutions currently active in the area? Which institutions? What do these institutions focus on?										
Have any other institutions been active in the area in the past? Which institutions? What did these institutions focus on? Which year?										

Type of value	Indicator	N°	Question	1	2	3	4	5	Source
Productive	Yield	1	How is your yearly production?	None	Not enough	Regular	Enough	More than enough	
		2	Compared to last year, how is your yield?	Much less	Less	Equal	More	Much more	
		3	How stable is your yield?	Not at all	Slightly	Moderately	Very	Extremely	
	Quality	4	Which percentage of your produce is improved or highly productive? I.e. certified improved, or more productive than average, animals or plants.	0%	25%	50%	75%	100%	(Mandru et al., 2009)
		5	How is the quality of your produce?	Very bad	Bad	Regular	Good	Very good	
	Practices	6	Which percentage of your yield is waste? I.e. products which cannot be eaten or sold. E.g. Rotten produce, bad quality crafts	100%	75%	50%	25%	0%	(Mandru et al., 2009)
		7	How varied is your produce? I.e. bad variation = 0 or 1 type of product; extremely good variation = >5 types of products	0-1 products	2 products	3 products	4 products	>5 products	
		8	Which percentage of your land is irrigated?	0%	25%	50%	75%	100%	
	Employment	9	Which percentage of you land is organically fertilised?	0%	25%	50%	75%	100%	
		10	How stable is your employment throughout the year? Being employed requires actively earning money	Not at all	Slightly	Moderately	Very	Extremely	(OECD, 2011)
		11	How many months do you have to go to other cities for work?	12 months	9 months	6 months	3 months	0 months	
	Territory and Assets	12	How satisfied are you with your labour force? Labour force also includes own labour, family, hired workers, etc.	Not at all	Slightly	Moderately	Very	Extremely	
		13	Which percentage of your land is generally less productive throughout the year? In case of rotational cropping systems, if the territory is generally productive it's counted as productive	100%	75%	50%	25%	0%	
		14	How confident are you that, in the future, your territory will stay yours?	Not at all	Slightly	Moderately	Very	Extremely	
	Economic	Income	15	Do you have all the assets and equipment you need to manage your farm as you would like to?	None	Not enough	Regular	Enough	More than enough
16			How is the current income of the family?	Very bad	Bad	Regular	Good	Very good	
17			How many months per year are your incomes non-existent or extremely low?	12 months	9 months	6 months	3 months	0 months	(Walby and Armstrong, 2011)
18		How is your current discretionary income? Discretionary income: income that is available to save, invest, or spend on non-essential things	None	Almost none	Regular	Enough	More than enough	(OECD, 2011)	
Debt and loans		19	How much debt do you have? Of banks or other families	Too much	A lot	Regular	Almost none	None	

		20	How much of your income is spent paying off debts?	Too much	A lot	Regular	Almost none	None	
		21	How often do you ask for loans?	Always	Often	Sometimes	Rarely	Never	
	Expenses	22	How are the current expenses of your household?	Very high	High	Regular	Low	Very Low	
		23	How are expenses spread throughout the year?	Very bad	Bad	Regular	Good	Very good	
		24	Which percentage of your expenses are invested in your production?	0%	25%	50%	75%	100%	
	Savings	25	How many savings do you have?	None	Almost none	Regular	Enough	More than enough	
		26	How much money can you save in average per month?	Nothing	Almost nothing	Regular	Enough	More than enough	
		27	How important is saving money for you?	Not at all	Slightly	Moderately	Very	Extremely	
	Connectivity	28	How easy is it to buy and sell in markets?	Very difficult	Difficult	Regular	Easy	Very easy	
		29	How are the roads in the area? I.e. how easy is transport	Very inaccessible	Inaccessible	Regular	Accessible	Very accessible	
30		How are the means of communication in the area? I.e. telephone connectivity	Very bad	Bad	Regular	Good	Very good		
<b>Social</b>	Trustworthiness	31	How much do you trust people in your community?	Not at all	Slightly	Moderately	Very	Extremely	(Black and Hughes, 2001)
		32	How much do you trust people from other communities?	Not at all	Slightly	Moderately	Very	Extremely	(Black and Hughes, 2001)
		33	How much do you trust the institutions working in the community?	Not at all	Slightly	Moderately	Very	Extremely	
	Social participation	34	How well organised are events in your community?	Very badly	Badly	Regular	Well	Very well	
		35	When you need help, to how many people can you ask for help?	No people	Few people	Regular	Some people	Most people	(Black and Hughes, 2001)
		36	How often do you attend local community events? Events are: communal meetings, labour, etc.	Never	Rarely	Sometimes	Often	Always	(Black and Hughes, 2001)
	Sense of community	37	Imagine that a person of a different religion, skin colour or sexuality would come to live in your community. How much would you accept this person?	Not at all	Slightly	Moderately	Very	Extremely	(Burchianti and Zapata-Barrero, 2013)
		38	How many people in your community would contribute their time for communal projects?	No people	Few people	Regular	Some people	Most people	
		39	Does your community feel like home and are you satisfied with it?	Not at all	Slightly	Moderately	Very	Extremely	(Black and Hughes, 2001)
	Shared norms	40	How many people share with you a sense of what is right and wrong?	No people	Few people	Regular	Some people	Many people	(Black and Hughes, 2001)
41		How many people share with you your costumes and way of living?	No people	Few people	Regular	Some people	Many people	(Black and Hughes, 2001)	

<b>Human</b>	Equality opportunities of	42	How much effort does your community apply to solve communal problems?	None	Not enough	Regular	Enough	More than enough	(Black and Hughes, 2001)
		43	Do policies, programs and social practices consider everybody's needs?	Not at all	Slightly	Moderately	Very	Extremely	(Black and Hughes, 2001)
		44	Are the particular needs of women, disabled people, ethnic, cultural and religious groups recognised and respected?	Not at all	Slightly	Moderately	Very	Extremely	(Black and Hughes, 2001)
		45	Do you feel like you are treated equally to others in your community?	Not at all	Slightly	Moderately	Very	Extremely	(Walby and Armstrong, 2011)
	Health	46	How often do you eat per day and what is the meal constituted of? Balanced meal = minimum of 3 of the following: (1) milk or cheese, (2) vegetables, (3) meat, fish, or egg, (4) fruits, (5) rice, potato or pasta	1x a day, unbalanced meal	2x a day, unbalanced meal	2x a day, balanced meal	3x a day, unbalanced meal	3x a day, balanced meal	
		47	How do you consider the health situation of your household in general?	Very bad	Bad	Regular	Good	Very good	(Kessler, 2019; OECD, 2011; Walby and Armstrong, 2011)
		48	How good is the access to health services from your household?	Very bad	Bad	Regular	Good	Very good	(OECD, 2011)
	Facility development	49	Does the household have all basic facilities? Every facility adds a point.	Basic sanitation service	Smoke-free kitchen	Separated rooms	Connection to sewage	Connection to electricity	(OECD, 2011)
		50	How clean and organised is the household?	Very dirty	Dirty	Regular	Clean	Very clean	
		51	How satisfied are you with your household?	Not at all	Slightly	Moderately	Very	Extremely	
	Education	52	What is the highest level of education finalised in your direct family?	None	Primary	Secondary	Superior (technical)	University	(OECD, 2011; Walby and Armstrong, 2011)
		53	How often are there available organised capacitation opportunities in your community? The opportunities can be organised by an institution of the community.	Never	Rarely	Sometimes	Often	Always	
		54	How is the access to education in your community?	Very bad, (no primary and secondary school, very bad accessibility)	Bad (only primary, but secondary difficult to access)	Moderately (only primary, secondary easy to access)	Good (primary and secondary in community)	Very good (primary, secondary and superior in community)	(OECD, 2011)
	Opportunity recognition and exploitation	55	How often do you see opportunities to improve your situation? Opportunities can be ideas to improve your home, income, community, etc.	Never	Rarely	Sometimes	Often	Always	(Kuckertz et al., 2017)

<b>Ecological</b>	Self-efficacy	56	How often do you act to make the aforementioned opportunities a reality?	Never	Rarely	Sometimes	Often	Always	(Kuckertz et al., 2017)
		57	Of all available projects in the area, which percentage do you actively participate on?	0%	25%	50%	75%	100%	(Kuckertz et al., 2017)
		58	How motivated are you to change your current situation?	Not at all	Slightly	Moderately	Very	Extremely	
		59	How do you think your household will be in 5 years' time?	Much worse	Worse	Same	Better	Much better	(Kessler, 2019)
		60	Do you think that you and your family act according to your own interest and wishes?	Never	Rarely	Sometimes	Often	Always	(Kessler, 2019)
	Pressures on the environment	61	How good is the waste management in your community?	Very bad; throwing away in nature and burning	Bad; burning	Regular; composting	Good; recycling and composting	Very good; recycling, composting, and picking-up by org.	(OECD, 2008)
		62	How often do you use pesticides and/or chemical fertilizers?	Always	Often	Sometimes	Rarely	Never	(OECD, 2008)
		63	How often do you take resources from the environment without replenishing them?	Always	Often	Sometimes	Rarely	Never	(OECD, 2008)
	State of the environment	64	How well maintained and respected is the environment in this community?	Very bad	Bad	Regular	Good	Very good	
		65	How is the state of the environment compared to 10 years ago?	Very bad	Bad	Regular	Good	Very good	
		66	How predictable is your environment related to agricultural practices?	Not at all	Slightly	Moderately	Very	Extremely	
	Social response	67	How often do you do act to better the environment?	Never	Rarely	Sometimes	Often	Always	(van Melis, 2017)
		68	How active are you in changing your practices to be better for the environment?	Not at all	Slightly	Moderately	Very	Extremely	
		69	How active do you plant trees in the area?	Not at all	Slightly	Moderately	Very	Extremely	
	Resources	70	How constant is the availability of clean water resources during the dry and rain season? The most important hours are during the day. To give a value, use the average between both seasons.	Never (0)	Rarely (<6)	Sometimes (6 – 12)	Often (13 – 23))	Always (24)	
71		How dependent are you on natural resources as a source of fuel? E.g. wood, dung.	Extremely	Very	Moderately	Slightly	Not at all	(Patlitzianas et al., 2008)	
72		How often do you give back to the environment what you have taken from it? E.g. planting trees, letting the soil rest.	Never	Rarely	Sometimes	Often	Always		
Resilience	73	How prepared are you for disaster scenarios? As an example, choose the most probable for the region: droughts, floods, hail, etc.	Not at all	Slightly	Moderately	Very	Extremely		
	74	Do you fear extreme weather events? E.g. droughts, floods, hail, etc.	Extremely	Very	Moderately	Slightly	Not at all	(van Melis, 2017)	
	75	How hard is it to recover from an extreme weather event? E.g. the destruction of your crops.	Extremely	Very	Moderately	Slightly	Not at all	(van Melis, 2017)	

## 8.4 Annex IV: Interview documentation

For a translation of the interviews, refer to the author. The interviews were kept in their original language in order to not bring across the message as unchanged as possible and because the main reviewer of this thesis is adept in Spanish.

Pilot 1

10-10-2019

Comunero de Sauki

Sauki, Lares

### **Contexto:**

La entrevista ocurrió mientras el señor estaba trabajando en su campo, y sus hijos estaban jugando a su alrededor. Su castellano era excelente, pero si necesitaba una mejor explicación para la mayoría de las preguntas. El señor no estaba muy concentrado en la entrevista ya que era relativamente tarde y estaba ocupado. Esta fue la primera entrevista de la investigación.

### **Necesidades:**

Aspecto social

- No hay mucha confianza entre las familias en la comunidad.
- Cada uno trabaja por sí mismo – no hay mucha unidad en la comunidad.

Aspecto humano

- La educación primaria en Sauki es muy inestable. Hay días en donde el profesor no viene sin avisar.
- Para ir a la educación secundaria se tiene que ir a otro pueblo, usando vías muy malas.

Aspecto ecológico

- No se le presta mucha atención a el medio ambiente; se queman los terrenos.

Aspecto productivo

- No hay suficiente agua por lo que se necesita un sistema de riego, la falta de agua empeora la calidad y cantidad de los productos. Esto es mayormente relevante en la zona alta de Sauki; no cerca a el rio.

Aspecto económico

- La infraestructura es muy mala y empeora en la época de lluvia. A veces se destruye la única vía a Sauki y quedan aislados de otras comunidades.
- Es muy difícil vender el café ya que no hay compradores en la zona, esto afecta los ingresos.

### **Valores:**

- La salud de sus hijos. Quiere que sus hijos crezcan bien y tengan una buena vida afuera de Sauki.

### **Metas:**

- Personal: Mejorar sus campos.
- Comunitario: No existen.

### **Últimos pensamientos:**

- No tenía nada que añadir.

Pilot 2  
11-10-2019  
Presidente de Hualla  
Hualla, Lares

**Contexto:**

La entrevista ocurrió afuera del edificio comunal. El señor estaba ocupado arreglando unas cosas en el edificio, pero paró haciendo eso por la entrevista. Su nivel de castellano era excelente, aunque algunas preguntas no las entendía bien ya que no tenían suficiente explicación. Esto se cambió en las próximas entrevistas. El señor no parecía muy interesado en la entrevista, pero tomó el tiempo para responder todo tranquilamente. En este prototipo de la entrevista todavía no se había distinguido entre metas a corto y largo plazo. Al comienzo de la entrevista su hijo de aproximadamente 6 años estaba con nosotros, después de aproximadamente 5 minutos, el niño se fue y nos quedamos solos.

**Necesidades:**

Aspecto social

- Falta organización en y entre las familias. Una buena organización también ayudaría en facilitar la capacitación de las familias ya que sería más fácil organizar reuniones para entender lo que se necesita en la comunidad.
- Hay problemas territoriales entre familias y entre comunidades. Esto se debe a el sistema corrupto y mal organizado del saneamiento fiscal territorial.
- Se necesita una asociación entre campesinos para facilitar la venta y compra de productos. Había una, pero esta fracasó por cuotas demasiadas altas.

Aspecto humano

- No hay suficiente capacitación (charlas y talleres) en el aspecto técnico de la producción.
- La educación secundaria queda lejos, las vías son malas, y no la educación no es vista como buena.
- No hay buenos servicios de salud en la zona.

Aspecto ecológico

- Los campesinos no saben cómo mantener a la naturaleza de una manera sostenible por lo que se gastan los recursos naturales.
- La basura se bota en el medio ambiente. No hay un punto central para botar desechos.
- Se queman áreas para preparar el campo. A veces el fuego se esparce y termina quemando grandes áreas naturales.

Aspecto productivo

- Un sistema de riego es necesario para mejorar y crear una producción más constante.
- Los sistemas de producción son muy anticuados. Falta mejorar las técnicas para mejorar la calidad y cantidad de los productos.

Aspecto económico

- Es muy difícil vender productos por el mal acceso y la falta de apoyo de una asociación.

**Valores:**

- Costumbres. Es importante para el señor mantener su patrimonio cultural y que sus hijos sepan sobre las practicas ancestrales de la zona.

**Metas:**

- Personal: Mejorar el colegio de la comunidad, instalar un sistema de riego en su terreno.
- Comunitario: Mejorar el edificio comunal.

Pilot 3

11-10-2019

Señor mayor de Hualla

Hualla, Lares

**Contexto:**

Esta entrevista ocurrió en el huerto del señor. Aunque su castellano no era excelente, si podía comunicarse bien. Las preguntas tenían que ser repetidas varias veces ya que el señor no podía oír bien. El entrevistado parecía estar interesado en la investigación y respondía alegremente, aunque no sabía como elaborar sus respuestas. En este caso hubiera sido mejor simplificar las preguntas y preguntar más allá de las primeras respuestas. No había otras personas a nuestros alrededores.

**Necesidades:**

Aspecto social

- Hay luchas entre familias por problemas de territorio, celos, y peleas entre borrachos.

Aspecto humano

- No hay buenos servicios de salud para poder tratar con su sordera, ni otros problemas físicos que tiene.

Aspecto ecológico

- La comunidad se enfoca bastante en forestación.
- Se bota mucha basura en la naturaleza porque no hay lugares centrales.

Aspecto productivo

- Falta riego para incrementar la producción.
- No todas las tierras son productivas por falta de gente que quiere trabajar.
- Se están plantando pino y eucalipto.

Aspecto económico

- Falta apoyo para vender el café que se produce en el área. No lo pueden vender ellos mismos por malas vías y falta de clientes por lo que los ingresos son bajos.
- La única posibilidad de transporte son camiones que pasan por el área de vez en cuando. Transporte que además sale caro.

**Valores:**

- Satisfacción. Estar feliz por lo que uno ha hecho da motivación para seguir mejorando su vida.

**Metas:**

- Personal: Plantar una mayor variedad de cultivos (palta, granadilla).
- Comunitario: Plantar pino y eucalipto.

**Últimos pensamientos:**

- No tenía nada que añadir.

Pilot 4

11-10-2019

Señora de Hualla

Hualla, Lares

**Contexto:**

No hubo mucho tiempo para esta entrevista porque en el medio de ella nos teníamos que ir. El castellano de la señora era bueno y entendía la mayoría de las preguntas. Durante la entrevista, la señora estaba cocinando almuerzo, aunque si estaba enfocada principalmente en la entrevista. No había nadie más en la cocina.

**Necesidades:**

Aspecto social

- Durante reuniones comunales no todo el mundo en la comunidad participa y mujeres no muchas veces no tienen una voz.

Aspecto humano

- No tiene una buena cocina con chimenea, lo que resulta en una calidad de vida peor y posibles problemas respiratorios en el futuro.

Aspecto ecológico

- No tenía nada que agregar.

Aspecto productivo

- Tienen pocas variedades de productos. Le gustaría cultivar frutales y cuyes.

Aspecto económico

- No hay una empresa que quiera comprar los productos que su familia produce lo que afecta los ingresos.
- Malas vías no facilitan la venta y compra de productos.

**Valores:**

- Igualdad. Ella se ve como una emprendedora y quiere mejorar el futuro para ella y su familia; pero esto se dificulta con poca igualdad en la comunidad.

**Metas:**

- Personal: Cultivar frutales (Manzana, durazno)
- Comunitario: Plantar árboles como pino y eucalipto.

**Últimos pensamientos:**

- No tenía nada que añadir.

Pilot 5

16-11-2019

Subgerente de desarrollo económico de la municipalidad de Lares

Telefonico

**Contexto:**

Por ser una llamada telefónica, no se pudieron aplicar muchas de las practicas recomendadas para hacer durante una entrevista. Aunque llamadas no son fáciles para armar confianza, ya habíamos almorzado juntos en Lares varias semanas antes. La conexión estaba muy mala por lo que la conversación no era muy fluida – esto impidió preguntar más sobre algunos puntos que la señora había mencionado. Además, esta fue la primera entrevista que había hecho por lo que no era muy fluida de parte del entrevistador.

**Necesidades:**

Aspecto social

- La gente debe de entender que ellos pueden empoderarse, lograr cosas y cambiar sus vidas.
- Tienen un mal entendimiento de lo que es el sector público, piensan que es el único apoyo disponible. Sin entender que ellos y la comunidad también pueden ser una fuente de apoyo.
- Hay mucho machismo en las comunidades. Las mujeres no son vistas como iguales y los hombres son celosos y posesivos. Lo que afecta a la crianza de los niños también.

Aspecto humano

- Falta autoestima ya que la gente siempre se encuentra en la misma situación negativa.
- Hay sentimientos de depresión en las comunidades. La gente no se siente bien por los típicos problemas de pobreza (bajos ingresos, no poder comprar lo que puedan, falta de tiempo libre).
- Por la cultura pasada de los hacendados, la gente todavía piensa que hay un patrón. Hoy en día el alcalde a veces es visto como el patrón. Eso los hace muy dependientes del alcalde, lo que el alcalde diga la gente lo hace. Esto si es más que nada para la gente mayor.

Aspecto ecológico

- La gente ya respeta a la tierra bastante, por su cultura. Solo que lo hacen con tal de que no necesiten algo de la naturaleza. Siempre hay una preferencia para proteger a la naturaleza, pero no si les va a costar dinero.
- Para mantener a la ecología, se tiene que primero asegurar que la gente esté en buen estado económico.
- La gente si se siente avergonzada cuando se les dice que e.g. el eucalipto consume demasiada agua y le está quitando el agua a los ríos.

Aspecto productivo

- La gente tiene cultivos en pequeñas parcelas en zonas con muchas quebradas – y terreno difícil de manejar en general. Estas pequeñas parcelas lógicamente no pueden producir mucho y necesitan mucha labor para dar algo de producción.
- Usan herramientas ancestrales porque no hay acceso a máquinas y muchas maquinas no son útiles por la geografía.
- Costos de producción son muy altos por la cantidad de trabajo que tienen que hacer.
- No pueden competir contra más grandes productores
- Están acostumbrados a mantener a los animales sueltos, que comen mal y beben agua contaminada. Se oponen a cambiar esto porque lo ven como algo tradicional.

#### Aspecto económico

- La gran parte de los campesinos no piden préstamos. Solo algunos jóvenes han experimentado un poco con préstamos. Los jóvenes si hacen pagos a tiempo porque saben que no les va bien no pagar.
- Educación financiera no existe en las comunidades.
- Paola no cree que préstamos funcionaran porque falta la educación financiera/empresarial. Sin esa educación la gente probablemente se va a endeudar y va a estar triste – empeorando la situación incluso más.

#### **Valores:**

- Salir de la comunidad campesina se ve como un valor importante. Como un logro que le da sentido a la vida. Se ve como una búsqueda a mejores oportunidades.

#### **Metas:**

- Meta a largo plazo: salir de las comunidades
- Meta a corto plazo: asegurarse que los cultivos produzcan lo suficiente para comer y para vender.

#### **Últimos pensamientos**

- Importante que una ONG de una oportunidad de trabajo en vez de solo dar cosas. Muchas ONG solo le quitan el tiempo a los campesinos. Tiene que ser una fuente de empoderamiento y posible ganancia económica para los campesinos.

## Entrevista 1

19-11-2019

Profesor de la primaria de Arabito

Arabito, Huanoquite

### **Contexto:**

El señor había recién salido de dar clases y parecía estar en buen humor. Había alumnos jugando voleibol cerca de nosotros, que a veces gritaban, lo que el profesor trataba de parar. El profesor parecía estar interesado en la investigación. Las respuestas parecían ser honestas y bien pensadas. Nada fuera de lo normal fue notable en su manera de hablar o actuar. Su castellano era excelente.

### **Necesidades:**

#### Aspecto social

- Escuela de padres en contra de la agresión en las familias, ya que esto afecta directamente a el aprendizaje de los jóvenes.
- La gente es muy acogedora en la comunidad – poder confiar en el uno al otro es necesario para mantener esta mentalidad abierta a extraños.
- La relación entre Arabito y las autoridades es relativamente mala ya que la comunidad se siente olvidada por las autoridades.
- Proyectos para la escuela de la comunidad, como un biohuerto, tienen que ser autofinanciados – quitándole capital a las familias para concentrarse en mejorar sus viviendas.

#### Aspecto humano

- Por una falta de saneamiento básico hay mala salud en la comunidad debido a que no hay agua potable, pocas casas tienen pozos sépticos, hay pocas opciones para mantener una higiene básica personal.
- Falta capacitación a los padres de familia en áreas de: salud mental, alcoholismo, violencia, etc.
- Hay poco entendimiento sobre prevención de enfermedades ya que no se organizan charlas al respecto.
- La escuela tiene una infraestructura relativamente antigua, la cual dificulta educar a los jóvenes.

#### Aspecto ecológico

- Hay muy poca precipitación en el área la cual afecta la producción.
- Si hay concientización sobre la importancia de zonas naturales, pero de todos modos se queman mucho los pastizales basadas en creencias ancestrales.

#### Aspecto productivo

- No hay riego, mientras que la zona es muy seca.
- Las malas vías impiden un intercambio comercial eficiente – lo que afecta la venta y compra de productos y materiales. Las vías empeoran durante la época de lluvias, lo que a veces resulta en el aislamiento de la comunidad.
- La mayoría de los productos se venden en Chinchero, Anta.
- Falta mantenimiento de las vías.

#### Aspecto económico

- Hay gente pobre y gente que se esfuerza: la gente que se esfuerza trabaja con animales y cultivos, y vive en parte en cabañas en las montañas, la gente pobre solo se queda adentro de la comunidad y no tiene animales.
- Si la gente no se esfuerza, no tienen ingresos.
- Poca motivación resulta en falta de ganas para trabajar.

**Valores:**

- Honestidad. La gente en Arabito no son muy honestas lo que resulta en una falta de confianza entre las familias e individuos.
- Solidaridad también es importante para que la comunidad funcione como un órgano, lo que incrementa el sentido de comunidad.

**Metas:**

- Personal a corto plazo: Que los alumnos tengan aprendizajes integrales.
- Personal a largo plazo: (1) Que los niños sean grandes líderes en beneficio a la comunidad. Que aporten al desarrollo de la comunidad. (2) Erradicar el analfabetismo.
- Comunitario a corto plazo: Tener viviendas organizadas – pero esto solo ocurre en preparación a el concurso.
- Comunitario a largo plazo: Concientizar que mantener las viviendas limpias se vuelva en un hábito del diario vivir.

**Últimos pensamientos:**

- Esta tratando de rescatar los juegos tradicionales para mantener viva la cultura de la región y crear un ambiente para que el niño se sienta en casa. Esto lo hace con ayuda de los padres.

Entrevista 2  
19-11-2019  
Señora del almuerzo  
Arabito, Huanoquite

**Contexto:**

La señora nos había cocinado un almuerzo, lo que le quito tiempo para hacer otras cosas. Cuando fue preguntada por su tiempo para hacer una entrevista, parecía no querer hacerlo. Directamente preguntó para que era la entrevista, lo que pareció un poco desconfiada. Después de explicarle todo y tratar de convencerla, aceptó. Durante la entrevista, que ocurrió en su tienda, la señora no parecía entender las preguntas siempre. También respondía de una manera que parecía querer alabar a PMR para no quedar mal en frente de un empleado de PMR. Muchas de las respuestas también eran típicas de alguien que entiende la visión y el método de PMR – i.e. usando palabras claves que la organización también usa mucho. Aunque aceptó ser grabada, miraba frecuentemente a la grabadora – no parecía querer ser grabada. Su castellano era relativamente malo – algo que ella mismo admitió al final de la entrevista. Esto también puede ser parte de la razón por la que las respuestas no eran muy coherentes y repetitivas.

**Necesidades:**

Aspecto social

- Confianza es importante. No solo en la comunidad, pero también en relación con gente de afuera. Confianza ayuda en trabajar juntos, en mejorar las vidas colaborativamente.

Aspecto humano

- Mejorar las viviendas es importante.
- No es fácil encontrar buena educación en el área. Hay una escuela primaria en Arabito, pero para la secundaria los jóvenes deben de ir a Chinchaypuquio y viajar por vías peligrosas en un colectivo o alquilar un cuarto en esa comunidad.
- Educación para adultos es difícil encontrar porque tienen que ir a Huanoquite y no hay opciones más cercanas.
- No hay buena educación económica o empresarial.

Aspecto ecológico

- Forestación es importante. Si la señora corta un árbol, sabe que debe de plantar el doble o el triple.
- Respeto para la naturaleza es importante

Aspecto productivo

- Animales menores son importantes para una mejor fuente de ingresos.
- No hay buen transporte y las vías son malas en la época de lluvia.
- Hay poca gente que pueda ayudar en el campo.

Aspecto económico

- No hay suficientes ingresos ya que no tienen un negocio productivo y no hay gente a quien vender en la comunidad.
- Es fácil vender animales menores pero difícil vender cualquier otro producto.
- Es difícil comprar y traer productos a la comunidad por el mal acceso.
- No hace prestamos la señora porque no sabía que era posible hacer.

**Valores:**

- Orden. Según PMR, debe tener la casa bien ordenada y pintada. También los animales deben tener su sitio asignado y ordenado.

- Trabajar para ella misma. La señora dice que, si trabaja, debe de ser para ella misma y para el futuro de su familia. Le gusta trabajar y ver los frutos de su trabajo. Gracias a este trabajo su casa más bonita comparada a antes.

**Metas:**

- Personal a corto plazo: Seguir mejorando la casa, plantar paltos y pino.
- Personal a largo plazo: Vender frutas más fácilmente y tener incluso más variedades. Por ejemplo, paltas, granadilla, fresas, q'euña.
- Comunitario a corto plazo: Forestación de la zona con pinos y plantas nativas.
- Comunitario a largo plazo: Construir baños, mejorar el saneamiento.

**Últimos pensamientos:**

- Quiere que PMR siga apoyando ya que el apoyo los ayuda mucho. Ya pueden comprar los materiales que necesitan para e.g. crianzas pequeñas, pero un poco más de ayuda en capacitación les vendría bien.
- PMR los ayuda a vivir mejor y más limpio, apoya en la educación y el mejoramiento de la salud.

Entrevista 3  
19-11-2019  
Presidente de Queñaparo  
Queñaparo, Huanoquite

**Contexto:**

La entrevista ocurrió al costado de la única vía de Queñaparo. El señor no parecía entender las preguntas muy bien y siempre daba las mismas respuestas, o repetía lo que yo decía. Su castellano era de un nivel mediano. No parecía estar muy concentrado en la entrevista, o motivado para pensar un poco más allá de la primera cosa que decía. Al notar que no respondía cosas muy interesantes en las preguntas abiertas, decidí preguntar de una manera más cerrada. Esto ayudó un poco, pero la falta de motivación para responder seguía siendo clara. Igual a la Entrevista 2, el presidente constantemente alababa a PMR. El señor respondía muy positivamente sobre cualquier aspecto de su comunidad; no tenía una visión muy crítica sobre su comunidad.

**Necesidades:**

Aspecto social

- Orgullo y confianza son dos cosas muy importantes para la comunidad. El orgullo es en cierto modo formado por las plantaciones de los árboles y el mejoramiento de la comunidad. Ambos hay en la comunidad.

Aspecto humano

- Antes la educación no era muy estricta ni estable – profesores venían de vez en cuando. Hoy en día hay clase de lunes a viernes, y la educación ha mejorado. Es importante para el señor que la educación sea buena en su comunidad.
- Buena capacitación y un mejoramiento del entendimiento es necesario para la educación de adultos y jóvenes.

Aspecto ecológico

- La naturaleza se mantiene bien por la comunidad. Lo que se extrae, también se devuelve.

Aspecto productivo

- Debe de haber una gran cantidad de frutas para poder vender.
- La producción no es muy buena por granizados de vez en cuando. Este fenómeno baja la calidad de los productos.

Aspecto económico

- En la comunidad misma no se venden productos, solo en Chinchero, Anta. Esto es relativamente difícil para hacer por el mal acceso. En tiempo de lluvia se tienen que llevar los productos a caballo.
- Comprar productos no es fácil. Tiene que ir a Cusco por malas vías para comprar e.g. una pala.
- Los ingresos son bajos porque no saben lo suficiente sobre económica. Tampoco se hacen préstamos por la misma razón. Le parece importante capacitar más en educación económica y empresarial.
- Si se hacen préstamos entre familias. La confianza entre familias es suficientemente alta para que esto sea posible.

**Valores:**

- Poder trabajar bien y mucho. Esto se haría más fácil con buenas herramientas y suficientes posibilidades para labor.

**Metas:**

- Personal a corto plazo: Animales mayores le gustaría para incrementar sus ingresos.

- Personal a largo plazo: Comprarse un carro para facilitar el transporte.
- Comunitario a corto plazo: Comprar un carro para facilitar la venta y compra de productos, y mejorar la conexión a Cusco para poder participar en ferias.
- Comunitario a largo plazo: No existe.

**Últimos pensamientos:**

- No tenía nada que añadir.

Entrevista 4  
19-11-2019  
Coordinador de PMR en Huanquite  
Coror, Huanquite

**Contexto:**

El señor manejó la moto en la que yo estuve todo el día. Ya había hablado con él un poco por lo que armamos un poco de confianza. La entrevista ocurrió afuera, mientras anochece y esperábamos por nuestra cena – un ambiente era cómodo. El señor tiene mucha experiencia en el campo y se enfoca en la capacitación de campesinos. La conversación fue muy fluida y el señor tenía mucha información para dar de una manera honesta.

**Necesidades:**

Aspecto social

- Hay una falta de organización en las comunidades. Hay líderes que no dan dirección, no tienen metas, no organizan. Cada uno va a su lado y no procuran sacar resultados. No hay suficiente unidad en las comunidades.
- Capacitación es necesaria en varios aspectos para mejorar el desarrollo, de parte de las familias, de las comunidades.
- Los campesinos no ven el potencial que tienen.
- Por el inmediatismo en las comunidades, hay una falta de pensamiento a mediano o largo plazo. La gente quiere resultados de noche a la mañana y no son persistentes en las metas que deberían de querer lograr.
- Falta más intercambio de información y capacidad.

Aspecto humano

- Hay una falta de autoestima, lo que es evidente porque la gente no se quiere y no valora lo que tiene.
- Falta sensibilización en el tema de educación. Muchos padres piensan que toda la educación debe de ser dada en las escuelas, sin entender que los padres también son una parte esencial en la educación de los jóvenes. Los padres no educan porque no fueron educados ellos mismos.
- La mayoría de las familias no tienen plan de desarrollo personal o familiar.
- Los campesinos son muy paternalistas. En vez de tratar ellos mismos de buscar una solución y trabajar para lo que quieren, prefieren pedir a las organizaciones por ayuda.
- Falta el poder de ejecución por falta de motivación o meta clara.
- Falta educación económica.

Aspecto ecológico

- La mayoría no valora el medio ambiente lo suficiente.
- Por el inmediatismo, las familias depredan del medio ambiente sin pensar en el futuro.
- Falta manejo de áreas naturales.
- No hay suficiente conocimiento al respecto de la importancia de mantener a los ecosistemas en buena condición.

Aspecto productivo

- Falta entendimiento sobre el buen uso de químicos y abonos naturales. Se prefieren usar fertilizantes químicos ya que esto trabaja más rápido.
- No hay transporte estable hacia los mercados.
- En algunos casos, la producción no es de suficiente calidad o cantidad. Lo que resulta en las familias vendiendo para poder pagar el transporte.

- No siempre se explotan los recursos disponibles. No se ven las posibilidades, ni se buscan nuevas posibilidades – incluso menos si viven en una zona donde es relativamente fácil producir comida.
- No hay mucha diversidad de productos, lo que si ayudara para diversificar los ingresos y resultaría en ingresos mas constantes durante el año.

#### Aspecto económico

- No tienen suficientes ingresos ya que los negocios que tienen no son sostenibles ni rentables.
- Ingresos son estacionales, lo que resulta en meses de mucha pobreza y meses de menos pobreza. Ahorros ayudarían en este aspecto.
- Se piden prestamos, pero estos préstamos no se pagan siempre lo que resulta en más deudas.

#### **Valores:**

- Autoestima. La gente debe de ver que tienen, pero desconocen.
- Las comunidades no tienen valores claros. No se articulan claramente.

#### **Metas:**

- Comunitario a corto plazo: Primariamente la gente piensa solo en la agricultura como meta a corto plazo. Por PMR una meta también es plantar árboles.
- Comunitario a largo plazo: Hay varias metas (e.g. plantar más variedades de árboles) pero no se ejecutan.

#### **Últimos pensamientos:**

- Debe de haber una alianza entre organizaciones ya que trabajar juntos daría mejores resultados. También ayudaría tener un plan municipal o distrital ya que este no existe.

Entrevista 5  
19-11-2019  
Presidente de Coror  
Coror, Huanquite

**Contexto:**

La entrevista ocurrió adentro de una oficina del Tambo de Coror. El señor es muy amigable, pero un poco tímido; lo que resultaba en respuestas que parecían querer apoyar a PMR de cualquier manera. La entrevista fue relativamente fluida, aunque su castellano no era perfecto. A veces el señor no entendía las preguntas, pero después de algo de explicación si las entendía.

**Necesidades:**

Aspecto social

- Hay muy baja autoestima en las comunidades que se debería de reforzar.
- En la comunidad se trabaja en aumentar la igualdad entre las personas. Por ejemplo, en faenas es necesario que hombres y mujeres trabajen en la organización y ejecución del día.
- Se trabaja en disminuir la violencia familiar en la comunidad. Aunque esta es baja según el señor.

Aspecto humano

- Mejores viviendas, salud y educación son los puntos que según el señor son lo más importantes para una comunidad. Mejorando estos puntos ayuda a las familias a seguir adelante. No hay buena infraestructura de servicios.
- Por falta de dinero, los padres no tienen el tiempo, o no son capaces, para educar a sus hijos.
- Solo hay una primaria en la comunidad. En esta primaria hay clases de lunes a viernes – lo que no era antes. Para ir a la secundaria los jóvenes tienen que ir a otra comunidad.
- No hay suficiente educación para adultos, lo cual si es necesario para mejorar la situación de las familias.

Aspecto ecológico

- Se valora la naturaleza.
- La comunidad ha creado áreas protegidas.

Aspecto productivo

- Heladas y granizadas dañan la calidad y reducen la cantidad de productos.
- Aunque se produce lo más que la gente pueda, se producen más que nada cereales.

Aspecto económico

- El acceso es relativamente bueno. Mas aún comparado a antes cuando los productos se tenían que llevar a caballo.
- Hay pocos ingresos y los ingresos no son constantes durante el año.
- Casi no se piden préstamos a bancos. Solo los que tengan negocios un poco más grandes.
- Si se piden prestamos entre vecinos.

**Valores:**

- Motivación. Con motivación uno puede hacer todo.

**Metas:**

- Personal a corto plazo: Que los hijos vayan a estudiar.
- Personal a largo plazo: Mejorar la familia y que los hijos sean profesionales.
- Comunitario a corto plazo: Saneamiento de terrenos.
- Comunitario a largo plazo: Implementar riego en la comunidad y mejorar los servicios.

**Últimos pensamientos:**

- Le gustaría que todo fuera más organizado.
- Las organizaciones ayudan mucho a las comunidades en el aspecto de la motivación.

## Entrevista 6

19-11-2019

Gestor institucional de Coror

Coror, Huanquite

### **Contexto:**

Por su educación y experiencia, el señor tenía mucho que decir. La entrevista ocurrió relativamente tarde (20:00) después de una cena que tuvimos con todo el grupo – esto ayudo en crear confianza. Ambos parecíamos estar un poco cansados ya que habíamos trabajado todo el día. Pero, de todos modos, parecía estar cómodo en su oficina y la conversación fue fluida y llena de información.

### **Necesidades:**

#### Aspecto social

- Fortalecimiento de las familias. Se debe educar, orientar a la familia en temas de comunicación, trato, afecto; i.e. relaciones interpersonales. Ya que el trato de padre a hijo y esposa es vertical. Los padres no transmiten sentimientos de afecto por ser egocéntricos con sus sentimientos.
- Hay mucho alcoholismo en las comunidades. Esto resulta en violencia familiar de padres a hijos y esposas, abandono, enfermedades y separaciones. Las autoridades deberían de actuar en contra de esto.
- Machismo también resulta en violencia familiar. Esto resulta en menos participación de las mujeres, lo que en su turno resulta en las mujeres sintiéndose inferiores a los hombres y no empoderándose.
- La gente es muy abierta en recibir a distintas instituciones y a la ayuda que traen.

#### Aspecto humano

- Hay una presencia de anemia y desnutrición en las comunidades por el descuido y mala alimentación. Esto también resulta en dificultades de aprendizaje para los niños.
- Servicios educativos no son fáciles para acceder, por las malas vías y por el mal transporte. Esto resultaba en jóvenes teniendo que alquilar cuartos en ciudades con educación secundaria, lo que resulta en abandono, embarazos adolescentes, y desvíos negativos en sus trayectos de la vida. Esto hoy en día ocurre menos por el mejor transporte. Pero las carreteras son malas y hay un peligro latente de accidentes.
- Si hay suficientes posibilidades para capacitar a jóvenes y adultos, solo que debería de haber un mejor coordinamiento entre distintas instituciones públicas.

#### Aspecto ecológico

- Se ve como importante cuidar y mantener a la naturaleza por las comunidades.
- Respetan a la naturaleza con tal de que tengan los medios para dejarla inquieta. Si necesitan algo del medio ambiente, lo toman.
- Los incendios forestales que han habido en el área han sido sin querer. Cuando se queman los campos, se hace en las tardes. Entonces hay más viento y más oxígeno lo que resulta en una forma no sostenible de quemar las malas hierbas.

#### Aspecto productivo

- Es difícil encontrar semillas para nuevas plantaciones.
- No hay riego lo que si es necesario en la temporada seca.
- La agricultura no es lo suficientemente técnica por lo que la producción no es alta o de buena calidad.
- Se busca plantar nuevas variedades (principalmente frutales) para diversificar los ingresos. Eso sería con ayuda de una ONG que también planea en encargarse del transporte de las frutas.

#### Aspecto económico

- La producción es muy pequeña, y se vende normalmente en los mercados en Cusco.
- Los ingresos son muy bajos e inestables.
- Aunque la gente no pide préstamos, si hay ONGs que están proponiendo proyectos que funcionan con préstamos.
- Se forman asociaciones para vender productos juntos.

#### **Valores:**

- Empatía resulta en un mejor entendimiento y en el aprecio del bienestar mutuo.
- Tolerancia resulta en la aceptación de otras formas de pensar y ayuda en unir a las comunidades.
- Compromiso de cambiar y mejorar la calidad de vida de la comunidad.
- Respeto. Las comunidades respetan y valoran las instituciones que trabajan en el área.
- Buenas costumbres. Todavía se practican costumbres ancestrales y se valora el mantenimiento de estas.

#### **Metas:**

- Comunitario a corto plazo: Mejorar la economía con actividades productivas. Por ejemplo, la venta de animales y sus derivados. Construir biohuertos para tener más opciones para vender.
- Comunitario a largo plazo: Que la comunidad se convierta en un centro de comercio. Que haya una escuela secundaria, un centro de salud. También es importante poder salir de la comunidad para mejorar la vida de la familia y darle más oportunidades de educación a los hijos.

#### **Últimos pensamientos:**

- Hay mucho potencial en las comunidades para producir más, pero falta mucho en la tecnificación de las prácticas. Por ejemplo, mejores canales de irrigación. Si existe el presupuesto para esto, solo que no es dirigido a este aspecto.
- Se debe de invertir más en la capacitación, charlas, talleres, etc. La gente le encanta aprender más y quieren más posibilidades para aprender.

Entrevista 7

20-11-2019

Dos profesoras de la primaria de Rocoto

Rocoto, Huanquite

**Contexto:**

La entrevista ocurrió en el patio trasero de la escuela, mientras los niños tenían receso y jugaban a nuestros alrededores. Este ambiente les quitaba la concentración a las señoras, lo que resultaba en respuestas entrecortadas y la necesaria repetición de preguntas. La entrevista fue traducida de quechua a español por un coordinador de campo de PMR ya que las señoras no se sentían cómodas hablando en español. Ambas señoras parecían interesadas en dar respuestas, pero aparentaban ser un poco tímidas en la situación dada. Por el traductor no era fácil siempre hacer preguntas más profundas: en algunos casos el traductor mismo respondía la pregunta por las señoras – asumiendo que él sabía lo que iban a responder. Al preguntarle a el traductor si quería repetir la pregunta, las señoras no parecían tomar el tiempo para pensar y en vez afirmaban la respuesta del traductor. No es seguro si las respuestas eran verdaderamente suyas o si repetían la respuesta del traductor por su autoridad.

**Necesidades:**

Aspecto social

- Organización es importante.
- Mas apoyo de parte de organizaciones. No se sienten lo suficientemente capaces para comenzar con proyectos como la crianza de cuyes.

Aspecto humano

- No hay suficiente capital para la financiar la buena educación de los niños.
- Hay peleas entre los niños, y algunos niños no vienen más a la escuela. No son obligados por sus padres.
- No hay buena infraestructura sanitaria, aunque si se está construyendo.

Aspecto ecológico

- Se valora la naturaleza más hoy en día gracias a PMR.
- Se trata de proteger el medio ambiente haciendo cosas como coleccionar la basura en un mismo sitio.

Aspecto productivo

- Normalmente no hay suficientes productos para vender – no vale la pena ir a Cusco a vender tan poco.

Aspecto económico

- Es relativamente difícil vender productos, excepto los cuyes.
- Los ingresos son sumamente bajos.

**Valores:**

- Valorarse. Antes no se valoraban y se sentían mal de si mismas. Ahora ven la importancia de valorarse y valorar lo que hacen.

**Metas:**

- Personal a corto plazo: Plantar frutales (paltos, duraznos) y cuyes.
- Personal a largo plazo: Tener una empresa de cuyes o paltos.
- Comunitario a corto plazo: Plantas paltos y pinos como comunidad.
- Comunitario a largo plazo: No hay.

**Últimos pensamientos:**

- Les gustaría criar truchas.

Entrevista 8

20-11-2019

Señora de Huanca Huanca

Huanca Huanca, Huanoquite

**Contexto:**

La señora tenía a su hijo de aproximadamente 2 años en sus brazos durante la entrevista que ocurrió en la plaza central de la comunidad. Aparte de una compañera de trabajo de PMR, la plaza estaba vacía así que nadie nos podía interrumpir u oír la conversación. La conversación no fue grabada por preferencia de la señora. El hijo estaba un poco inquieto durante la conversación, pero esto no afectó claramente la concentración de la señora. Su castellano era bueno y la conversación fluida.

**Necesidades:**

Aspecto social

- Una familia unida que trabaja como una entidad es necesario para mejorar prácticamente todos los aspectos de la vida.
- También es importante que la comunidad se sienta unida y que se hagan proyectos al nivel de la comunidad.
- Confianza en y entre las familias es necesaria para el mejor funcionamiento de la comunidad.
- La opinión de mujeres no siempre es valorada en reuniones comunales.

Aspecto humano

- La educación que hay no es muy buena y faltan profesores.
- Hay pocos doctores, la prevención de enfermedades y educación sobre la salud es muy baja, y hay pocas opciones para medicarse.

Aspecto ecológico

- Parece que hay menos lluvias, y las lluvias que hay no son suficientes.
- La mayoría de la gente respeta a la naturaleza, dando de vuelta lo que toma.

Aspecto productivo

- Es difícil vender por la baja cantidad y calidad de los productos. También por las malas rutas.
- No hay suficientes manos para trabajar en el campo.
- La infraestructura sanitaria y de transporte es muy mala.

Aspecto económico

- Generalmente hay suficientes ingresos en la comunidad.
- Varias personas piden préstamos.

**Valores:**

- Sus hijos. Que tengan una buena educación y vida.

**Metas:**

- Personal a corto plazo: Comprar terreno y posiblemente comprar una casa.
- Personal a largo plazo: Ir a Cusco con su familia para que sus hijos tengan una mejor educación.
- Comunitario a corto y largo plazo: No existen.

**Últimos pensamientos:**

- No tenía nada que añadir.

Entrevista 9  
20-11-2019  
Coordinador de PMR en Huanca Huanca  
Huanca Huanca, Huanoquite

**Contexto:**

La entrevista ocurrió en la plaza central de Huanca Huanca sin personas a nuestros alrededores. Los últimos dos días habíamos viajado juntos a distintas comunidades así que ya habíamos formado algo de confianza y ya habíamos hablado sobre algunos temas que no fueron grabados. La entrevista si fue un poco apurada ya que otro señor lo estaba esperando para unas diligencias. De todos modos, todas las preguntas fueron contestadas y el señor estaba concentrado en la entrevista. Su castellano era excelente.

**Necesidades:**

Aspecto social

- Sensibilizar a la gente en temas del medio ambiente, relaciones entre la familia, y mejoramiento de su producción.
- Capacitar, hacer conocer los derechos y deberes de las personas.

Aspecto humano

- Salud
- Educación sobre temas de la agricultura

Aspecto ecológico

- Gracias a PMR, la gente respeta un poco mas al medio ambiente. Todavía se usan pesticidas, pero esto es por necesidad. También se están adoptando abonos orgánicos.

Aspecto productivo

- Las familias deben de concentrarse producir una mayor variedad de productos.

Aspecto económico

- Trabajando en asociaciones da más seguridad a las familias ya que así pueden vender y comprar productos en una manera unida.

**Valores:**

- Educar a los hijos en los valores y costumbres de sus ancestros.

**Metas:**

- Personal a corto plazo: Construir galpones para la crianza de animales menores.
- Personal a largo plazo: Plantar pinos, cedros y palto.
- Comunitario a corto plazo: Plantar cereales, papa y maíz.
- Comunitario a largo plazo: Plantaciones de árboles.

**Últimos pensamientos:**

- No tenía nada que añadir.

Entrevista 10

21-11-2019

Pareja visitando la oficina

Cochacochayoc, Challabamba

**Contexto:**

La entrevista ocurrió en la oficina de PMR, en un cuarto privado sin otra gente que podía escuchar la conversación. El señor y la señora participaron ambos, aunque el señor hablaba primariamente en castellano excelente. Para tratar de sacar información de la señora, algunas preguntas fueron dirigidas directamente a la señora. A veces, la señora respondía suavemente y el señor repetía la respuesta más claramente. Con algunos temas, la señora también añadía información sin tener que preguntarle directamente. Al finalizar la entrevista, la pareja tuvo una conversación con un colega de PMR. Esta conversación no fue grabada, pero si fue seguida e información fue sacada de ella.

**Necesidades:**

Aspecto social

- Buenas posibilidades para dialogar civilmente en la familia y entre familias.
- Compartir el trabajo entre la familia.

Aspecto humano

- Educación de confianza es necesaria en la comunidad. También que los hijos entiendan la importancia de estudiar.
- Es difícil encontrar medicinas en caso de enfermedades. Hay malas conexiones a servicios médicos.
- No hay buen mantenimiento de servicios sanitarios, y no hay agua potable en casa.
- Muchos niños van a la escuela sin poder bañarse, con ropa sucia, sin higiene básica.

Aspecto ecológico

- Ha estado lloviendo menos en los últimos años.
- Hay una zona natural protegida donde han aparecido animales que no se habían visto en mucho tiempo.

Aspecto productivo

- Una mayor variedad de productos (e.g. más cultivos y animales menores) que ayudaría en crear ingresos más constantes.
- Se enfoca más en calidad en vez de cantidad.
- No hay suficientes lluvias para mantener a los cultivos vitales.

Aspecto económico

- No hay suficientes ingresos para mejorar la vida significativamente.
- Tiene que ir a otra ciudad a trabajar para ganar un poco más de dinero.

**Valores:**

- Progresar y ser un líder; el señor quiere siempre seguir adelante y ser un ejemplo en esta manera para su familia y su comunidad.

**Metas:**

- Personal a corto plazo: Comprar terreno para cuyes y nuevas variedades.
- Personal a largo plazo: Ir a la ciudad y asegurarse que sus hijos se vuelvan profesionales.
- Comunitario a corto plazo: Plantar más variedades de cultivos y árboles.
- Comunitario a largo plazo: Construir una fábrica comunal para procesar lana.

**Últimos pensamientos:**

- No tenía nada que añadir.

## 8.5 Annex V: KPI criteria scores

Question numbers have been added instead of the questions to reduce the size of the table. For the respective questions, see Annex III.

Value	Question	Validity	Interpretability	Objectiveness	Understandability	Importance	Final score
Productive	1	5	5	5	4	4	4.5
Productive	2	3	3	4	4	4	3.7
Productive	3	4	4	4	4	4	4
Productive	4	4	5	5	4	3	4
Productive	5	3	5	4	5	3	3.8
Productive	6	4	5	5	3	3	3.8
Productive	7	4	5	4	4	5	4.4
Productive	8	5	4	5	4	5	4.7
Productive	9	4	5	5	4	5	4.6
Productive	10	4	4	4	5	3	3.9
Productive	11	5	5	3	5	3	4
Productive	12	4	4	3	5	3	3.7
Productive	13	5	5	5	5	4	4.7
Productive	14	5	5	5	5	4	4.7
Productive	15	4	5	5	5	4	4.5
Economic	16	5	4	4	5	5	4.7
Economic	17	5	5	4	4	5	4.6
Economic	18	4	4	3	4	5	4.1
Economic	19	4	4	5	4	3	3.9
Economic	20	4	4	5	4	3	3.9
Economic	21	4	5	4	5	3	4
Economic	22	5	4	4	5	3	4.1
Economic	23	4	5	5	4	3	4
Economic	24	5	4	5	4	3	4.1
Economic	25	4	4	5	4	2	3.6
Economic	26	5	5	5	4	2	3.9
Economic	27	5	5	4	5	2	3.9
Economic	28	4	5	4	5	5	4.6
Economic	29	5	5	5	5	5	5
Economic	30	5	5	5	5	5	5
Social	31	5	5	4	5	3	4.2
Social	32	4	5	3	5	3	3.8
Social	33	4	4	4	5	3	3.9
Social	34	4	5	4	4	4	4.1
Social	35	5	5	3	5	4	4.3
Social	36	5	5	4	5	4	4.5
Social	37	4	5	3	4	4	3.9
Social	38	4	5	4	5	4	4.3
Social	39	5	5	5	5	4	4.7

Social	40	4	4	4	4	3	3.7
Social	41	4	4	5	4	3	3.9
Social	42	4	4	5	4	3	3.9
Social	43	5	5	4	4	3	4
Social	44	5	5	3	4	3	3.8
Social	45	5	5	3	5	3	4
Human	46	5	5	5	5	4	4.7
Human	47	5	4	4	4	4	4.2
Human	48	4	5	4	5	4	4.3
Human	49	5	5	5	4	4	4.5
Human	50	4	4	4	5	4	4.2
Human	51	4	4	5	5	4	4.4
Human	52	5	5	5	5	5	5
Human	53	4	5	5	4	5	4.6
Human	54	5	5	4	5	5	4.8
Human	55	4	4	4	5	4	4.2
Human	56	4	5	5	5	4	4.5
Human	57	4	4	5	3	4	4
Human	58	5	5	4	4	3	4
Human	59	5	5	3	5	3	4
Human	60	5	4	4	4	3	3.9
Ecological	61	5	5	5	3	4	4.3
Ecological	62	5	5	5	4	4	4.5
Ecological	63	4	4	5	3	4	4
Ecological	64	4	4	4	4	4	4
Ecological	65	4	5	4	4	4	4.1
Ecological	66	4	5	3	4	4	3.9
Ecological	67	3	4	4	5	4	4
Ecological	68	5	4	4	4	4	4.2
Ecological	69	4	5	4	5	4	4.3
Ecological	70	5	5	5	5	3	4.4
Ecological	71	5	5	5	5	3	4.4
Ecological	72	4	5	4	3	3	3.6
Ecological	73	4	4	3	4	2	3.2
Ecological	74	5	5	5	5	2	4.1
Ecological	75	5	5	3	5	2	3.7

## 8.6 Annex VI: Individual scores for subcategories for PMR and non-PMR communities

Value	Indicator	PMR	non-PMR	Difference
Productive PMR	Yield	3.5	2.9	0.6
Productive PMR	Quality	3.3	2.7	0.6
Productive PMR	Practices	3.8	3.3	0.6
Productive PMR	Employment	4.1	3.8	0.4
Productive PMR	Territory and Assets	3.7	3.8	-0.1
Economic PMR	Income	3.0	2.4	0.6
Economic PMR	Debt and loans	4.4	4.8	-0.3
Economic PMR	Expenses	3.0	2.7	0.3
Economic PMR	Savings	2.5	2.4	0.0
Economic PMR	Connectivity	2.2	2.2	0.1
Social PMR	Trustworthiness	4.4	3.3	1.1
Social PMR	Social participation	4.4	3.8	0.5
Social PMR	Sense of community	4.1	3.1	1.0
Social PMR	Shared norms	4.6	4.4	0.2
Social PMR	Equality of opportunities	4.4	3.4	1.0
Human PMR	Health	3.4	3.0	0.4
Human PMR	Facility development	3.9	3.5	0.5
Human PMR	Education	3.6	2.5	1.1
Human PMR	Opportunity recognition and exploitation	4.3	3.3	1.0
Human PMR	Self-efficacy	4.6	4.2	0.4
Ecological PMR	Pressures	4.0	3.4	0.6
Ecological PMR	State of the environment	2.8	2.6	0.2
Ecological PMR	Social response	3.9	2.8	1.1
Ecological PMR	Resources	3.3	2.8	0.4
Ecological PMR	Resilience	2.6	1.9	0.6

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