



ANDES
Asociación Para la Naturaleza
y el Desarrollo Sostenible



Oxfam Novib

SOWING DIVERSITY= HARVESTING SECURITY

Nutrition, Coping Strategies, Knowledge and Use
of Neglected and Underutilized Species

Pillar 3- Intermediary report- Scarcity Period

BASELINE STUDY



Cusco, April 2016

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1. INTRODUCTION

The project “*Sowing diversity= Harvesting Security. Nutrition, coping strategies, knowledge and use of neglected and underutilized species*” (SD=HS) aims to uphold, strengthen and mainstream the rights and technical capacities of indigenous peoples and smallholder farmers, and to influence local to global policies and institutions on the sustainable use of plant genetic resources for food security and nutrition under the conditions of climate change. The objective is to help link diverse realities on the ground and feed this information into complex national and global policy processes.

One of its objectives, related to Pillar 3, is to empower women to reclaim their right and role in food security through strengthening their capacity in seeds management and nutrition and in global policy engagement. It is expected that the project, through this pillar, will allow: 1) the women farmers empowerment to enhance their knowledge, access and use of biodiverse sources of nutrition, contributing to build stronger seed systems of important nutritional crops such as the Neglected and Underutilized Species (NUS), 2) the sharing of their acquired knowledge and innovative strategies on biodiverse nutrition concepts and tools with other communities and 3) the contribution of their knowledge and experiences to the international awareness of biodiversity based diets, and their participation in policy dialogues to claim the right to food.

The present report contains the results of the baseline study of the project “*Sowing diversity= Harvesting Security*”. It provides useful information to size the characteristics of the project’s beneficiary population and constitutes the first step of the monitoring process with the project’s partners and donors. The monitored indicators will provide evidences to adapt and redefine the project’s strategy in order to achieve its results. It will also nurture the coming final evaluation process, allowing the design of gender-based nutrition interventions comprising NUS and further advocacy processes and policy briefs. This baseline complements the assessment undertaken in 2013 in the context of the project “*Putting Lessons into Practice. Scaling Up Peoples’ Biodiversity Management for Food Security*” aiming to scale up innovations produced by farmers of the Potato Park to communities in Lares by means of an experience-based approach and focusing on innovations improving food production, seed security, nutrition, women empowering and climate resilience¹.

In this project, the use of Neglected and Underutilized Species (NUS) as coping strategy to face food scarcity periods was identified as a local bio-cultural innovation. This report assesses the use of Neglected and Underutilized Species (NUS) which are

¹ With the project *Putting Lessons into Practice: Scaling Up Peoples’ Biodiversity Management for Food Security* supported by Oxfam Novib and IFAD, ANDES has initiated the scaling up of innovations produced by farmers of the Potato Park to communities in Lares. Specifically, the project aims to: (i) scale-up Potato Park farmer’s innovations, taking advantage of opportunities created by the IFAD project to reach scaling targets; (ii) carry out a systematic assessment of the nutritional situation of Lares to complement the base line developed under the IFAD project, identify problems related to under-nourishment and bottlenecks as well as opportunities for action. The Project examines the extent to which the Potato Park project have actually produced measurable on-farm conservation results which can be scalable to other areas. This aims at developing a conceptual scheme for (i) strengthening key farmer innovations (specially focused on seed multiplication/transfer/exchanges); and (ii) analyzing and assessing whether interventions by projects aimed at supporting on-farm conservation deliver relevant conservation and livelihood results. The later can be extremely useful for scientists, donors, policy-makers and practitioners involved in on-farm projects, to assess the success of their projects in a more systematic way.

species neglected by research and sciences. They present however high potentialities in terms of nutrition and resistance to climate change, and are associated to traditional and local knowledge. Smallholder farmers, especially women are the guardians of this knowledge. Reinforcing nutrition interventions based on NUS and the Andean traditional reciprocity food strategies (i.e barter markets) is a way to empower women.

The report includes nine sections deploying the introduction, the assessment objectives, the territorial scope, the baseline indicators, the estimation methodology, the results, the influencing factors for the future design of support strategies, the conclusions and the recommendations.

2. OBJECTIVES

The goal of this research was to assess the contribution of Neglected and Underutilized Species (NUS) in the food security strategies of households in the communities of the Lares Valley during food scarcity periods. The specific objectives of the process were:

- To assess the households dietary diversity.
- To explore the food coping strategies during food scarcity periods, looking specifically at the collection of NUS.
- To analyze how women and men manage the NUS system, including coping strategies, social access, diversity of uses, knowledge management.
 - To explore the contribution of NUS in the well-being local concept, looking at the inequalities between households and the local strategies to address them.
 - To map the institutional opportunities to enhance the NUS systems.

3. SCOPE

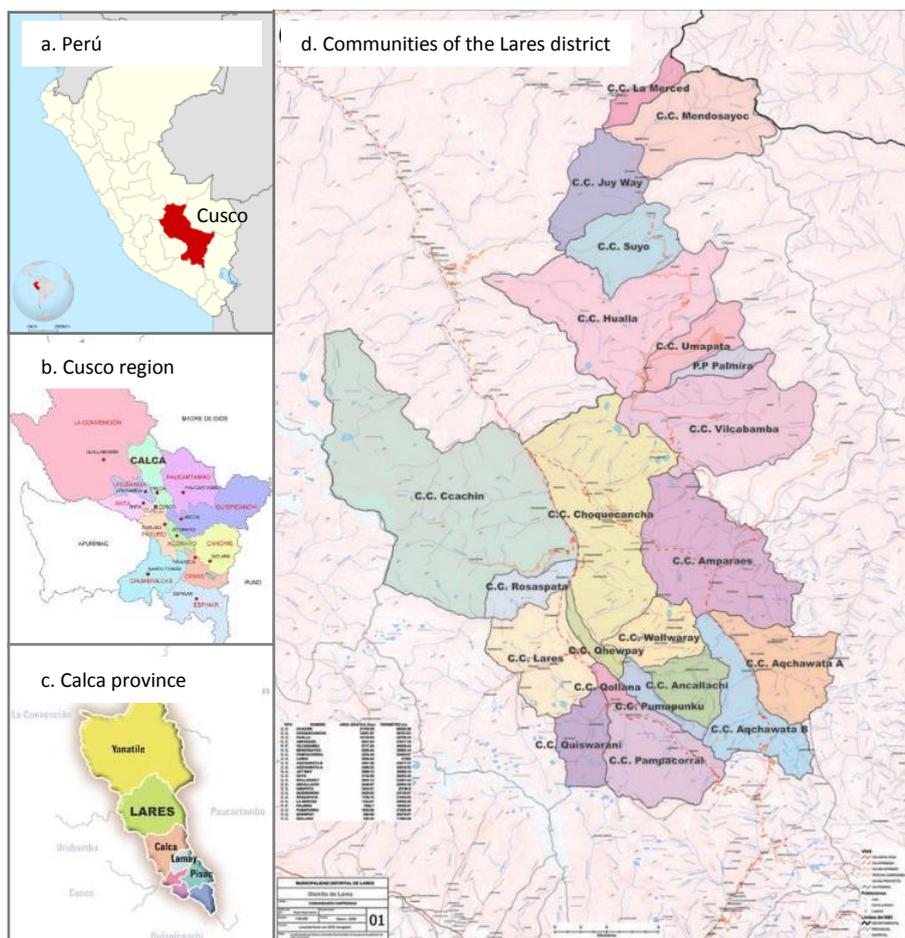
Small farmers' food and seed systems in the Peruvian Andes confront a double challenge: on one hand climate change with its increasing temperatures, changing rainfall patterns and increases in frequency of extreme events and on the other hand, socioeconomic and political drivers, particularly extractive industries (e.g. mining), agro-industry, and land grabbing. Both have increased habitat destruction and fragmentation, biodiversity loss and genetic erosion of important food crops. This trend is compounded by the globalization of market forces, the promotion of industrial agriculture, migration, seed policy, and cultural change. Against this backdrop, the current agricultural policy on small farmers promotes the transformation of the traditional and diverse smallholder seed and food systems into systems dependent on corporate seed and chemical inputs and mechanization, endangering the food security and wellbeing of millions of marginalized indigenous small farmers.

This challenge is particularly acute in the Cusco region, a center of origin of important Andean food crops and an agro-biodiversity hotspot with a highly diverse food system and rich traditional knowledge; thus, a region of high conservation value for both wild and domesticated species and for its vibrant smallholder seed and food systems. The latter is critical for global food security as the large crop diversity maintained by local farmers contributes to sustaining the capacity of global agricultural and food systems. However, maintaining large crop diversity on-farm entails important costs to farmers,

who have almost no official support and increasingly face strong incentives to abandon this diversity. Such systems need support.

The research included the 13 farming communities² of the district of Lares³ (Calca province) in the region of Cusco, Peru.

FIGURE 1. Location of the communities included in the research



The district of Lares comprises a wide range of altitudes from 2,000 masl to 4,500 masl. The existence of three main agro-ecological areas⁴ leads to a wide diversity of

² The implementation of the SD=HS project was originally planned in 23 communities situated in the Lares district. On December 2015, the Peruvian government created the new district of Amparaes (Law N0922015 PCM) with some of the communities of Lares in order to improve the effectiveness of poverty alleviation programs. In this way, the communities involved in the project became 13.

³ As explained in the SD=HS project formulation document, the district of Lares is one of the poorest in Peru, being 97.8% of the households under the poverty line, and 89.2% of the households under the extreme poverty line (INEI 2009). In its communities, 73.8% of the children under 5 year-old present chronic malnutrition (INEI 2009), being highly vulnerable to the impacts that climate change in food security. The most part of the Lares population (95%) lives in the rural areas, with 98% of them working in agriculture. The average farm plot size is 1.5 hectares and agriculture constitutes the largest component of the local economy.

⁴ The upper area is characterized by the presence of native grasses, where tubers and roots are mostly cultivated; it is also the zone for camelid and sheep grazing. In the middle area is that where cereals such as corn, rice and barley are cultivated; there are also some legumes such as beans, peas, and Andean grains like quinoa and *kiwicha*. Cattle and some other small animals (guinea pigs, chickens, pigs, ducks)

crops and wildlife species. Barter markets take place once a week allowing social and productive complementarities between communities of the three areas. One of the main effects of this economic integration network is the improvement of the households (HH) diets through the intake of foods produced out of their communities. For this reason, the communities participating were those where barter markets take place, situated in the middle and high agro-ecological areas (Figure 2).

FIGURE 2. Communities included in the research

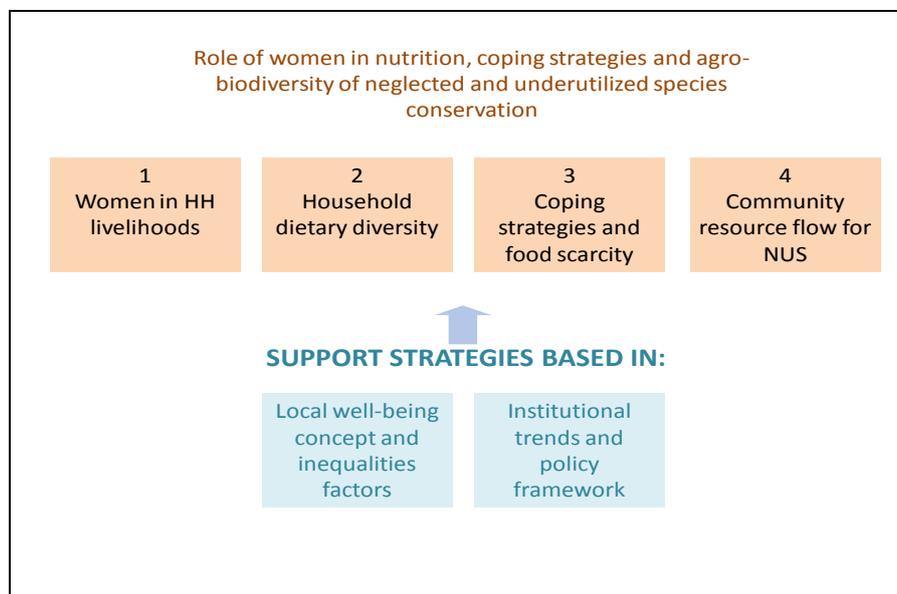
Agroecological area	Communities	Population	Households
KESHUA (Middle altitude range: between 2300 to 3500 masl)	Queyupay	197	46
	Cacchin	1032	294
	Collana	61	18
	Choquecancha	1510	432
	Rosaspata	177	50
	Matinga	80	20
	Lares	117	31
	Lares Ayllu	849	248
PUNA (High altitude range: above 3500 masl)	Pampacorral	428	100
	Pumapunku	122	35
	Ancallachi	81	23
	Quishuarani	203	50
	Huallhuaray	170	41
TOTAL		5027	1388

are bred here. In the lowest area some fruits are cultivated such as citrus fruits, bananas, as well as some other products such as cotton and squash.

4. INDICATORS

The set of impact indicators established by the project's partners for planning, monitoring and ongoing evaluation are related to the 6 dimensions showed in Figure 1.

FIGURE 3. Monitoring dimensions



For each of the four dimensions, a set of indicators have been established in order to provide evidences on the leading role of women in nutrition, coping strategies and agro-biodiversity of NUS conservation. The number of indicators established in each dimension is as follows:

- Dimension 1. Role of women in the HH livelihood (WHS): 7 indicators (Figure 4).
- Dimension 2. Household dietary diversity (HDD): 9 indicators (Figure 5).
- Dimension 3. Coping strategies in food scarcity periods (CS): 9 indicators (Figure 6).
- Dimension 6. Community resource flow for NUS (CRNUS): 3 indicators (Figure 7).

Most of the indicators refer to the household as the main unit of socio-economic integration in the communities. Some indicators are desegregated by gender in order to evidence the specific role of women.

The indicators for each dimension are showed in Figure 4, 5, 6 and 7.

FIGURE 4. Indicators related to the role of women in the HH livelihoods (Dimension 1)

WHS	1	Average household size	Number of members
WHS	2	Households composition by age and gender	% of women in HH
WHS	3	Gender of the head of households	% of HH
WHS	4	Average age of head of household	Years
WHS	5	Main activity of the repondent	% of respondent per activity reporte
WHS	6	Respondent level of education attainment	% of women respondent
WHS	7	Respondent literacy level by gender	% of women respondent

FIGURE 5. Indicators related to the household dietary diversity (Dimension 2)

Dimension	Ind. Number	Indicator name	Unit
HDD	1	Share of households consuming plant foods rich in vitamin A	% of HH
HDD	2	Share of households consuming organ meat, flesh meat, or fish	% of HH
HDD	3	Share of households consuming fats and oils	% of HH
HDD	4	Share of households consuming sugar and sugary foods	% of HH
HDD	5	Share of households consuming condiments and beverages	% of HH
HDD	6	Average household dietary diversity score	Number of food groups
HDD	7	Median household dietary diversity score	Number of food groups
HDD	8	Household consumption of food groups by HDDS tertile	% of HH
HDD	9	Household food sources by HDDS tertile (self-production, purchase and barter)	% of HH

FIGURE 6. Indicators related to the coping strategies during periods of food scarcity (Dimension 3)

Dimension	Ind. Number	Indicator	Unit
CS	1	Hunger periods frequency during the last year	% of HH
CS	2	Average period of food scarcity	Number of months
CS	3	Food scarcity duration along the year	% of HH
CS	4	Role of the household members in coping strategies by gender	% of HH
CS	5	Household coping strategies during hunger periods	% of HH
CS	6	Households practicing wild food collection	% of HH
CS	7	Households practicing food storage	% of HH
CS	8	Wild food collected by households	% of HH
CS	9	Food stored by households	% of HH

FIGURE 7. Indicators related to the Community resource flow for NUS (Dimension 4)

Dimension	Ind. Number	Indicator	Unit
NUS	1	Number of NUS species collected during food scarcity periods	Number of species
NUS	2	Number of NUS species collected during food abundance periods	Number of species
NUS	3	Number of extinct NUS species	Number of species

5. METHODOLOGY

5.1 Approach

Indigenous, decolonizing and participatory methodology

The research methodology was designed respecting the indigenous worldview and its focus on biocultural heritage. This was done by ensuring the engagement of the communities of Lares in the design, implementation and evaluation of the research. Their participation aimed to empower participants and local institutions allowing its

involvement as facilitators along the process. Three main strategies enhanced the participation:

- Leading the process from the local office in Lares. In order to enhance trusting relationships with the community participating, much of the work was done in the Lares office.
- Integrating local people in the research team as local technicians. Local technicians were elected in each participating communities (n=5) to be surveyors and facilitators. They were trained to ensure the reliability of the results and their operative autonomy⁵.
- Mixing professional and cultural profiles in the work team. *The team that led the process was performed to ensure* interdisciplinary and interculturality. It comprised external experts (such as a food security expert, a project manager, a research assistant, a field coordinator and two agronomists) and the local technicians to allow a knowledge dialogue (Annex 1).

Prior Informed Consent

Natural resources are an integral part of the territories of indigenous peoples. The UN Declaration on the Rights of Indigenous Peoples, adopted in 2007 by the UN General Assembly, lists the biocultural rights of indigenous peoples, with respect to their land and forests, stating in Article 32.2 “*States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.*”

In this way, considering that the free consent of the rural communities is the cornerstone of the Biocultural Protocol, the project seeks to empower its beneficiary population so that they may become active stakeholders of their own development.

The SD=HS project starts with this Nutrition and NUS Baseline in the participating communities, so as the process pay special attention to ensure a free prior informed consent. This involved reporting on the project and its benefits at the community meetings, obtaining the approval of the communities’ authorities, providing adequate times for the community members to decide autonomously, and from that getting a document of joint commitment.

Integration of quantitative and qualitative research methods

The baseline study used a mixed methods approach, in which quantitative and qualitative methods were combined in a complementary manner. A quantitative analysis of key indicators was carried out by means of a household survey. Additionally, causal explanations that cannot be measured in quantitative terms were explored through focus groups and interviews (Figure 8).

⁵ Some of the issues included in the training were: dynamic project presentation, awareness of the nutrition subject, hunger periods/coping strategies and NUS, tools and code of ethics to be a good facilitator, conducting workshops on nutrition hunger periods/coping strategies and NUS, methodology to implement the survey, awareness of the gender approach in development projects, conducting workshops about gender, awareness of the subject of politics and conducting workshops on political advocacy.

FIGURE 8. Quantitative and qualitative methods combination

Type of method	Tool	Purpose
Quantitative	Survey	To estimate the indicators related to: <ul style="list-style-type: none"> - the role of women in the HH livelihoods, - the household dietary diversity, - the current coping strategies in food scarcity periods
Qualitative	Focus groups Interviews	To understand the processes related to: <ul style="list-style-type: none"> - the communities resource flow for NUS - the contribution of NUS in the well-being local concept - the institutional opportunities to enhance NUS

This methodological combination provided a wider understanding of the contribution of NUS to food security. For some indicators (e.g. the use of NUS), the use of both methodologies allowed the quantitative results to be complemented by local interpretations.

Quality management

The design and implementation of this research ensured an explicit management of the quality of the process by means of providing internal processes to design, test, adapt, implement and review the obtained results. Some of the specific measures adopted to do it were:

- Checking the validity of the project's relevance with all its participants and designing a contextually adapted intervention in light of the study results.
- Knowing the situation, potential, problems, needs, desires and priorities of farmers and especially women who will participate in future nutrition projects.
- Taking into account the inequalities and power relationships in the communities when designing and managing the process.
- Reviewing the indicators of the baseline if necessary.
- Defining standardized techniques and procedures that will ensure the provision of the required information.
- Democratizing the local access to information, through the results return to the communities and donors.

5.1 Phases

The process involved four main phases that embraced the research approach and analysis methods (Figure 9):

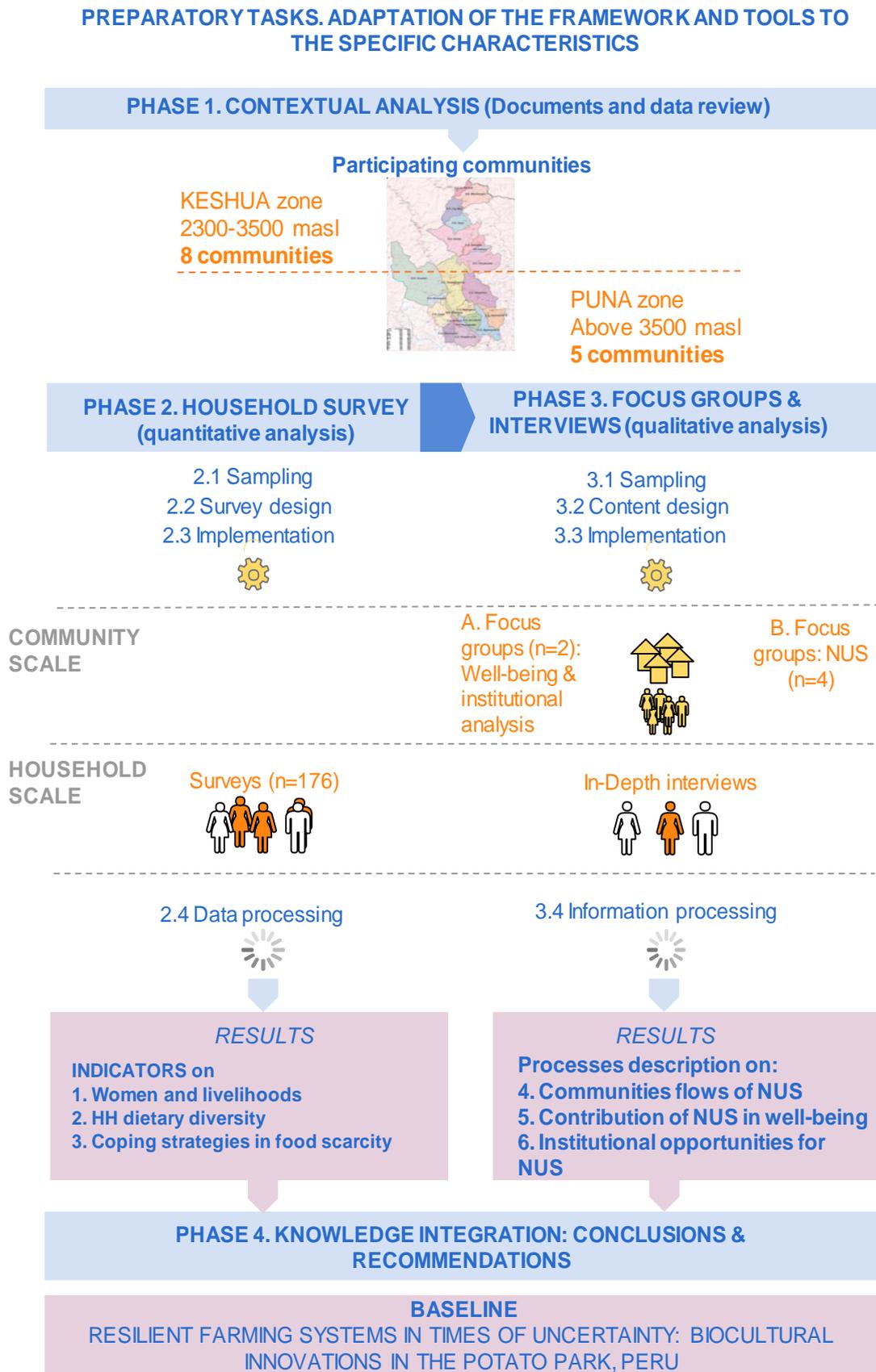
- **Phase 1. Contextual analysis.** The contextual analysis aimed to provide information regarding health factors, productive and social indicators. Primary information on the socio-economic and productive context of the district and region was reviewed.. Information was interpreted and used in a local meeting of the research team.
- **Phase 2. Household survey.** A transversal (cross-sectional) survey was conducted to get an estimation of the indicators at the moment it was done. The survey had a descriptive purpose as it enabled understanding the state of the

monitored dimensions (women and livelihoods, household food diversity and coping strategies in food scarcity periods).

- **Phase 3. Community focus groups and interviews.** By means of Participatory Rapid Appraisal tools, focus groups allowed exploring the communities' resource flow for NUS, their contribution to the local well-being, and the contribution of NUS in the well-being local concept and the institutional opportunities to enhance NUS. The semi-conducted interviews gathered supplementary information on the community NUS resources, their use and the traditional knowledge referred to the collection techniques.

- **Phase 4. Analysis and conclusions.** Information gathered was systematized and indicators were estimated. The obtained results were interpreted taking into account influencing factors such as the local concept of well-being and the institutional and policy drivers.

FIGURE 9. Methodological phases



5.2 Methods and tools

The specific tools used in the assessment to gather information and learnings were a household survey, community focus groups and interviews.

5.2.1 Survey

Sampling

The design of the survey sample followed a statistical stratified approach in accordance with the study area characteristics, allowing the comparison of the results between the two main agro-ecological areas (middle altitude and high altitude). Stratification of the sample by communities of these two agro-ecological areas ensured greater reliability by diminishing global variance. Figure 10 shows the sample size and distribution.

FIGURE 10. Survey sample by community.

Agroecological area	Communities	Population	HH	% of HH (min)	Sample size (n)	Effective sample size (n)
KESHUA (Middle altitude range: between 2300 to 3500 masl)	Queyupay	197	46	10%	5	6
	Cacchin	1032	294	10%	29	35
	Collana	61	18	10%	2	2
	Choquecancha	1510	432	10%	43	57
	Rosapata	177	50	10%	5	6
	Matinga	80	20	10%	2	4
	Lares	117	31	10%	3	1
	Lares Ayllu	849	248	10%	25	35
PUNA (High altitude range: above 3500 masl)	Pampacorral	428	100	10%	10	12
	Pumapunku	122	35	10%	4	4
	Ancallachi	81	23	10%	2	3
	Quishuarani	203	50	10%	5	6
	Huallhuaray	170	41	10%	4	5
TOTAL		5027	1388		139	176

In the households, the key informant person was the head of household. Approximately half of the respondents were women (Figure 11), with an average age of 46 years-old (Figure 12).

FIGURE 11. Surveyed persons gender

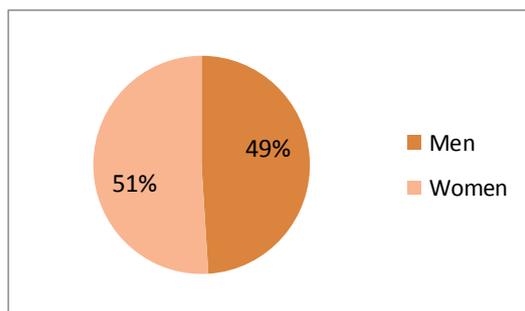
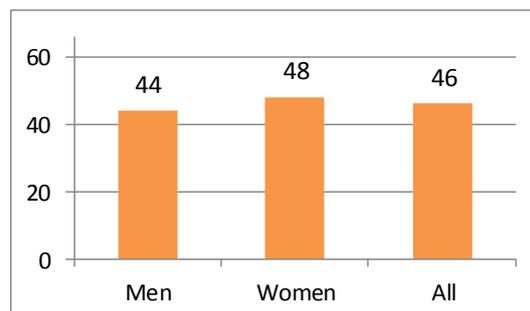


FIGURE 12. Surveyed persons age



Design

The survey form, which was adapted from the original questionnaire provided by Oxfam-Novib⁶, was structured in three sections (HH socioeconomic profile, HH food diversity and food scarcity periods and coping strategies (Annex 2)) that included different types of questions⁷.

The HH socioeconomic profile section included questions on household composition, education attainment, and livelihoods. The HH food diversity section was designed to undertake an analysis of the Household dietary diversity score by means of the 24 hours dietary recall methodology⁸ (Annex 3). This section included questions on food consumption and sources⁹. The food scarcity periods and coping strategies included questions related to the frequency and length of the food scarcity periods, and the coping strategies during these periods, including the HH member's roles and the specific food provision strategies (growing wild foods, storing food).

The first survey design and the survey protocol were reviewed by the local technicians and the field coordinators in two workshops¹⁰ in order to solve possible constraints, particularly referred to the wording of questions, accuracy in information registration and impartiality. After being jointly approved by the ANDES staff and the field team (field coordinators and surveyors), the new version was tested in some communities and improved later¹¹. It has to be noted that, when starting to implement the survey, the first 10% of the survey forms returned incomplete or not correctly filled¹². At the same

⁶ The original questionnaire was translated first into Spanish, and then into Quechua by the field technicians. Some original terms and vocabulary were adapted to the reality of the Andean communities in Lares.

⁷ I.e, direct/ indirect, closed ended, dichotomous, multiple choice.

⁸ [FAO, 2010. Guidelines for measuring household and individual dietary diversity.](#)

⁹ The HDDS should best be measured during the period of greatest food shortage, such as before the harvest. However, the HDDS survey was conducted during the sufficient period to investigate seasonality of the food security.

¹⁰ The two workshops took place February 2016 in Cusco and Lares. Survey procedures were reviewed through role play. A specific training workshop was led with field coordinators and the project coordinator on how to classify food items into the food groups' classification for the FAO's Household Diversity Tool.

¹¹ Local technicians made some surveys with the project and field coordinators during a four days test.

Few deficiencies were noticed in the questionnaire.

¹² One of the detected problems was related to the food scarcity section. The scarcity term (which is "escasez" in Spanish) does not have an equivalent in Quechua and is often assimilated to poverty. Asking about food scarcity would, in the local context, equal asking about the poverty of HH, which is taboo in the communities. Another problem was the fulfillment of the HH food diversity section. Despite the training

time that improving the survey questions and protocol, it was decided to raise the HH sample by 10%.

Finally, surveyors were trained on how to conduct the interview process, guiding its development and avoiding at all times that the respondents provide answers unrelated to the topics of the questionnaire or discuss issues that have nothing to do with the interview. They also practiced how to maintain a neutral stance during the implementation of the survey, avoiding making notice of incorrect or erroneous answer, whether that be with a facial expression or tone of voice.

Implementation

The baseline survey was conducted during period of scarcity in the area of interest (February and March 2016). The survey was implemented in the two agro-ecological areas by the local teams using to register the information paper forms as well as digital equipment (cameras, video cameras, iPads and voice recorders).

The survey implementation was done privately in each household. The presence of family outsiders was avoided to not affect the quality of the responses. Despite surveyors had credentials and an institutional presentation letter explaining the purpose of the survey, the introductory protocol with the households heads followed an Andean cultural practice consisting in offering a portion of coca leaves as a symbol of friendship and mutual respect before starting. In the starting phase, language was carefully used as the first impressions that the respondents could have of the interview were of vital importance to generate trust and cooperation. At this point, before implementing the questionnaire, surveyors made the families aware of the private and confidential nature of the information being provided.

Questions were asked to the respondents exactly as they were printed in the questionnaire form, in the same order and using the same language to do not change their sense. They were posed slowly to guarantee people understood what was being asked. Sufficient time was given to think about and formulate an answer, especially during the dietary 24 hour recall, which required concentration and memory.

Throughout the data collection process, controls were applied to ensure the quality of the information (Figure 13).

FIGURE 13. Survey quality controls mechanisms

- *Punctual control in weekly meetings with local technicians.* Each meeting during the data collection period included a point on the quality of the delivered questionnaires, and difficulties encountered by the interviewers. On demand of the interviewers and local technicians, technical workshops were led during these meetings.
- *Workshops during data collection:* A four day workshop was led during the data collection to control the quality of facilitating and data entry, with a qualitative training on best practices.

workshop undertaken with the interviewers before the deployment of the survey, the food groups were not filled properly. It was then decided that the interviewers would fill a first form with details of the meals by period of the day. Based in this information, the field coordinator and the project manager would make the food groups classification.

Data processing

Data collected through the survey was systematized in a specific database. The answers of the questionnaire were codified. This involved converting all the characters from a natural language (questionnaire) into a set of symbols (numerical, literal, or graphic expressions), allowing for its uniform entry into a digital file. A quality control of the information registered was undertaken in order to clean the database (looking for omissions and errors of data entry).

The specific indicators were estimated for each agro-ecological area. Means and averages were first calculated for each participating community. Information was then aggregated by agro-ecological areas. Graphs were produced to display the obtained results.

5.2.2 Focus groups and interviews

Sampling

The purpose of focus groups was to explore two main issues:

- 1) The communities resource flow for the Neglected and Underutilized Species (NUS)
- 2) The influencing factors that should be taken into account in the design of collaborative strategies to support food security through the NUS. These influencing factors are related to the HH well-being and the institutional trends and policy factors addressing it.

The design of the focus groups has been done to explore specifically these issues in the communities of the two agro-ecological zones: the Keshua zone in the mid altitudinal range and the Puna zone in the high altitudinal range (Figure 9). In order to explore the communities' resource flow of NUS, two focus groups (one by gender) took place in each agro-ecological zone (n=4). In order to explore the influencing factors two focus groups took place (one by agroecological zone) (n=2) (Figure 14). This focus groups design by agro-ecological zones allowed integrating into the research the pre-existent groups of field schools farmers.

FIGURE 14. Focus groups design.

Agroecological area	Thematic focus groups	Communities	Gender
KESHUA (Middle altitude range: between 2300 to 3500 masl)	1. Community resource flow for NUS	Ccachin	Men
	2. Community resource flow for NUS	Choquecancha	Women
	3. Influencing factors: well-being & institutional analysis	Ccahin, Choquecancha & Rosaspata	Mixed
PUNA (High altitude range: above 3500 masl)	4. Community resource flow for NUS	Pampacorral	Women
	5. Community resource flow for NUS	Maucau	Men
	6. Influencing factors: well-being & institutional analysis	Pampacorral & Maucau	Mixed

In the focus groups exploring the communities resource flows for the NUS, some interviews were undertaken in order to go deeper into the assessment. The

interviewees were selected from the focus groups participants inviting persons, especially ancient women, with a deep knowledge and experience on NUS. They were selected by the field coordinator and the local technicians.

Design

The topics explored in each focus group and the interviews forms were adapted from the original guide provided by Oxfam-Novib. The questions guiding the focus groups are showed in Figure 15.

FIGURE 15. Topics explored in each focus group.

Community resource flow for NUS	Influencing factors (I): institutional analysis	Influencing factors (II): well-being
<ul style="list-style-type: none"> ▪ Most important NUS per community ▪ Main traits and uses of NUS ▪ Role of women in NUS knowledge ▪ Role of women in NUS collection ▪ Seasonality of NUS ▪ Trends in time for NUS collection <p><i>In-situ interviews</i></p> <ul style="list-style-type: none"> ▪ NUS concept ▪ Most utilized NUS in the HH ▪ NUS flows within the household ▪ Uses and values of NUS (nutritional, medicinal), ▪ Availability of NUS and conservation practices ▪ Trends in consumption of NUS within generations ▪ Source of knowledge on NUS 	<ul style="list-style-type: none"> ▪ Institutions and organizations in the community ▪ Importance of these institutions ▪ Activities of the institutions prioritized ▪ Relation between the prioritized institutions and the communities ▪ Discussion on the above steps 	<ul style="list-style-type: none"> ▪ Well-being concept and identification of well-being criteria¹³ ▪ Criteria valuation and determination of the missing ones in the communities ▪ Existent inequalities and their levels in the communities, based on the previously determined criteria ▪ General well-being scale within and between communities

The design of the focus groups sessions and the interviews was discussed and adapted in two training workshops with local technicians. The first one (February 2016) was oriented on how to get good data to complement the survey in order to gather food dietary and nutrition information. The project field coordinator and agronomists attended this workshop. In the second one (March 2016) the tools proposed originally by Oxfam were presented to the field coordinator and technicians and adapted to the local context¹⁴. Their translation was done during this workshop¹⁵. This new version was approved by the entire team¹⁶.

¹³ As of the context, it was not possible to do a wealth ranking analysis, it was decided with local technicians to use criteria of "Well-Being" chosen by the communities themselves, and use a scale of inequalities in the communities. An in-depth analysis of the concept of Well-Being, associated with community development and the well-known, local Andean concept of Sumaq Kausay (Harmony and well-being) was led. This way, they pulled out a few criteria defining well-being according to them.

¹⁴ Adaptations of the original tool were:

- On the methodology used in the institutional analysis: change in the order and the use of methods (for the valorisation, and how to define the type of relations) in order to adapt to the comprehension and the traditions of the communities
- On the concept itself of Wealth Ranking: wealth is associated to poverty and identifying households to classify them namely by level of wealth is no doable in a context of extreme

Implementation

Each focus group was facilitated by each community-elected technician, the field coordinator and an agronomist. A set of open ended questions were asked to the participants. Participatory Rural Appraisal (PRA) techniques were used such as *yupana* (traditional way to count), drawings, participatory flows map, and seasonal calendars. PRA allowed obtaining quality and free from bias data, empowering the participants by means of using indigenous-based methodologies that have been known in the communities for thousands of years. Before starting each focus group, confidentiality on the information was ensured to the participants.

The facilitators guided the development of the session avoiding as much as possible that the respondents discuss issues that have nothing to do with content of the FGD. However, they also were flexible to respect the participants' speech freedom allowing a variety of arguments and letting people speak out on important matters.

Discussion was supported with pictures, recordings, videos and notes of Quechua facilitators. Participation was very active during the focus groups and participants took great part in drawing and ranking as well as in discussions. A meal and refreshments were always shared during the session.

The semi-directed interviews to key-informants were conducted during 3 days. The presence of outsiders was avoided during the interview.

Data processing

The systematization process was done during and right after the focus groups with the facilitators, and in workshops in the office. The detailed guidelines and outlines of the Focus groups discussions are in Annex 4.

The data from the two Focus groups exploring the influencing factors was aggregated as no differences were noted between the two groups regarding the criteria of well-being and the remarks on the local inequalities.

poverty, where the subject is taboo. Instead it was decided to use the concept of well-being which is closer to the Andean philosophy of *Sumaq Kausay*, with a better understanding from the communities.

- On the methodology of this Focus group, it was decided not to name household, but to quantify the levels of well-being according to a community-determined scale, based on the criteria they chose.
- On the NUS workshop, the methodology and process was simplified for time and difficulty constraints: drawings were used as much as possible and the map was made with only the valorized NUS. The characteristics of the valorized NUS also included medicinal characteristics, as it is an easier them for the communities who have extensive knowledge of medicinal properties of plants. From these characteristics nutrition traits can be found as well.

¹⁵ The outline for the FGD was carefully translated and used to avoid any misinterpretation and digressions in the conversations, not related to the content of the FGD and interviews. Also, facilitators were trained to maintain a neutral behavior at all times in regard to the conversations occurring during the workshop, thus avoiding making notice of incorrect or erroneous answer, whether that be with a facial expression or tone of voice. For the FGD specifically, they were also trained to be the least intrusive during the workshop and keeping their role of facilitators, while the communities' participants were the "doers" of the workshop. The outline was however flexible to fit best the participants' possibilities and needs, though keeping in mind the outcomes required for the baseline.

¹⁶ Project coordinators, field coordinator, local technicians and ANDES staff.

Throughout data processing, controls were applied to ensure the quality of the information (Figure 16).

FIGURE 16. Focus groups quality controls mechanisms

- During the focus group, re-explanation of the exercise and concepts. Reallocation of time to collect high-quality data.
- As the focus group, a system of instantaneous systematization was put into place through a set of questions, to collect data right after the FGD from the facilitators.
- As the focus groups were very long and brought an important amount of detailed information, a second systematization was done through the recordings, the videos and photos taken during the workshop.

The interviews results were systematized identifying the key ideas provided and sorting them according to the monitoring sections & indicators of the baseline. This information complemented the information obtained through the survey and the focus groups.

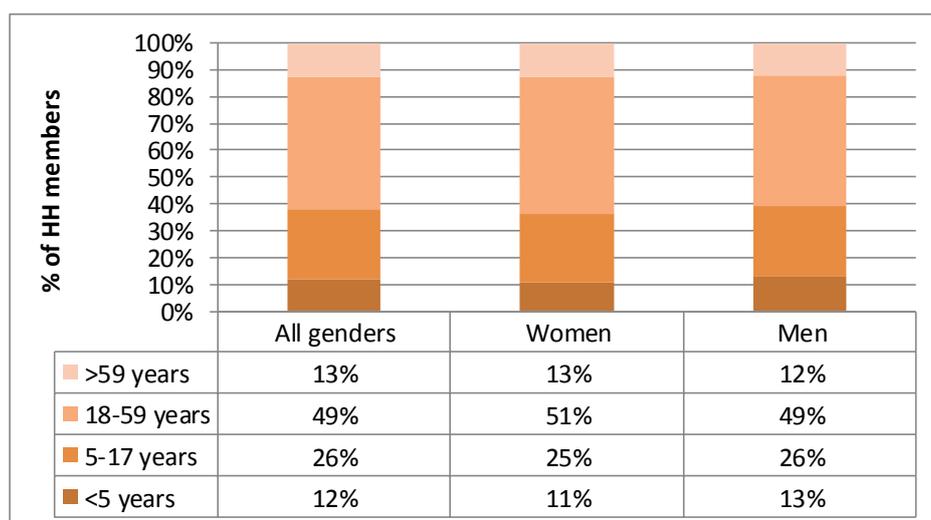
6. Results

6.1 Women and livelihoods

Households' characteristics

The average household size in the communities covered by the baseline is 4 members. The most common household type consists of two adults (18-59 years old) with two dependent children or young people (0-17 years old) and one old person (>59 years old) (Figure 17). The distribution of age between the female members of household is similar to the male distribution (Figure 17).

FIGURE 17. Household composition by age and gender, 2016



Most of the respondents recognize women as the main heads¹⁷ of the household (62% of interviewed HH) (Figure 18), especially in the middle *keshua* zone. Indeed in the medium altitude zone many of the men go find work to supplement their livelihoods outside of the community with urban or tourism work and the women are left as the head of the household, taking care of the family. Gender norms also seem more persistent in the higher altitude zone, where the remoteness could lead to different gender role perception. In both cases, the average age of the household head is over 45 years-old (Figure 19).

FIGURE 18. Head of household gender by agro-ecological zones (% of respondents), 2016

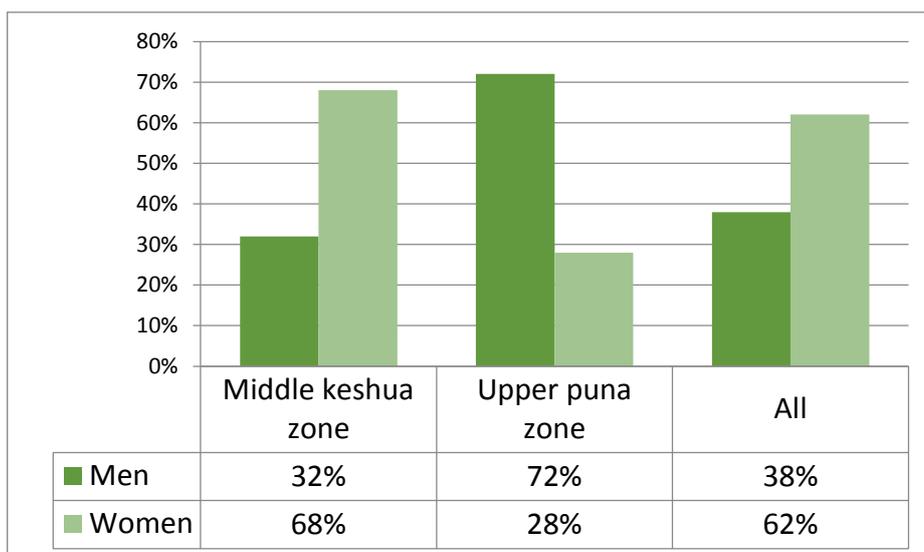
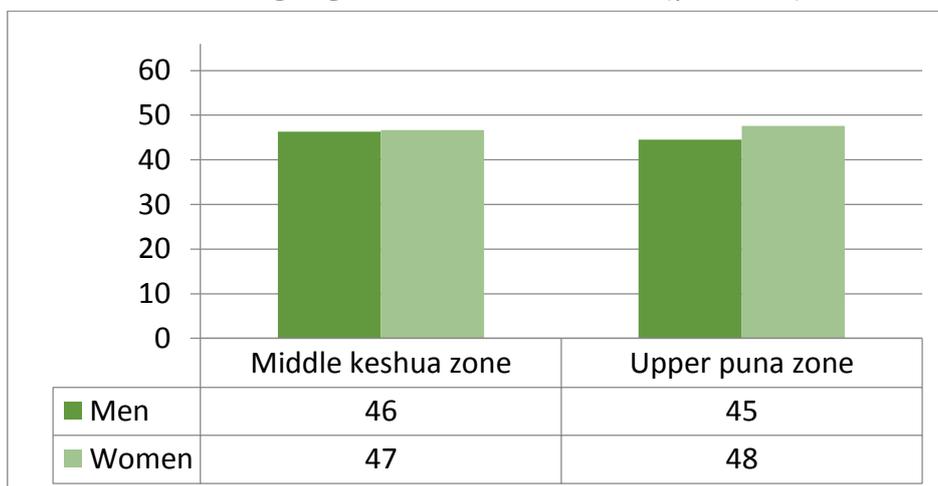


FIGURE 19. Average age of heads of household (years-old), 2016

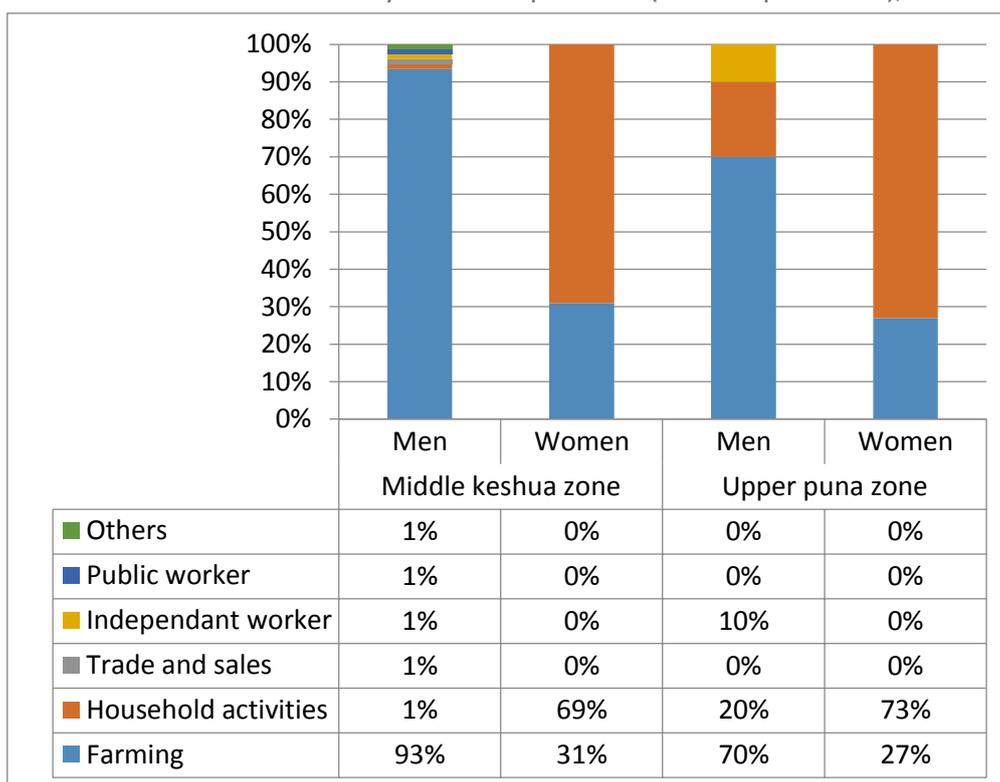


¹⁷ The head of the household is the one who manages the income earned and the expenses incurred by the household. He/she is considered by other members of the household as the head. The household head is not necessarily the oldest person in the household.

Livelihoods

The dominance of women as household heads explains the fact that the main activity of women in the households reported by the respondents, especially in the middle Keshua zone, is the household caring (69% of respondents), followed by farming (31% of respondents). Women undertake multiple activities such as children and elderly care, agricultural activities, seeds selection, wild food collection, provision of fuel for cooking and heating and participation in food barter and trade markets among others (Figure 20).

FIGURE 20. Main activity of the respondent (% of respondents), 2016



Educational attainment and literacy

The most part of respondents attended at least primary school (92% of respondents). A less part attended secondary school (20% of respondents) and very few tertiary studies. By gender, whereas 33% of men completed secondary school, only 7% of women completed the same level of education attainment (Figure 21). Literacy levels show gender inequalities as well. Women read and write spanish and kechua less than men (Figure 22). These differences show that women are more vulnerable than men as they lower educational and literacy skills affect their opportunities to participate in new collaborative projects with external stakeholders generating new ideas and technologies. Regarding the differences between agroecological areas, results show how women in the upper *puna* communities do not access to secondary studies while a share of women in the middle *keshua* zone do it. Because this area is more remote and there are less economic resources, there has not been an educational facility until recently. Often families must decide between sending their male or female child to school, and because of persistent gender norms, male children are sent.

FIGURE 21. Respondents level of education attainment by gender, 2016

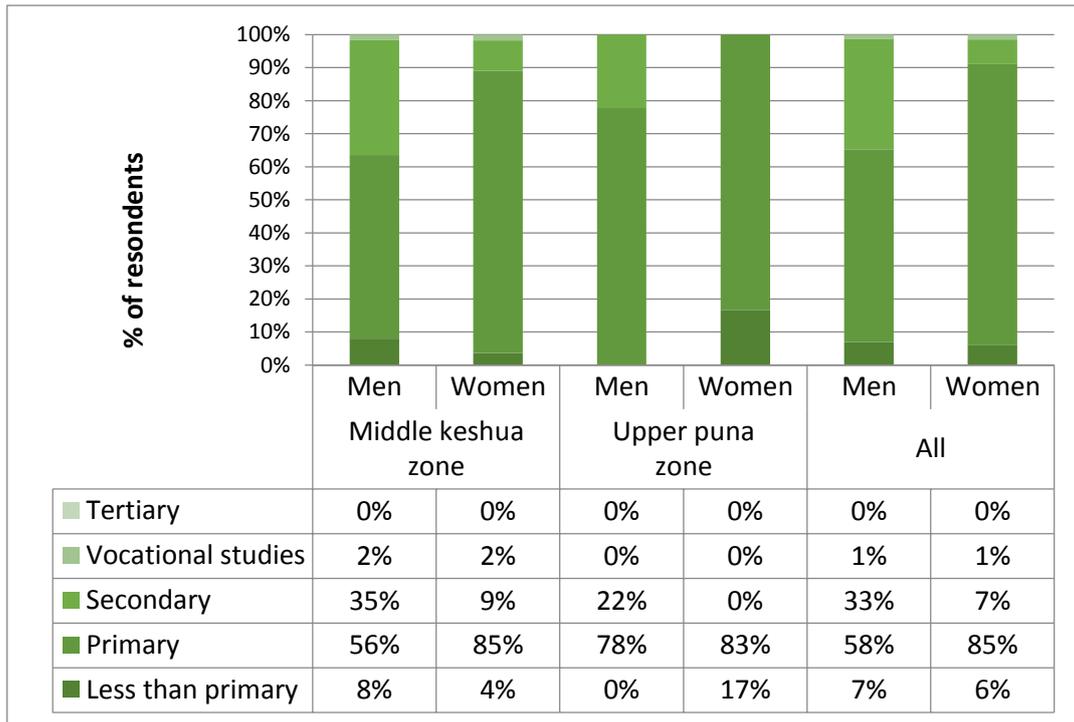
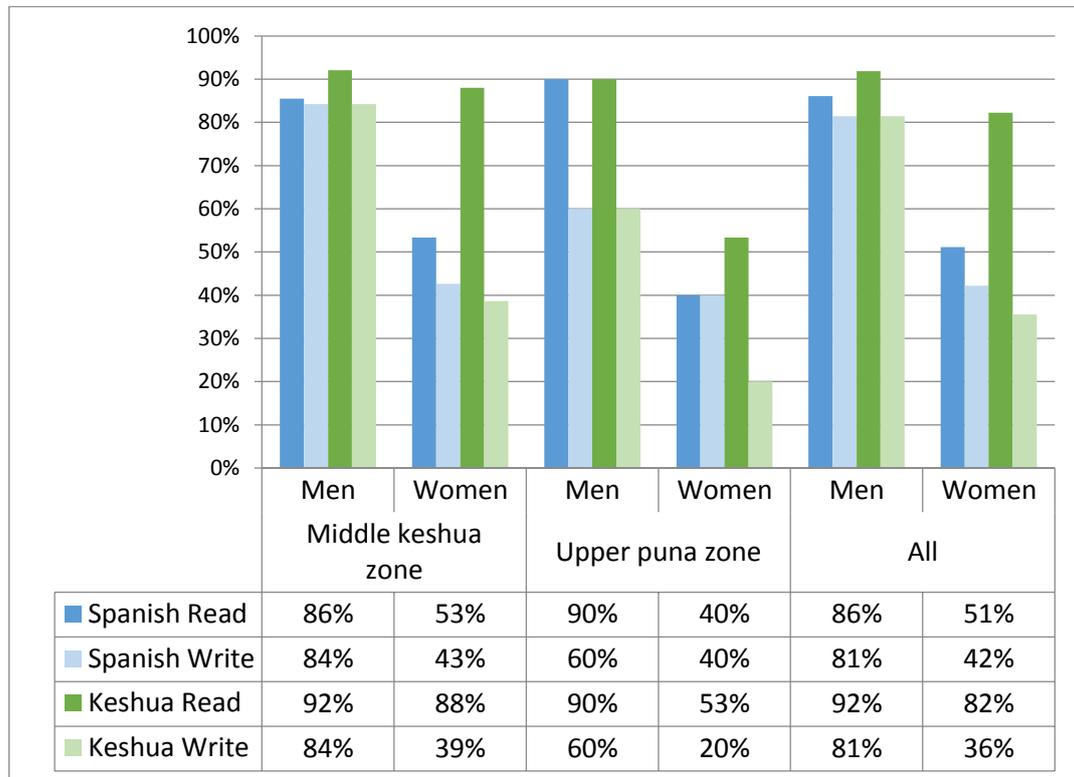


FIGURE 22. Respondents literacy level by gender, 2016



Highlights 1. Women and livelihoods

- The role of women in households is different in the two agro-ecological zones. In the middle keshua zone, women have a dominant role as heads of households while in the puna zone, few women are household heads.
- In the middle keshua zone, the main working activity of men is farming. The two main activities of women are farming and household caring. In the upper puna zone, men also dedicate time to other types of work to generate an extra income such as handicrafts making and Inca trail guiding. Women in these communities are more oriented to household caring activities than in the middle zone communities.
- Respondents' education attainment and literacy abilities for reading or writing are clearly higher in the communities of the middle zone. Women respondents from the highest communities present the lowest education and literacy levels.

6.2 Household dietary diversity

Households consumption by food groups (last 24 hours)

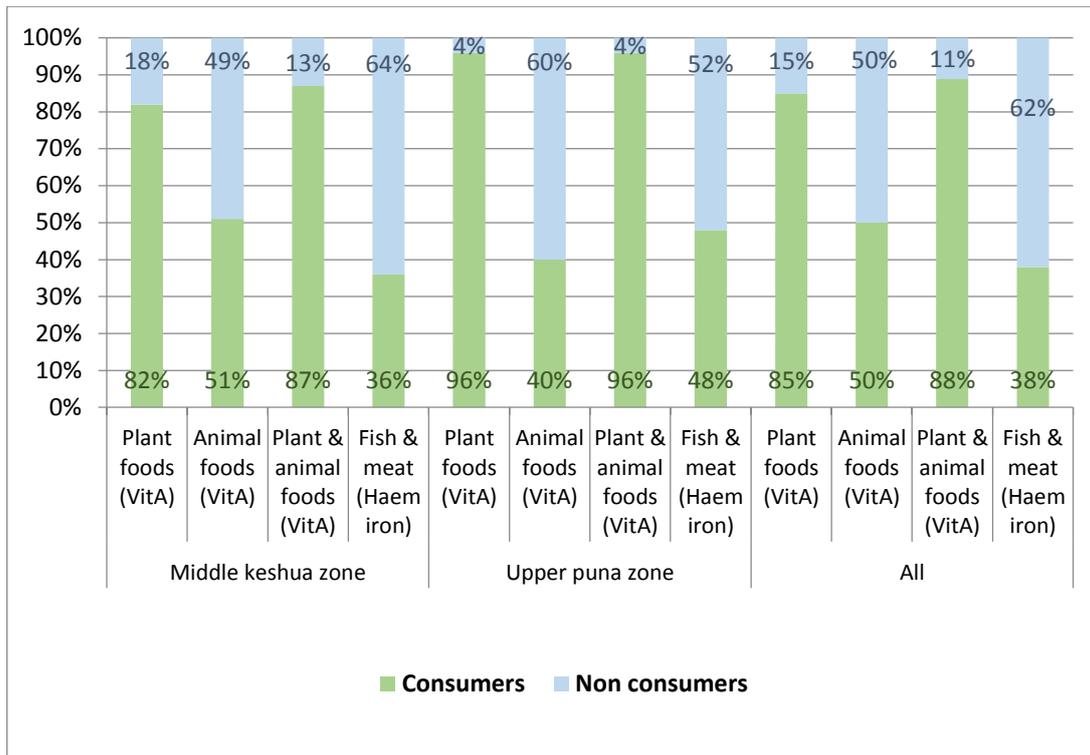
A high percentage of households consume plant foods rich in vitamin A (83% of the surveyed households) (Figure 23). This intake comes mainly from vegetables and tubers such as pumpkin, carrots and squash, and, in the upper puna zone from dark green leafy vegetables, such as *nabo* and *coles* which are wild local foods. Very little intake of dark green leafy vegetables was reported in the middle keshua zone.¹⁸ Almost no household reported intake of fruits rich in vitamin. A.

Half of the households consume vitamin A rich animal source food, and it comes mainly from milk and milk products and eggs. No households reported consuming organ meat, which is a very high source of vitamins.

Thanks to the consumption of vitamin A rich food plant, the large majority of households consumes vitamin A. It is important to keep in mind that the HDDS does not give indication on the quantity of the food consumed so we cannot assume that the 87% of the households that consumed vitamin A rich food in the preceding 24 hours of the interviews have sufficient vitamin A intake. However, only 38% of the households had an intake in haem iron in the preceding 24 hour of the survey, which mainly came from fish and meat sources as no household reported intake of organ meat (Figure 23). In the upper puna zone the share of the surveyed HH consuming meat rich in haem iron is higher than in the middle keshua zone. Because the upper zone has a higher concentration of animal herding, and because there is a lower variety of other food cultivars, the consumption of animals meats within households is higher.

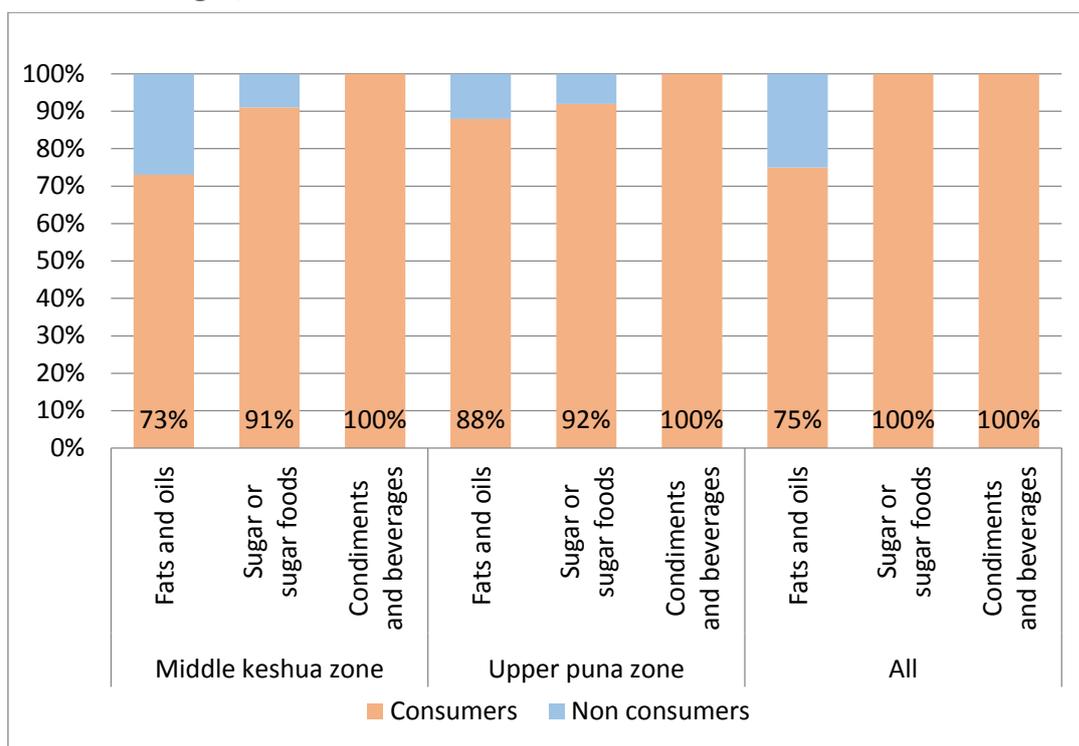
¹⁸ Also, a few households from the middle keshua zone reported intake of "verduras" which could not be specified as it was not detailed enough but could have been dark green leafy vegetable.

FIGURE 23. Households consuming foods rich in vitamin A and haem iron over the last 24 hours, 2016



Combining estimation for vitamin A intake with oil and fat intake is important as oil improves the absorption of plant source carotenoids and fat-soluble vitamins. On the other hand, 100% of the sample consumes either sugar or sugar foods (exclusively bought) or condiments and beverages (Figure 24).

FIGURE 24. Households consuming fats and oils, sugars, condiments and beverages, 2016



Household dietary diversity score (HDDS)¹⁹

The average household dietary diversity score (HDDS) is 7.7 (Figure 25). The analysis shows that most of the surveyed households had an HDDS comprised between 7 and 9, being the median 8. There are few extreme values (Figure 26 and 28). No differences have been found in the HDDS, depending on whether the head of household is a man or a woman. The HDDS of households in the upper *puna* zone is

¹⁹ The Household Dietary Diversity Score (HDDS) is a widely used proxy developed by FAO to measure of household food access where the number of different food groups consumed over the previous 24 hours is recalled by respondents.

The HDDS is meant to reflect, in a snapshot form, the economic ability of a household to access a variety of foods. The HDDS method is the following: the respondent is asked to recall what has been eaten in the household over the last 24 hours (24-hour recall) during day and night, whether at home or outside the home and are asked about the source of food (whether cultivated, collected, bought etc.). In the case the food items were cultivated or collected, the source was précised. Each food items composing meals are then classified in 16 food groups. Some categories are aggregated (vegetables, fruits and meat) so that the sum of the 12 food groups with aggregation was used to obtain the Household Dietary diversity Score. This classification can also help calculating specific intake of nutrients.

When interpreting the dietary diversity score, it is important to keep in mind that:

- The dietary diversity score does not indicate the quantity of food consumed.
- Diet varies across seasons and some foods can be available in large quantities and at low cost for short periods.
- There may be urban/rural differentials in dietary diversity. Variety is often much greater in urban and peri-urban centers where food markets are adequately supplied and easily accessible.
- Accordingly to recommendations for 24 hour-recall, the survey was conducted during the worse scarcity period

lower than in the middle *keshua* zone Which correlates with the difference of accessibility to natural resources in each area. Because the upper zone experiences less crop and products variety, the intake diversity is lower when compared to the middle zone, which has larger access to a variety of cultivars. This difference can perhaps be met and complemented through the barter markets, although this may not be sufficient.

FIGURE 25. Households HDDS, by agro-ecological zones. 2016

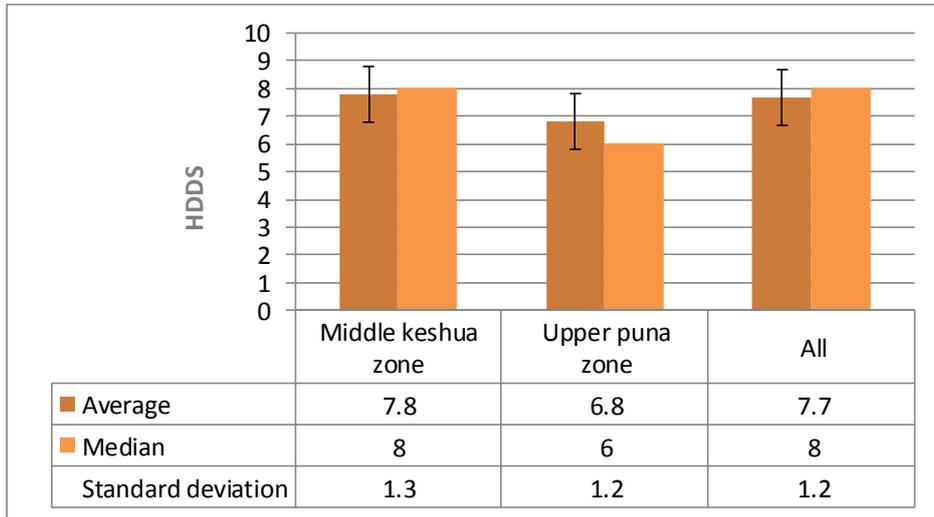


FIGURE 26. Households HDDS, middle keshua zone. 2016

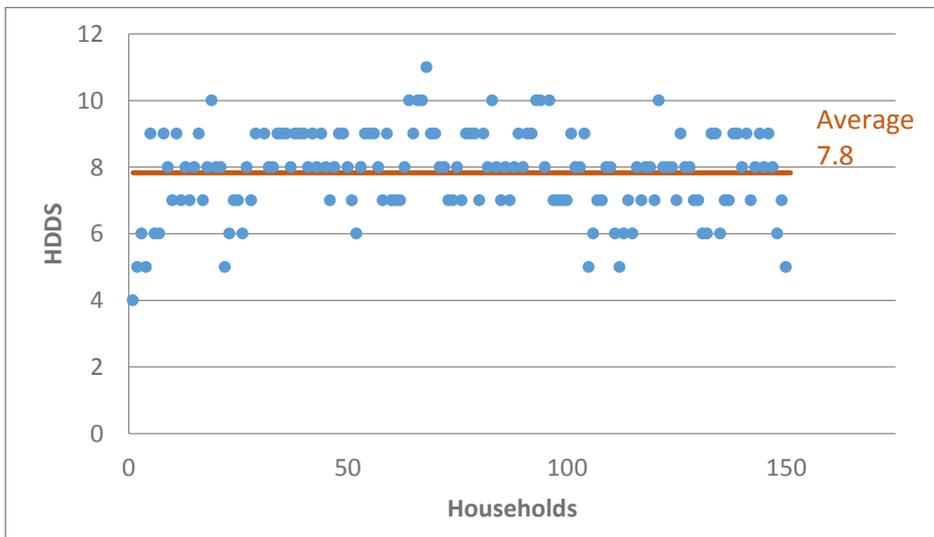


FIGURE 27. Households distribution by HDDS, middle keshua zone. 2016

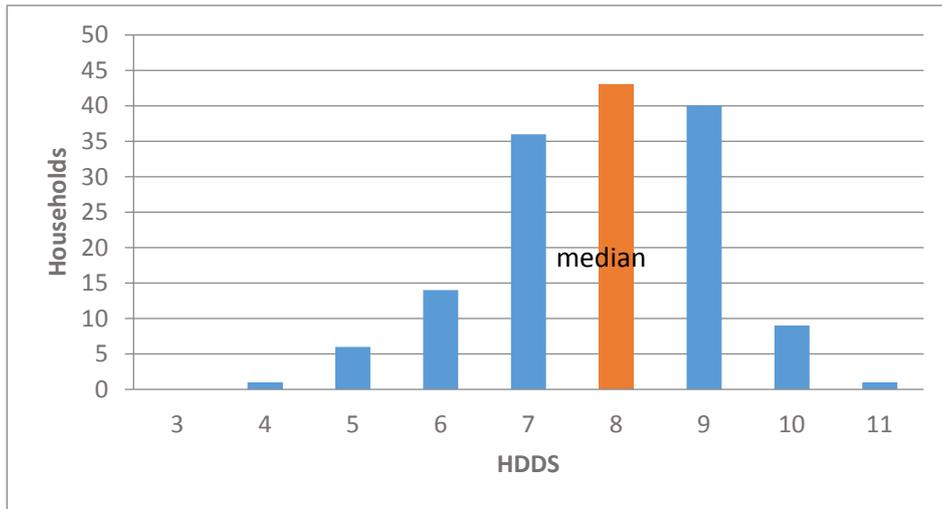


FIGURE 28. Households HDDS, upper puna zone. 2016

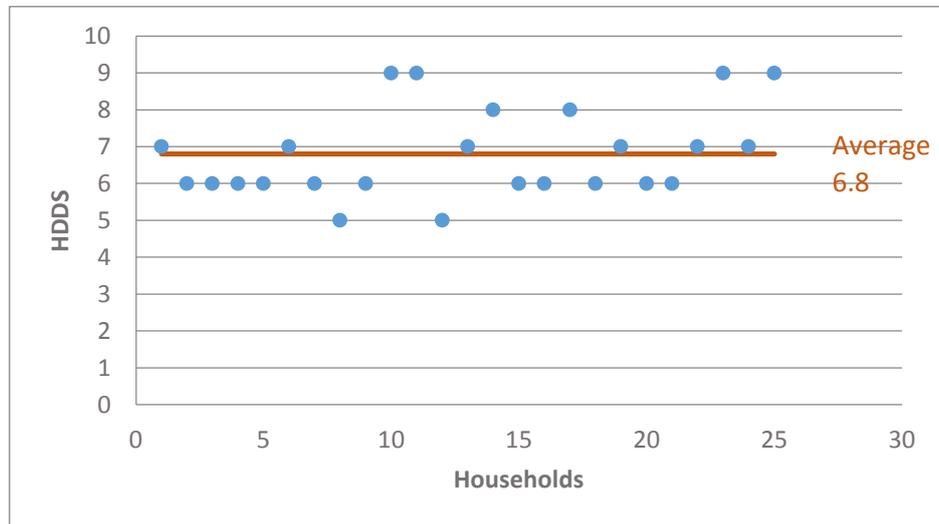
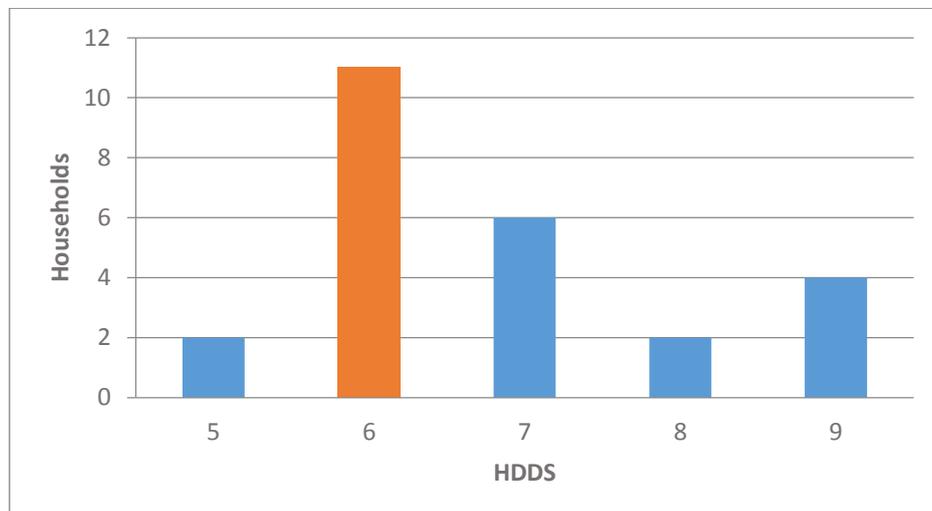


FIGURE 29. Households' distribution by HDDS, upper puna zone. 2016



In order to get an overview of households classification in terms of HDDS, tertiles were calculated and an in-depth analyze was led within each of the tertiles. The goal was to understand differences in dietary diversity within each tertile and get an indication of household economic access to food by tertile. When analyzing which are the food groups that households consume the most by HDDS level, little differences between HDDS tertiles arise. The table below shows which food groups are eaten by at least 50% of the households of the tertile, for each tertile. In the first tertile, at least 50 % of the households eat foods from 7 different food groups, in the second tertile at least 50% of the households eat at least foods from 9 food groups and at least 50% of the third tertile eat foods from 10 food groups. (Figure 30).

There are also some food groups that are more consumed by households with a high HDDS. This is the case of oils and fats which are eaten by more households with a high HDDS. The same happens for cereals, sweets, fruits and legumes (Figure 30).

FIGURE 30. Household consumption of food groups by HDDS tertile, 2016

		Households with lowest HDDS (first tertile)	Households with medium HDDS (second tertile)	Households with high HDDS (third tertile)
Number of food groups consumed		7	9	10
Share of surveyed households consuming foods of each group*	Cereals	83%	95%	100%
	White roots and tubers	97%	100%	100%
	Vitamin A rich vegetables and tub	81%	76%	88%
	Other vegetables	98%	100%	98%
	Oils and fats	53%	81%	90%
	Sweets	86%	88%	100%
	Spices, condiments, beverages	100%	100%	100%
	Other fruits		66%	69%
	Legumes, nuts and seeds		62%	83%
	Milk and milk product			69%

(*) This table includes the food groups that are eaten by at least 50% of the households of the tertile.

Results suggest that households with a high HDDS (third tertile) combine more intensively self-production with purchase and barter to get a wide diversity of food. The share of households in this tertile producing some specific foods (cereals; vitamin A rich vegetables and tubers; spices, condiments and beverages and legumes, nuts and seeds) is higher than in the lower tertiles. Barter is also an extended practice between these households. The main foods provided through barter practices are vegetables, fruits and spices, condiments and beverages (Figure 31).

FIGURE 31. Household food sources by HDDS tertile (% of surveyed households), 2016.

	Households with lowest HDDS, tertile 1			Households with medium HDDS, tertile 2			Households with high HDDS, tertile 3		
	Cultivated	Purchased	Bartered	Cultivated	Purchased	Bartered	Cultivated	Purchased	Bartered
Cereals	52%	36%	0%	74%	66%	0%	76%	56%	0%
White roots and tubers	97%	0%	0%	98%	0%	0%	100%	0%	0%
Vitamin A rich vegetables and tubers	38%	41%	0%	41%	36%	0%	58%	25%	0%
Other vegetables	50%	6%	19%	55%	78%	28%	51%	58%	47%
Oils and fats	100%	0%	0%	100%	0%	0%	100%	0%	0%
Sweets	100%	0%	0%	100%	0%	0%	100%	0%	0%
Spices, condiments, beverages	47%	100%	40%	67%	93%	33%	76%	98%	59%
Other fruits	0%	0%	0%	0%	24%	47%	0%	19%	51%
Legumes, nuts and seeds	0%	0%	0%	55%	0%	0%	80%	0%	0%
Milk and milk products	0%	0%	0%	0%	0%	0%	0%	58%	0%

(*) Barter includes borrow, exchanged for labour and gifts from friends or relatives

Some sources can overlap, as in the same food groups, foods can be cultivated, purchased or exchanged.

Highlights 2. Household dietary diversity

Vitamin A sources are mainly food plants, both in the middle and higher communities. Despite the number of households having had meat is higher in the upper communities than in the middle communities, less than 50% of HH have reported a previous intake of this VitA and haem iron source. Fats and oil sources are consumed by more HH in the higher communities.

The household dietary diversity is higher in the communities from the middle keshua zones than in the communities from the upper puna zone. The Households of this agro-ecological zone that have a high HDDS (third tertile), combine more intensively self-production with purchase and barter to get a wide diversity of food.

Barter markets exchange, which is a more extended practice between the HH of the middle altitude communities, provides vegetables, fruits and spices, condiments and beverages.

6.3 Coping strategies during food scarcity periods

Food scarcity periods

Most households reported that, during the last year, there was at least one food scarcity period (Figure 32). Looking at the specific months of the year (Figure 33 and 34), food scarcity and hunger stress started to rise in October and last until April. During this period, which is the rainy season between planting and harvesting, food is limited because crops are growing. The average period of food scarcity reported is 2 months. In the upper *puna* zone, some households reported food scarcity along the entire year, while in the middle *keshua* zone all the households agreed with the fact that there is at least one food abundance period along the year between June and

August. Because in the upper zone there is a lower diversity of cultivars, pest and disease can largely affect the household food products and resources available. Because the potato harvest is only experienced once a year, household accessibility to cultivated products is less present when compared to the other zones. As such, households identify scarcity for a longer period.

FIGURE 32. Food scarcity periods frequency during the last year (% of households reporting each item), 2016

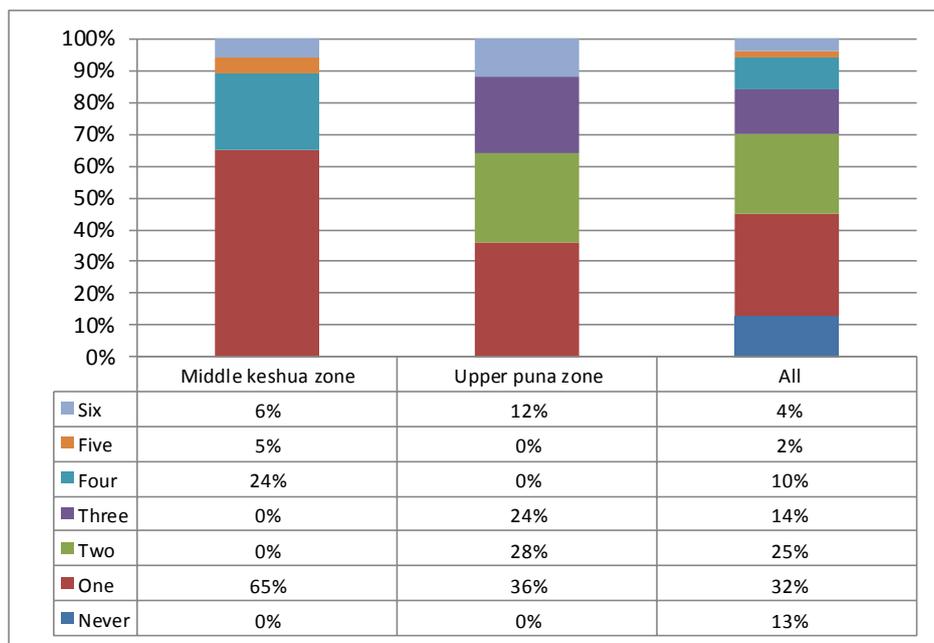


FIGURE 33. Household food scarcity along the year, middle keshua zone (% of households that have reported food scarcity), 2016

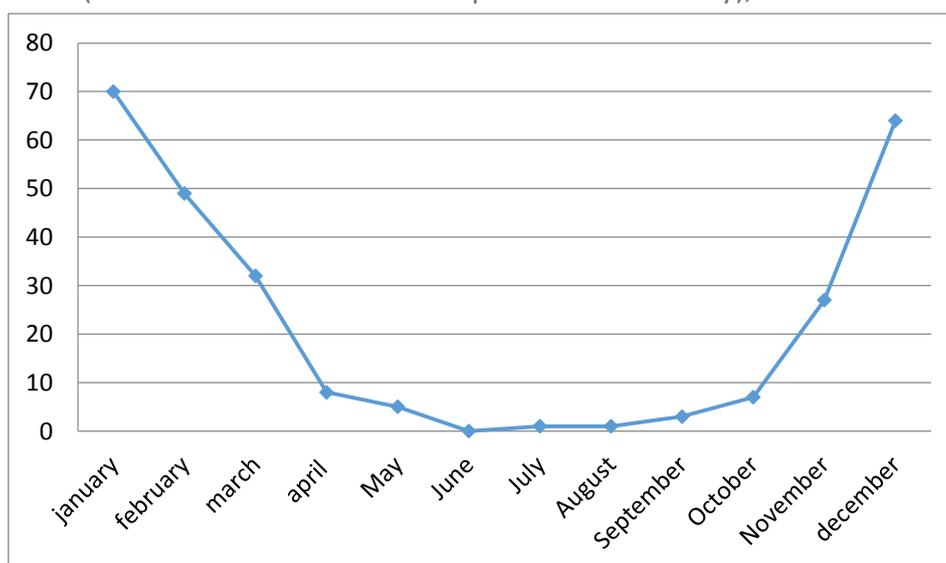
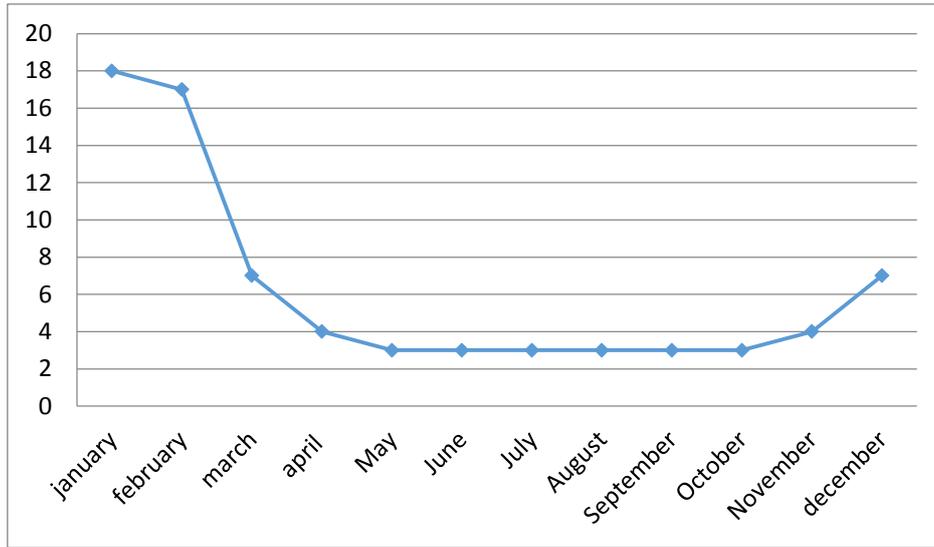
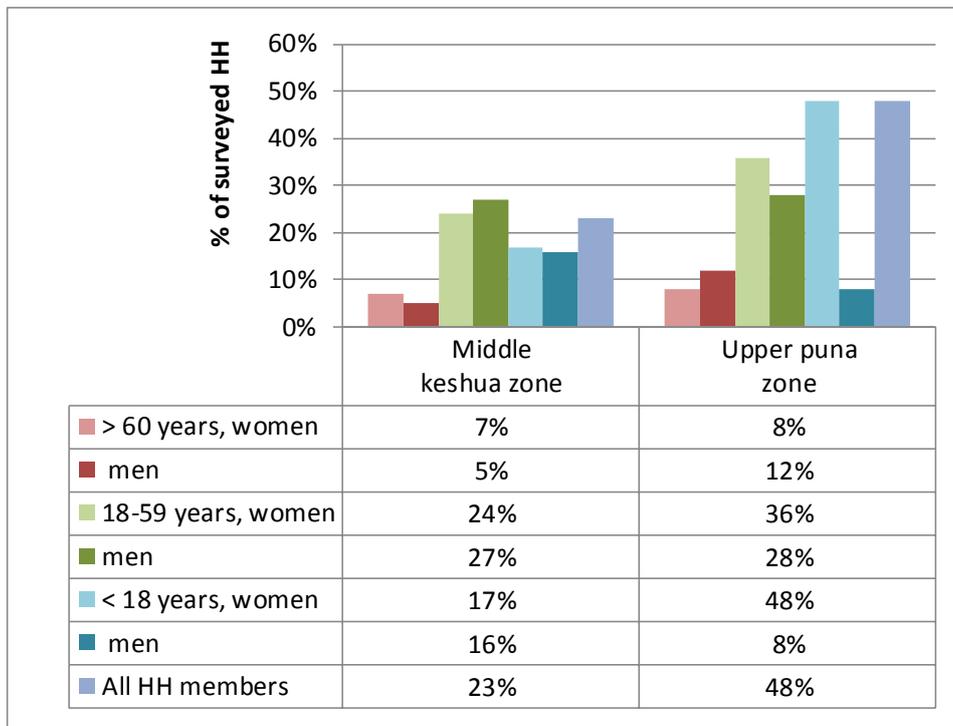


FIGURE 34. Household food scarcity along the year, upper puna zone (% of households that have reported food scarcity), 2016



Regarding the most affected households members by food scarcity, most part of the surveyed households in the upper *puna* zone reported that all the HH members are affected, followed by young and adult women. In the middle *keshua* zone, surveyed households mentioned that both adult men and adult women are the main affected members by food scarcity (Figure 35).

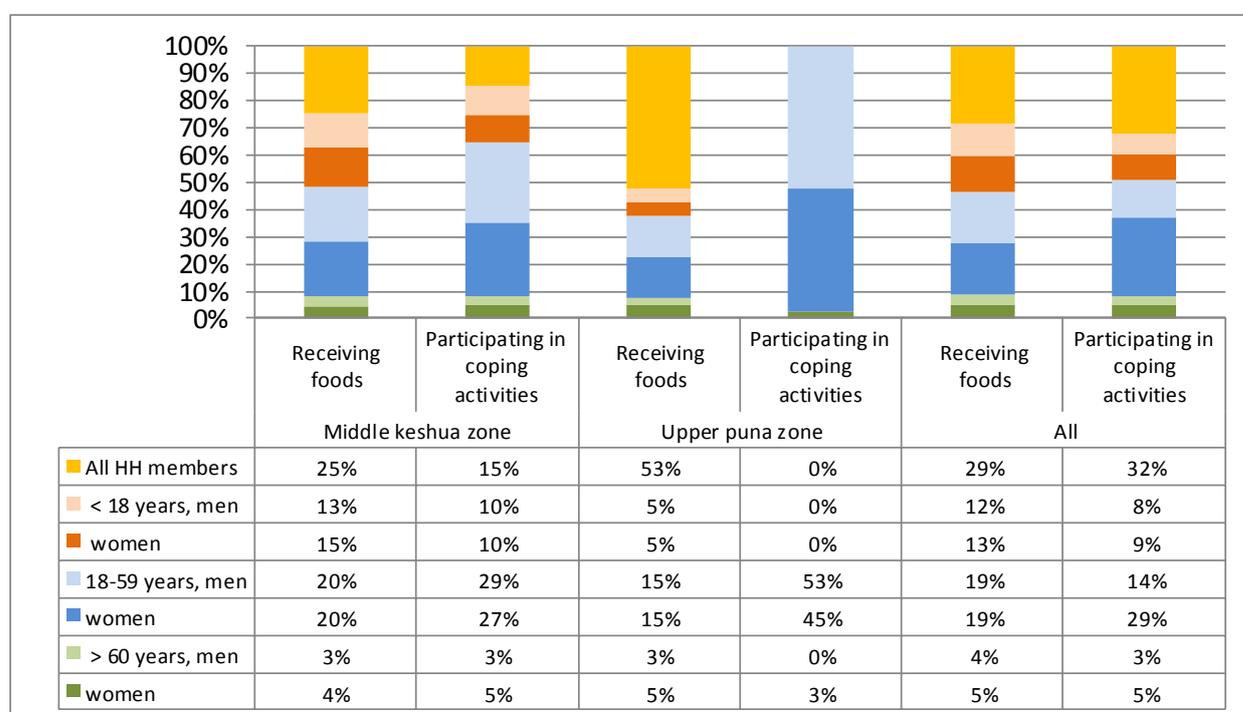
FIGURE 35. Most affected household members by food scarcity, by agro-ecological zones (% of HH reporting each item), 2016



Households' food scarcity coping strategies

The household members who are mostly engaged in the food coping activities are women, especially adults (Figure 33). In some cases, the rest of the members also participate in such activities. The eldest members (over 60 years-old) are least involved in coping activities. Generally, the whole household benefits from these activities and all the members have access to the new foods. However the share of adult women carrying out coping activities is higher than the share taking the got foods. In the middle *keshua* zone, the participation of young people and children in coping activities is higher than in the upper *puna* zone. This is due to the fact that statistically, because only 14% of the sample derives from the middle zone compared to 86% in the middle zone, there may be a higher correlation with households who identify their children as participating in coping activities in the middle zone as compared to the upper zone.

FIGURE 36. Role of the household members in coping strategies by gender

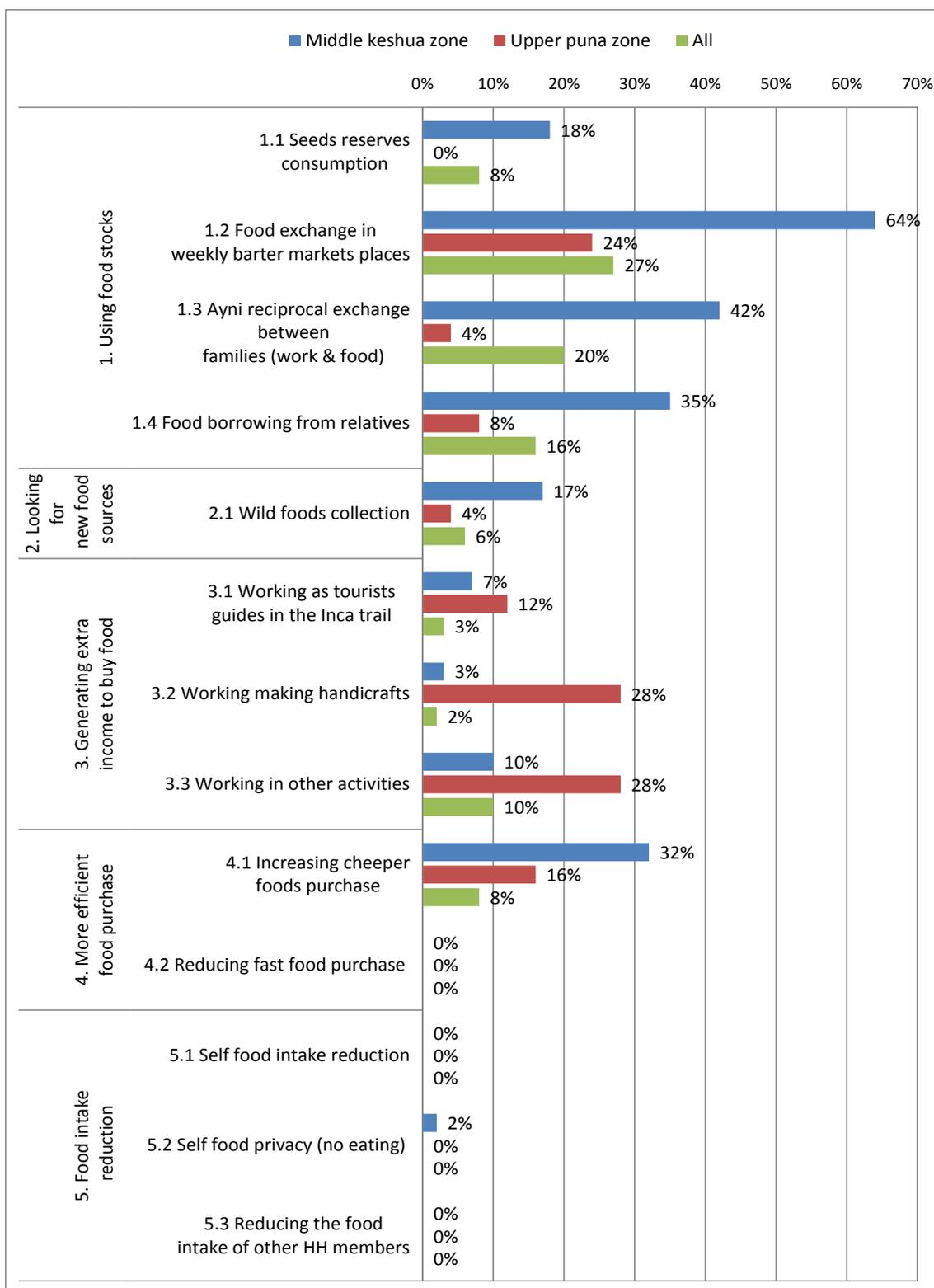


The main reported food coping strategies facing hunger periods are barter markets, *ayni* (a reciprocal exchange of food and work time between family and community members) and borrow from relatives (Figure 37). All these strategies are based on the traditional principles of solidarity and reciprocity between the community members; as well as on the socio-ecological complementarity between communities located in different altitudes. The share of surveyed households using food stocks for exchanging is higher in the middle *keshua* zone than in the *puna* zone. In the higher communities, a higher share of households generate extra money to buy food. This is because in the puna zone there is very little variety of products which can be continuously exchanged in the barter market year-round. As the staple crop of potato can only be cultivated once a year, many households have a member who takes up work outside of the community as to contribute to household livelihood before and after the potato harvest. In order to supplement meals, households must purchase what they cannot produce themselves. As the locations of the medium Keshua zone households are lower, the

surrounding land allows for a higher diversity of crops, and thus products, to exchange in the barter market.

In the Lares valley, there is a network of five barter markets places where women from the highest communities exchange food products with women from the middle and lowest communities. These markets, that take place once a week, enable households getting diversified foods growing in different agro-ecological areas. The way the barter markets work enhances the traditional social relationships that have been crucial for the local resilience of Andean inhabitants to the environmental and economic disturbances. These relationships still based on kinship systems, family alliances, social networks and ancient practices of reciprocity and redistribution.

FIGURE 37. Household coping strategies during hunger periods (% of households that have reported each item), by agro-ecological zones. 2016



Two strategies that are commonly used along the year to face food scarcity are wild food collection and food storage (Figure 38 and 40). Most households collect wild foods to supplement their diets during hunger periods. Among the collected foods, there are several plants but also some animal species including fish (i.e, river trout) and insects

(Figure 39). Most of the reported food plants have been identified as neglected and underutilized species during the focus groups on NUS.

FIGURE 38. Households practicing wild food collection, by agro-ecological zones (% of surveyed households). 2016

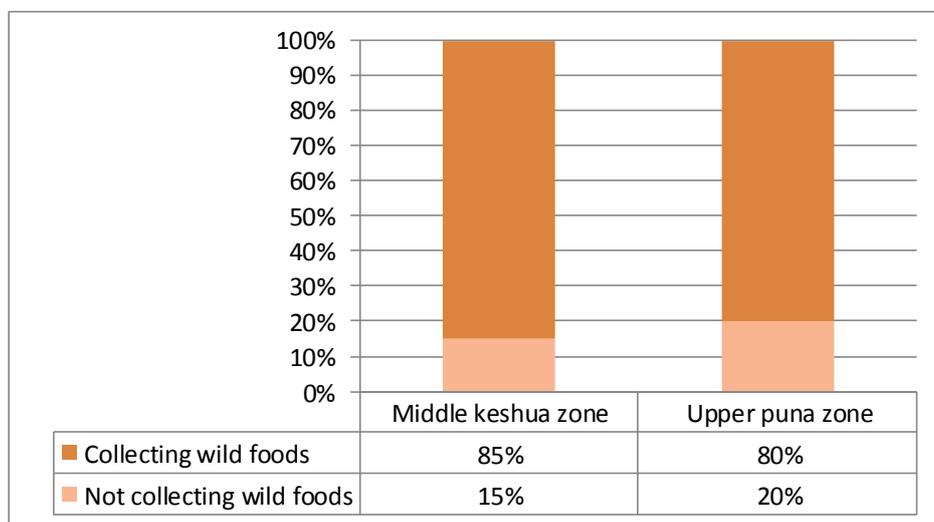


FIGURE 39. Wild food collected by households (% of surveyed households reporting each item)

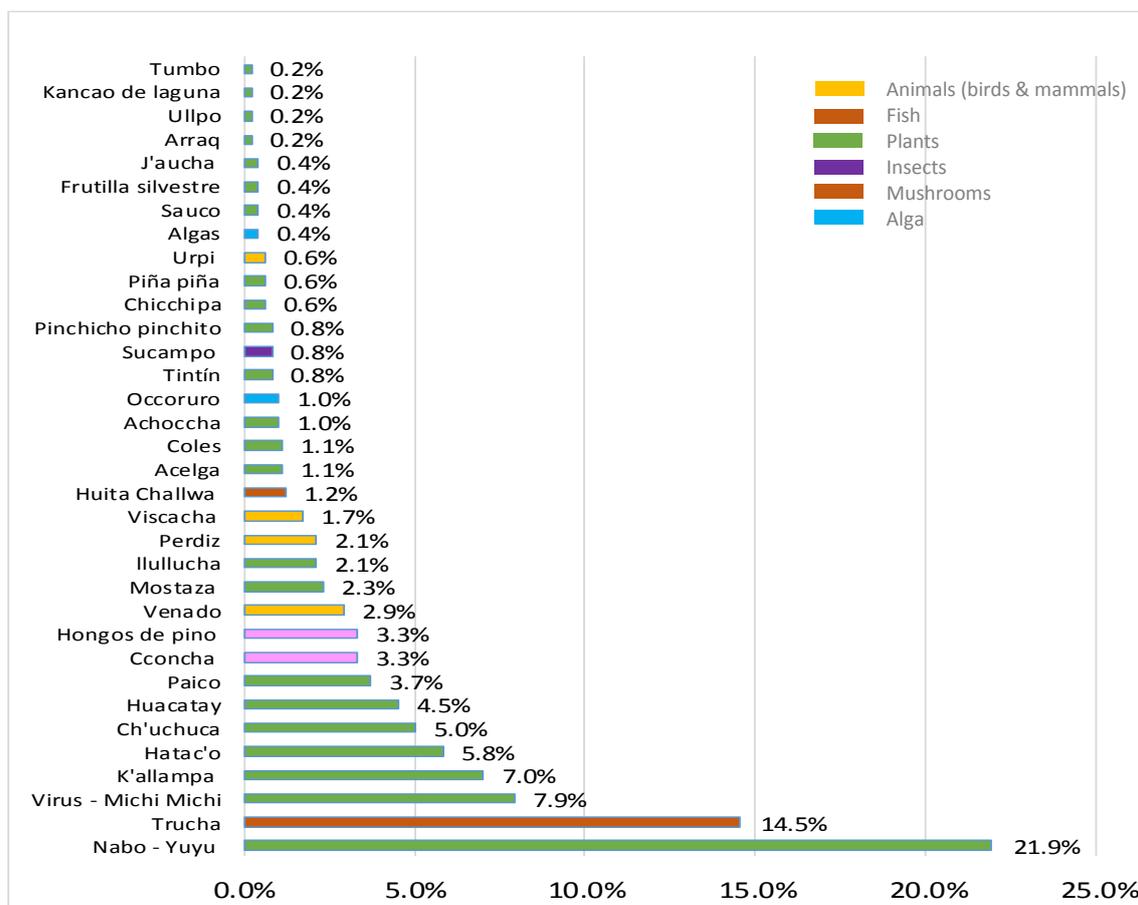
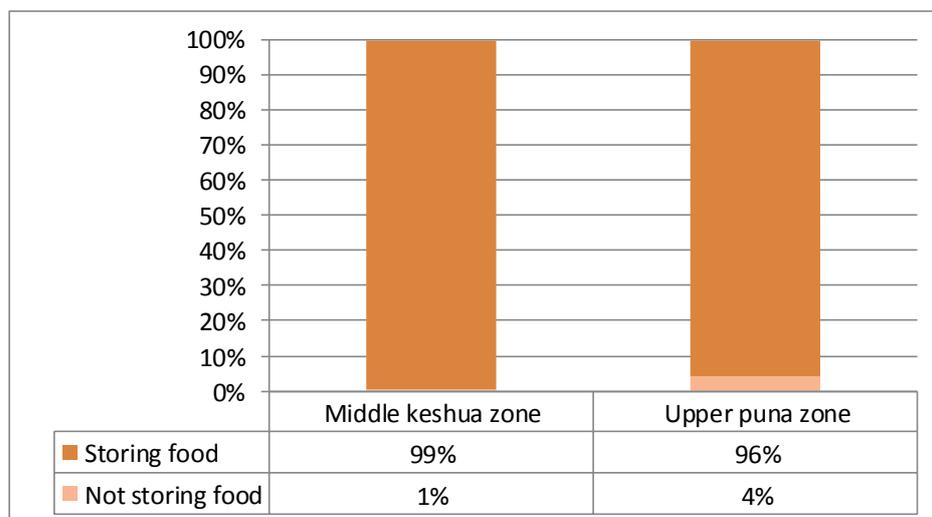


FIGURE 40. Households practicing food storage (% of surveyed households). 2016



The main foods stored by households are maize, fava beans, potato, *chuño* and *moraya* (dried potato), quinoa, chick peas, peas and beans. The reasons reported for storing food are:

- To secure food during periods of scarcity
- Because the food stored does not rot or go bad (lasting an average of two years)
- In order to barter these food by fruits and vegetables
- To secure food for periods of rough climate inducing crop failure
- Because climate change has been affecting harvests from year to year and they need to build up reserves
- To build up reserves for the youngsters of the family

Highlights 3. Food scarcity periods and coping strategies

Most households reported that, during the last year, there was at least one food scarcity period which correspond to the rainy season between planting and harvesting. The number of HH reporting more than one food scarcity period the last year was higher in the communities of the upper puna zone. In this agro-ecological zone food scarcity risk is higher than in the middle keshua communities.

In the higher communities the food scarcity affects all the HH members reducing the food intake, while in the middle keshua zone, food stress is mainly absorbed by adults (men and women) who are the HH members who reduce their food intake.

The household members who are mostly engaged in the food coping activities are adults, especially in the higher communities. In the middle keshua communities there is higher participation of all the HH members in these strategies. The main food coping strategies practiced by HH are based on traditional principles of solidarity and reciprocity: participation in barter markets, practice of *ayni* (a reciprocal exchange of food and work time between family and community members) and borrowing from relatives. The weight of extra income generation to get food is higher in the high altitude communities as their productive diversity is lower and the food scarcity risk is higher for them. The most part of HH in both agro-ecological zones collect wild foods, which are mainly plant species.

6.4 Community resource flow for NUS

Local awareness of NUS

According to the participants, NUS are food plants with high nutritional value which are forgotten by most people and little used. They have a strong sacred value as they are conceived as fruits of the *Pachamama* (Mother Earth), crops sent by the *Apus* (natural divinities), blood of the *Apus* and species used to purify the body.

Most important NUS for nutritional and medicinal uses

The total number of NUS that are used by all the participating communities is 78. Participants from the middle keshua communities have reported the use of 47 species of NUS during food abundance periods and 23 in food scarcity periods. The number of NUS species available during food scarcity periods in the *keshua* communities is almost the same than in the *puna* communities. In both agro-ecological zones participants have reported species that have been extinct (Figures 41 and 42).

The most important NUS for each community participating in the baseline are listed in Figure 43. They are ranked from the most to the less important.

The nutritional and medicinal uses of these prioritized NUS are described in Figure 41. The figure contains the specific uses given by each community to each species. Results point out that even though nutrition and medicinal uses are specific for each community, there are coincidences for the most extended species. Nutrition concepts in the communities are based on empirical knowledge, experiences, and are basics. However as the results show, they can be very detailed.

Looking at their uses, most of them concern children nutrition and their growth, being specifically valued for their high protein and vitamin content (Figure 44). Species treating flu and colds are also important as the main children mortality cause in the region is respiratory diseases.

FIGURE 41. Average number of NUS species collected per community during food scarcity and abundance periods, by agro-ecological zones. 2016

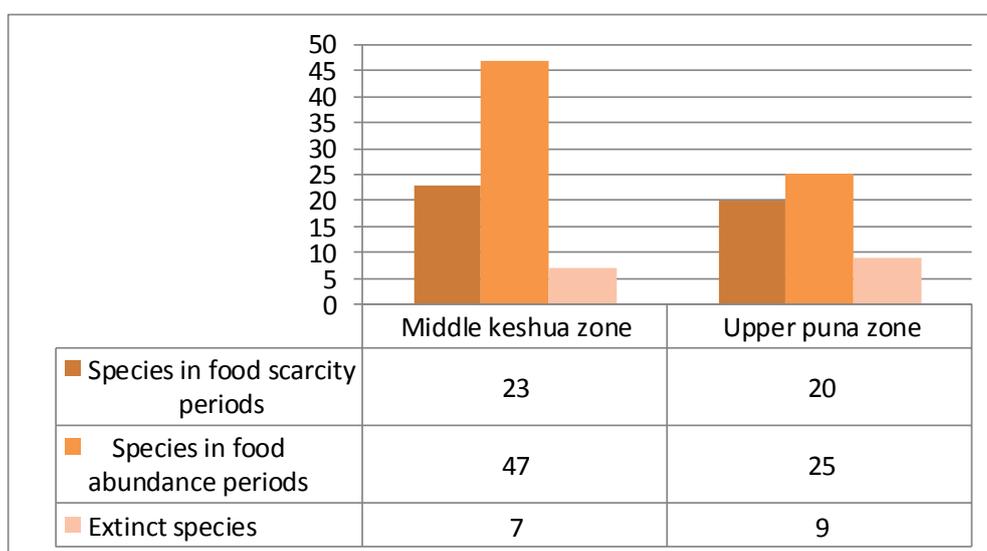


FIGURE 42. NUS species collected per community during food scarcity and abundance periods, by agroecological zones. 2016

	Middle keshua zone		Upper puna zone			Middle keshua zone		Upper puna zone	
	Abundance	Scarcity	Abundance	Scarcity		Abundance	Scarcity	Abundance	Scarcity
Acelgas	Yes	Yes			Mullak'a			Yes	
Achoc'cha	Yes		Yes		Mutuy	Yes	Yes		
Achoq	Yes				Muña		Yes		
Airampa	Yes				Muyumunsay				Yes
Amaq	Yes				Nabo	Yes		Yes	
Amp'ara papa	Yes				Oca oca				Yes
Ana k'ani			Yes		Ochulo	Yes			
Añapanqo		Yes		Yes	Ocoruro	Yes	Yes	Yes	Yes
Arac	Yes				Ortiga negra	Yes			
Atacco	Yes				Phaccha		Yes		
Atoq lizas	Yes				Paco	Yes		Yes	Yes
Atoq papa	Yes				P'acpa flor		Yes		
Aguaymanto			Yes		Pilli	Yes	Yes		
Calabaza blanca		Yes			Pinchicho	Yes		Yes	Yes
Capulí	Yes				Pinchicha Hanta		Yes		
Campacho			Yes	Yes	Piña Piña	Yes			
Caccas	Yes				Ponoto	Yes			
Cancao	Yes	Yes			Puya raimondi			Yes	
Cconcha	Yes		Yes		Quinoa	Yes			
Chicchipa		Yes	Yes		Quinus águila	Yes			
Ch'uchuca	Yes		Yes	Yes	Roca manzana				Yes
Chulluk'ó			Yes		Salqa frutilla	Yes		Yes	
Choclo de oro	Yes				Raquiraqui		Yes		
Cocacoca				Yes	T'ankar mumo				Yes
Concha	Yes				Tarwi	Yes			Yes
Culis		Yes		Yes	Titin		Yes	Yes	
Ermarrccay	Yes				Uchu uchú				Yes
Hongo	Yes				Uchululo			Yes	
Hongo pino			Yes		Ullpu		Yes		
Huacatay	Yes				Vicuño concha				Yes
Huarco		Yes			Virus	Yes	Yes		
Huita		Yes			Walpa walpa	Yes			
Jataco	Yes				Wita	Yes			
K'ana			Yes		Yacón	Yes	Yes		
K'allampa	Yes		Yes	Yes	Yanaquisa		Yes		
K'uchiqcha	Yes								
K'umani	Yes								
Limon limon			Yes						
Linli	Yes	Yes							
Llullucha	Yes	Yes	Yes	Yes					
Loma manzana	Yes								
Manzana Manzana			Yes	Yes					
Michi michi				Yes					
Monteculandro	Yes		Yes						
Mostaza	Yes		Yes	Yes					

FIGURE 43. Important NUS in the communities of Ccachin, Choquecancha, Pampacorral and Maucau.

Communities	NUS
<u>Ccachín</u>	<ol style="list-style-type: none"> 1. Occoruro/ <i>Mimulus glabratus</i> 2. Quinoa/ <i>Chenopodium quinoa</i> 3. Achoq/Achojcha/<i>cyclanthera pedata</i> 4. Mostaza/<i>Sinapis alba</i> 5. Nabo/<i>Brassica rapa</i> 6. Llulluchá/ <i>Nostoc commune</i> 7. Hongo Pino/<i>Sullius Luteus</i> 8. K'allampa/ <i>Agaricus campestris</i> 9. Ch'uchuca/<i>Coprinus comatus</i> 10. Jatáqo/ <i>Amaranthus Caudatus</i> 11. Culis/<i>Brassica oleracea var. Ramosa</i>
<u>Choquecancha</u>	<ol style="list-style-type: none"> 1. Hongo Pino/<i>Sullius Luteus</i> 2. Nabo/<i>Brassica rapa</i> 3. Jatáqo/ <i>Amaranthus Caudatus</i> 4. Acelga/<i>Beta vulgaris subesp marítima</i> 5. Tintin/ <i>Passiflora pinnatistipula</i> 6. Llulluchá/ <i>Nostoc commune</i> 7. Ch'uchuca/<i>Coprinus comatus</i> 8. K'allampa/ <i>Agaricus campestris</i> 9. Ullp'u/ <i>Asplenium squamosum</i> 10. Yacón/<i>Mallanthus Sonchifolius</i> 11. Virus/ Berro/ <i>Nasturtium officinale</i>
<u>Pampacorral</u>	<ol style="list-style-type: none"> 1. Mostaza/ <i>Sinapis alba</i> 2. Nabo/<i>Brassica rapa</i> 3. Ocoruro/ <i>Mimulus glabratus</i> 4. Llulluchá/ <i>Nostoc commune</i> 5. K'allampa/ <i>Agaricus campestris</i> 6. K'ana (unknown) 7. Concha/ <i>Boletus Luteus</i> 8. Hongo Pino/ <i>Suillus luteus</i>, 9. Pinchicho/ <i>Vaccinium floribundum</i> 10. Tintin/ <i>Passiflora pinnatistipula</i> 11. Achoqcha/ <i>cyclanthera pedata</i> 12. Colis/ <i>Brassica oleracea var. Ramosa</i>
<u>Maucau</u>	<ol style="list-style-type: none"> 1. K'allampa/ <i>Agaricus campestris</i> 2. Concha/ <i>Boletus Luteus</i> 3. Berro/ <i>Nasturtium officinale</i> 4. Llulluchá/ <i>Nostoc commune</i> 5. Mostaza/ <i>Sinapis alba</i> 6. Hongo Pino/ <i>Suillus luteus</i>, 7. Colis/ <i>Brassica oleracea var. Ramosa</i> 8. Ocoruro/ <i>Mimulus glabratus</i>

FIGURE 44. Nutritional and medicinal uses of prioritized NUS²⁰

NUS	Nutritional uses	Medicinal uses
K'allampa	Contains vitamins that help children's growth Give appetite to children help for growth Contains proteins Good nutritional value, give it especially to children	Treats gastroenteritis Treats anemia Good to treat undernutrition and liver inflammations Treats anemia
Concha	Contains proteins Good for memory	Treats gastroenteritis
Berros	Protect from diseases	Treats colds and flu Treats prostate and liver inflammation
Llullucha	Good for strength- growth Contains a lot of proteins, good for growth Contains a lot of vitamins	Treats colds, inflammation, liver issues Treats colds and inflammation Treats liver issues and inflammations
Mostasa	Protect from diseases Good nutritional value Good nutritional value	Treat colds, inflammation Smooths cramps and toothache Smooths toothache
Hongo Pino	Very good food for growth and strength Good for growth for slim persons, give appetite to children High nutritional value	Treats anemia Treats anemia Helps for liver infections
Colis	Good for health, protect from diseases, good for memory Good for children's growth, protect from diseases Good for memory	Treats inflammation Juice protects from cancer Treats the flu
Ocoruro	Contains proteins which help growth Good nutritional value, fortify the blood Good for children's strength and growth	Treats colds and mother's inflammations Treat colds and anemia
Nabo	Good for strength and growth Good for growth High content in vitamins, especially in its flowers	Flowers treat rheumatism, protect from diseases, cures prostate disease Flower used to treat inflammation and rheumatism
J'ataco	Good for strength and growth Contains vitamins	Protects from diseases, especially urinary infections
Acelga	Contains more nutritional value than J'ataco and Nabo, prevent from diseases	Soothe inflammation and diseases
Tintin	Good nutritional value Contains a lot of proteins	Treats the flu Treats colds
Ch'uc'cchuca	Good for growth, contains iodine Good for strength and growth, contains vitamins	
Ull'pu	Good for growth	Treats liver inflammation and colds
Yacon	It is highly nutritional	Treats gastroenteritis, diabetes, cancer
Pinchicho	Contains proteins	

²⁰ Colors in the figure refer to the community reporting each use. Green= Maucau; Red= Pampacorral; Blue= Choquecancha and Grey= Ccachin.

Atoqcha	Protects from diseases, good for growth Nutritive food especially for women	Treats colds and inflammation Treats inflammation, used as contraceptive, during menstruation
Quinoa	Contains vitamins, most nutritive food plant	Use its cooking water as medicine

Collection and conservation

NUS species sowed by households are traditionally collected in specific places out of the crops plots. Actually they are scanty. Participants remarked that actually it is harder to find NUS close to the communities and they have to walk further to recollect them. This distance criteria vary depending on the species as some of them, like the Virus (*Nasturtium officinale*) can still be found close to the households, however many NUS plants have gone further and further away from the cultivation areas. This happens for two reasons: 1) more recurrent extreme temperatures as a consequence of climate change affecting the altitudinal distribution of certain NUS species, and 2) less dedication of local people to cultivate or semi-cultivate these species. The main trends affecting their conservation and availability are listed in Figure 45.

FIGURE 45. Trends affecting the NUS conservation and availability in the Lares valley.

	Middle keshua zone	Upper puna zone
Negative drivers		
Availability		
Scarcity by land uses changes (cattle pasturage in growing areas)	Yes	--
Scarcity by climate changes (increase of extreme temperatures)	Yes	Yes
Extinction of some species	Yes	Yes
Time allocation		
Longer distances to collect them	Yes	Yes
Use and knowledge		
Less use of NUS (medicinal and nutritional uses)	Yes	Yes
Loss of knowledge on their use and collection	Yes	Yes
Opportunities		
Emerging local interest for their nutritional and medicinal benefits	Yes	Yes
Elder people gathering local knowledge on their collection and use are alive	Yes	Yes

The fact that they are considered sacred (gifts of the *pachamama* (mother earth)) makes that they are rarely neither traded nor exchanged outside of the communities. Their collection is mostly for personal and household uses.

Adult women are in charge of the NUS collection. They are in charge of the pastoralist activities going far away of the community, so as they can collect these species in their

growing areas. Children involved in pastoral activities also collect them, specifically sweet species, as they often have been taught about the properties of NUS and the collection methods.

The oldest women are guardian of NUS knowledge. They collect NUS while walking around the communities, undertaking specific rituals. Their physical constraints to go further limit the species they can collect. Men do not really collect NUS and know much less about the places they growth and their uses.

Highlights 4. NUS communities resources

The main part of the reported species of NUS grows in the middle keshua communities. In this agro-ecological zone, the species variability between food abundance and scarcity periods is higher than in the puna zone. The share of species that have been extinct is higher in the upper puna communities where climate change is affecting the range of temperatures. Some NUS species are of strategic importance in all the communities while others have specific uses in each community.

Looking at their uses, most of them concern children nutrition and their growth, being specifically valued for their high protein and vitamin content.

NUS species sowed by households are traditionally collected in specific places out of the crops plots, being some species scanty. Adult women are mainly in charge of the NUS collection. The fact that they are considered gifts of the *pachamama* (mother earth) makes that they are rarely traded or exchanged.

Despite elder women keep traditional knowledge on NUS, adult and young women show a growing interest in their collection and uses.

7. Influencing factors for the design of collaborative strategies

7.1 Local well-being concept and the inequalities factors

Well-being values

The equivalent concept of well-being for the communities of the Lares valley is *Sumaq kausay*, which means “good living”. It integrates a wide diversity of values that refers to the individual and collective wellness. Some of these values are related to the balance with nature and the ecosystem services, to the health care (including feeding), to the reciprocal and solidarity relationships, to the cultural identity, to leisure and celebrations; and to the knowledge heritage (Figure 46).

FIGURE 46. Criteria related to the well-being (or good living) local concept

Water and natural resources conservation
Food products and domestic animals availability

Health

Right to identity (legally)
Cultural identity
Access to leisure time

Local economy
Barter practices *Ayni* (reciprocal system between member of a same family or community, especially for goods or agriculture services)
Mink'a (collective work done in favor of the community).

Education
Ñawpa gachay (traditional knowledge)

Social inequalities

Social inequalities in the Lares valley communities are weak. The maintenance of solidarity relationships between households and the community is the main mechanisms to minimize the effects of the unequal distribution of resources. Families own their basic livelihoods assets (housing, land, seeds, livestock, tools and equipment, others). When a household is not able to own their own livelihoods assets (i.e. house), the community lend them until they can get their own. In terms of nutrition, most households consume the same products, even though meat consumption can vary. Families who mostly own land and livestock consume beef and pork more frequently.

Income inequality between households determines their access to health and education services. Regarding health, a low household income put vulnerable people at a higher risk for environmental health effects. The local primary care services do not cure complex diseases. Households with enough money can afford going to the regional hospitals located in the Calca town and the city of Cusco. In the same way, regarding education, households with higher incomes can send their kids to schools further away, where better education is provided. For these reasons income generation and savings are important strategies in households to access health and education services.

While education is considered an important asset for the resilience of livelihoods, it is also perceived by elders as the main cause of the traditional knowledge lost, having negative effects on the conservation of the local culture. They reported that young people attending secondary education schools in Calca or Cusco tends to undervalue traditional local knowledge.

Another inequality factor is the free time availability among the household members. Women have less free time for leisure than men. They are overloaded with working time in domestic activities, agricultural and shepherding activities and in markets participation, among others.

7.2 Institutional trends and policy framework

The prioritized institutions and organizations reported working in the Lares Valley to enhance local development are ten (Figure 44). Most of them are social and productive programs from the Peruvian state (i.e, the ministry of Development and Social Inclusion). NGOs such as ANDES and Alianza Andina are also well known and locally appreciated, notably by their training activities (Figure 44).

Communities maintain good relationships with these institutions and organizations they ranked as most important for their communities. This is because their programs are adapted to the specific local needs and their implementation includes the engagement of the communities. Most of the public programs offer local trainings in the wide range of issues. One of the most locally valued practices is the free prior informed consent through which ANDES engage the communities and start working together.

FIGURE 47. Institutions and organizations working in the Lares valley.

Institution/ organization	Issue
Posta Médica Health Center. Ministry of Health	Health public services
Centros de educación Ministry of Education	Education services: schools and high school
Programa Juntos Ministry of Development and Social Inclusion	Poverty alleviation
Trabaja Perú Working Peru. Ministry of employment.	Activities generating inclusive social employment
Programa Haku Winay Ministry of Development and Social Inclusion	Productive capacities and rural entrepreneurship enhancement.
Programa Pensión 65 Ministry of Development and Social Inclusion	Retreat pensions for the oldest population in poverty contexts.
QalliWarma Ministry of Development and Social Inclusion	Provide basic food products for schooled kids
Municipalidad de Lares Lares council	Roads and sports infrastructure construction.
Asociación Andes NGO	Agricultural training on corn and potato Farmers field school
Alianza Andina NGO	NGO working on agricultural training

This institutional analysis was led in order to understand the institutional support in the communities, the institutions and organisations they privilege and the type of relationship they have. Indeed in order to develop strong partnerships which would be valuable for the communities and the project it was crucial to have an in-depth comprehension of the linkages between the institutions and the communities.

8. Conclusions

Dimension 1. Women and HH livelihoods. Women have a strategic role in the HH livelihoods as they undertake both food provision activities (farming, trade and market, others) and household caring activities. In the highest communities, where the women educational attainment is lower, they are less recognized as household heads.

- 1.1. The main activity of the HH heads (both men and women) is family farming. Even though women are reported to be housewife, they are as much involved in agriculture as men.
- 1.2. Family farming is mainly orientated towards self-consumption or barter activities and even though it maintains the HH food security, it does not contribute to generate income. HH get an extra income through handicraft making and tourism services provision (i.e, guiding in the Inka trail).
- 1.3. Women have lower educational attainment levels and literacy rates than men. Men are sent for longer periods to school than women, who undertake the household care activities.

Dimension 2. Household dietary diversity. The HH dietary diversity score is higher in the communities from the middle keshua zones. The HH that have the highest HDDS (third tertile), combine more intensively self-production with purchase and barter to get a wide diversity of food. This trend show that it is not necessarily the wealthiest households in terms of income that have the most diverse diets, but the ones that are practicing barter, and thus are the least isolated, or the ones that cultivate most, and thus have resources

- 2.1 The majority of the HH have had a Vitamin A intake in the 24 hours preceding the survey. The most part of this intake came from vitamin A rich tubers and vegetables and from dark green leafy vegetable in the upper puna zone only. Much less comes from milk and eggs. The consumption of green leafy vegetables is very low in the middle keshua zone, and there is a low consumption of Vitamin A rich fruits and fruits in general.
- 2.2 Protein intake from animal sources is also low. However, protein intake from food plant is higher as there is a high consumption of legumes, especially fava beans.
- 2.3 Most households have an HDDS comprised between 7 and 9. There are no differences of HDDS depending on the gender of the head of household.
- 2.4 At least 50% of the HHs from the tertile with the highest HDDS eat foods from 3 more food groups (fruits, legumes nuts and seeds, milk and milk products) than the HHs from the tertiles with the medium and lowest HDDS. The highest the HDDS, the highest the percentage of HHs from the tertile eating foods from each food group. HHs with the highest HDDS tend to cultivate and barter more than the others.
- 2.5 Whereas HDDS is often used to measure socio-economic access to food, the economic resources do not seem to be a proxy of more diversity in this context. Food diversity of the household with the highest HDDS comes mainly from their ability to cultivate (land resources, capacities and knowledge) and practice barter (social abilities).

Dimension 3. Food scarcity periods and coping strategies. Food scarcity affects differently the HH in the two agro-ecological zones. In the higher communities food scarcity periods are more recurrent. In these communities they affect all the HH members, while in the middle keshua zone only adults (both men and women) are reported to be affected. The main scarcity coping strategy in the middle keshua zone is food procurement through traditional practices based on solidarity and reciprocity principles. (i.e, barter markets, *ayni* and borrowing from relatives). It is also an important strategy in the upper puna zone, along with diversification of livelihood outside of the community through tourism work or handicraft. The most part of HH in both agro-ecological zones collect wild foods, which are mainly plant species.

- 3.1 There have been more scarcity periods in the past few years, and most of the HHs reported experiencing food scarcity at least once a year.
- 3.2 All members of the HHs are affected by food scarcity.
- 3.3 The main coping strategies to face food scarcity are work and food exchange practices based on the solidarity and reciprocity principles (i.e, barter markets, *Ayni*, borrowing food or money from relatives, others) in both zones and tourism and handicraft for a majority of households of the upper Puna zone.
- 3.4 Wild foods collected in times of food scarcity have a high nutritional content. All the collected wild food plants were considered as neglected and underutilized species by the participants.

Dimension 4. NUS use and conservation. The NUS conservation presents complementary challenges between the two agro-ecological zones. The main part of the reported species of NUS grows in the middle keshua communities while the share of species that have been extinct is higher in the upper puna communities where climate change is affecting the range of temperatures. Some NUS species are of strategic importance in all the communities while others have specific uses in each community. Adult women are in charge of the NUS collection while elder women conserve the knowledge on their uses. The fact that they are sacred (they are not traded) requires that specific and adapted exchange strategies should be explored taking into account the current food procurement reciprocal strategies.

- 4.1 NUS are considered important for nutrition and health purposes, especially for the children and mothers. Most part of the participants considered NUS as a part of their gastronomy and their ancestral dietary knowledge.
- 4.2 The knowledge on NUS is traditionally held by elder women. Participants recognized that it is at risk because there is a lack of transmission to younger generations and some species are becoming unknown.
- 4.3 Women collect NUS during their pastoralist activities further away from the villages, where most NUS are located. Elder women undertake rituals when collecting NUS as they consider them sacred foods provided by the *Pachamama*.
- 4.4 Women know NUS traits, which are mainly medicinal. Properties for specific diseases have been registered. Most nutritional properties are related to their content in proteins and vitamins.
- 4.5 The NUS conservation areas are diminishing due to changing climatic conditions.

9. Recommendations

Participants confirmed that social inequalities exist within the communities mostly affecting the access of HHs to health and education. They also expressed their interest to regain the knowledge and uses of the NUS facing their conservation challenges. The local concept of well-being still linked to the traditional Andean concept of *suma qawsay* in which the holly, the ecosystem services' and the human dimensions are integrated by means of the social reciprocity strategies along the altitudinal agro-ecological complementarities. The establishment of future collaborative strategies to enhance the use and conservation of NUS for nutrition purposes during food scarcity periods may integrate the following recommendations:

R1. Local policies for NUS conservation and nutrition improvement

- a) To promote collaboratively with the Lares authorities a local policy protecting the local economic strategies which are based on the traditional solidarity and reciprocal principles, reinforcing women's role in food and nutrition security.
- b) Through the Farmers Field School platform create a space for communities to exchange and get the opportunity to raise their voice to local, regional and global levels on their perceptions of threats and need for support..

R2. NUS awareness and capacities building

- c) To build, following a gender approach, women's capacities on production, conservation and knowledge management of NUS plant species within the framework of the Farmers Fields Schools.
- d) To empower women heads of households, which are the majority of heads of households identified in this project by maintaining training and awareness workshops with a majority of women participation. To continue the horizontal learning process inviting experts from other communities (eg. Potato Park) to give training on specific subjects related to NUS conservation and NUS properties and uses and nutrition.
- e) To maintain the capacity building process of the local technicians team allowing the improvement of their analytical skills within the project.
- f) To undertake trainings sessions on NUS within the Farmers Fields Schools.
- g) To undertake training sessions on NUS with local staff from the public education and health services.
- h) To design nutrition guidelines on NUS for women.

R3. SD=HS project implementation

- i) To continue with the gender strategy to establish adequate spaces and methods that motivates women's participation in the project execution.
- j) To conduct the second part of the baseline study in Lares during the food abundance period.
- k) To continue monitoring and evaluation of the research and activities conducted.
- l) To report regularly to communal authorities on the work led in their communities.

ANNEX 1. Indigenous and participatory methodology

Photo 4: Workshop led in Lares in February 2016, with the field coordinator, research assistant, agronomist and local technicians



Photo 1: Pre-test and control of the first surveys in the communities



Photo 3: Survey in the community of Pampacorral



Photo 2: Definition of main institutions and activities with the communities of Ccachín, Choquecancha and Rosasnata



Photo 6: Institutional ranking using the Yupana methodology in Pampacorral and Maucau



Photo 5: Institutional ranking using the Yupana methodology in Pampacorral and Maucau



Photo 10: Defining the Sumaq Kausay criteria with communities of Pampacorral and Maucau



Photo 9: Creating list of existing NUS Ccachin



Photo 8: Discussing traits of NUS in Maucau

Photo 7: Eating local NUS "Nabo" prepared by women in Choquecancha

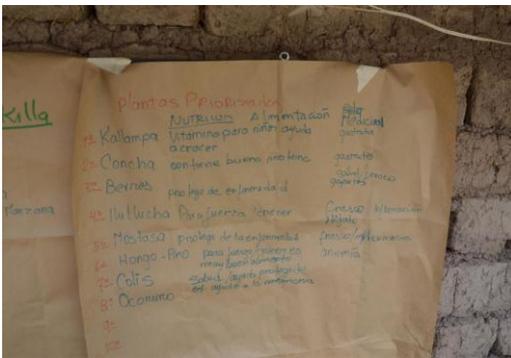


Photo 14: Women drawing NUS plant species to include on the seasonal calendar in Choquecancha

Photo 11: Women from Pampacorral drawing NUS flow map



Photo 12: Seasonal calendar in Pampacorral

Photo 13: Seasonal calendar in Choquecancha



ANNEX 2. Local team

TABLE 1. TECHNICAL TEAM IN CHARGE OF SURVEY IMPLEMENTATION

Name	Role	Origin	Language	Tasks
Christian Adriazola Salvidar	Project Manager	Peru	Spanish and English	Responsible for the monitoring of survey progress and the financial management of the field work, coordination with the municipality of the district of Lares and the communal authorities
Hélène Botreau	Project Manager- Food Security expert	France	French, Spanish and English	Responsible for the control of quality, methodology, data entry and analysis
Sara Argumedo	Research Assistant	Canada	Spanish and English	Responsible for the logistics, coordination with the municipality of the district of Lares and the communal authorities, coordination with field coordinator and technicians, support for control of quality, data entry and analysis.
Ricardo Pacco Chipa	Field coordinator	Potato Park/ Cusco	Quechua and Spanish	Responsible for the training and support of field teams, and control of quality, facilitation of FGD and conduction of semi-directed interviews
Hernan Oscar Ramos Cardenas	Agronomist	Potato Park/ Cusco	Quechua and Spanish	Responsible for technical support on the survey and FDG facilitation and systematization
Jessica Villacorta	Agronomist	Cusco	Quechua and Spanish	Responsible for technical support on the survey and FDG facilitation and systematization
Petronilla Quispe Quispe	Local technician	Choquecancha/ Cusco	Quechua and Spanish	Responsible for implementing surveys and FGD in the field.
Valentina Abiles Tapara	Local technician	Pampacorral/ Cusco	Quechua and Spanish	Responsible for implementing surveys and FGD in the field.
Maria Chasin Zuniga	Local technician	Rosaspata / Cusco	Quechua and Spanish	Responsible for implementing surveys and FGD in the field.
Aniceto Condori Mamani	Local technician	Maucou / Cusco	Quechua and Spanish	Responsible for implementing surveys and FGD in the field.
Juan Victor Oblitas Chasin	Local technician	Ccachín/ Cusco	Quechua and Spanish	Responsible for implementing surveys and FGD in the field.
Enrique Granados Rojas	Driver	Peru	Quechua and Spanish	

ANNEX 3. Survey structure

Encuesta “Línea Base Nutricional Lares”

Encuesta Individual para Hombres y Mujeres d

Sección 1: Datos demográficos y estado de los medios de vida				
Sección 1.1 : Sitio y Ubicación				
Código HH (código de ocho dígitos?: Provincia, Distrito, municipio, comunidad y el número del hogar)				
1.1.1 Provincia	1.1.2. Distrito	1.1.3. Nombre del/la encuestador/a		1.1.4. Fecha
1.1.5. Detalles del Encuestado/a		1.1.6. Nombre del Municipio	1.1.7. Nombre de la Comunidad	
Sexo (Opcional): 1 = Hombre 2 = Mujer				
Indicar Año de nacimiento o edad de la persona encuestada:				
Estado Civil (Opcional) 1=Soltero/a - nunca casado/a 2= Casado/a - conviviente 3= Divorciado/a – Separado/a 4= Viudo/a				
Sección 1.2 : Demografía (escribe la respuesta adecuada en el espacio en el espacio correspondiente)				
1.2.1.. ¿Cuál es el nombre del/la Jefe/a del Hogar? ¿Por qué esta persona es jefe/a de la familia?				
1.2.2. Sexo del/la Jefe/a del Hogar 1 = Hombre 2 = Mujer				
1.2.3. Edad del/la Jefe/a de familia :				
1.2.4. Estado Civil de el/la Jefe/a del hogar (Opcional) 1= Soltero/a - nunca casado/a 2= Casado/a – conviviente 3= Divorciado/a – Separado/a 4= Viudo/a				
1.3 ¿Cuál es su ocupación principal (persona encuestada)? NO LEER LAS ALTERNATIVAS				
a. Agricultura				1
b. Mano de obra agrícola/ Jornalero/a				2
c. Comerciante / compra y venta				3
d. Empleo Formal – Servicio gubernamental/público				4
e. Empleo Formal – Empresa/Privado				5
f. Desempleado / no está trabajando				6
g. Trabajos temporales / empleo informal				7
h. Independiente				8
i. Pensionista				9
j. Ama de casa				10
k. Estudiante				11

1. Otro (especificar) 12

1.4	¿Cuál es el nivel más alto de educación formal que ha completado? <i>NO LEER LAS ALTERNATIVAS</i>	Jardín	Escuela Primaria	Escuela Secundaria	Instituto	Terciario (Universidad)	Otro (detalle)			
1.5	¿Es lee y escribe ? (Marque con una X)	IDIOMA			LEER		ESCRIBIR			
					SI	No	SI	No		
		A	Español							
		B	Quechua							
		C	Otros idiomas (mencionelos)							

1.6 Número total de personas en el hogar (indicarlo) :

Es importante tener en cuenta que el número de personas descrito, tiene que coincidir con las marcadas en el siguiente cuadro.

Completa la tabla por sexo y grupo de edad

	Por favor escriba 0 si no hay	Número de los miembros menores de 5 años	Número de los miembros de edad 5-17 años	Número de los miembros de edad 18-59	Número De los miembros de edad 60+
	Hombre				
	Mujer				

Indicar lo siguiente:

		Número de los miembros menores de 5 años	Número de los miembros de edad 5-17 años	Número de los miembros de edad 18-59	Número De los miembros de edad 60+
	Huérfanos (uno o ambos padres muertos)				
	Crónicamente enfermo/a, que no puedan trabajar				
	Número de personas físicamente / mentalmente con problemas				

¿Cuántos miembros de la familia están involucrados en actividades agrícolas?

.....

Sección 2: Diversidad de la alimentación en el hogar

Que alimentos usted y el resto de miembros de su familia han COMIDO Y BEBIDO durante las últimas 24 horas (ayer).

Indicar todos los alimentos y bebidas consumidos en el desayuno, almuerzo, cena y refrigerios.
Es importante mencionar no se incluirán los alimentos preparados comprados fuera de casa.

Uso de Ipad – cámara fotográfica para tomar registro de los principales cultivos empleados en la alimentación del hogar.

<i>Comidas principales</i>	<i>Alimentos y bebidas consumidas</i>	<i>Ingredientes/ componentes</i>	<i>Los alimentos se obtuvieron a través de: (por ingrediente) 1 =Cultivado 2=Recolección, la caza, la pesca 3 = Comprado 4 = Prestado, trueque, intercambio de mano de obra, regalo de amigos/as o familiares 5=Ayuda alimentaria 6= Otro</i>
<i>DESAYUNO</i>	1.	1.	a)
		2.	b)
		3.	c)
	2.	4.	d)
		5.	e)
		6.	f)
	3.	7.	g)
		8.	h)
		9.	i)
		10.	j)
<i>ALMUERZO</i>	1.	1.	a)
		2.	b)
		3.	c)
	2.	4.	d)
		5.	e)
		6.	f)
	3.	7.	g)
		8.	h)
		9.	i)
	4.	10.	j)
		11.	k)

<i>Comidas principales</i>	<i>Alimentos y bebidas consumidas</i>	<i>Ingredientes/ componentes</i>	<i>Los alimentos se obtuvieron a través de: (por ingrediente) 1 =Cultivado 2=Recolección, la caza, la pesca 3 = Comprado 4 = Prestado, trueque, intercambio de mano de obra, regalo de amigos/as o familiares 5=Ayuda alimentaria 6= Otro</i>	
<i>CENA</i>	4.	11.	a)	
		12. /	b)	
		13.	c)	
	5.	14.	d)	
		15.	e)	
		16.	f)	
	6.	17.	g)	
		18.	h)	
		19.	i)	
		20.	j)	
	<i>REFRIGERIOS</i>	1.	1.	a)
			2.	b)
3.			c)	
2.		4.	d)	
		5.	e)	
		6.	f)	
3.		7.	g)	
		8.	h)	
		9.	i)	
4.		10.	j)	
		11.	k)	
		12.	l)	

Sección 3. Periodo de Escasez:

3.1. ¿Cuántas veces durante el último año ha pasado por momentos de escasez de alimentos?
 Marque con una X

- Nunca
- Una vez
- 2 veces
- 3 veces
- 4 veces
- 5 veces
- más de 5 veces

3.2. Normalmente, ¿durante qué meses enfrenta escasez de alimentos? Marque con una X las mencionadas.

ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEPT	OCT	NOV	DIC

3.3. Generalmente, ¿cuánto tiempo dura un periodo de escasez de alimentos? _____ (Número de días, semanas, meses)

3.4. Mayormente, ¿quién en su hogar se ve más afectado/a por los periodos de escasez de alimentos? Marque con una X las mencionadas.

Hombre Joven (0 – 17 años)	Mujer Joven (0 – 17 años)	Hombre Adulto (18 – 65 años)	Mujer Adulta (18 – 65 años)	Hombre Anciano (más de 65 años)	Mujer Anciano (más de 65 años)	Hogar Entero

3.5. Estrategias de superación de la escasez de alimentos

<p>¿Cuáles son las estrategias utilizadas de superación en los periodos de escases de alimentos? <i>Mercado de trueque – Ayni - Productos más baratos - Préstamos de familiares - Compras al crédito - Recolectar alimentos salvajes, caza, o cosechar cultivos silvestres - Consumir las reservas de semillas, Restringir el consumo de alimentos a algún miembro de la familia - Comprar menos comida preparada - Reducir las porciones de alimentos - No comer.</i></p>	<p>Quienes se ven perjudicado, con esta estrategia. <i>Hombre – Mujer = Adulto/a Hombre – Mujer = Joven Hombre – Mujer = Anciano/a Todo hogar</i></p>	<p>Quienes se ven beneficiados, con esta estrategia. <i>Hombre – Mujer = Adulto/a Hombre – Mujer = Joven Hombre – Mujer = Anciano/a Todo hogar</i></p>

<p>¿Recolectan alimentos silvestres, cazan, o cosechan cultivos silvestres? (anote los cultivos recolectados en el cuadro de abajo)</p> <p>1.-</p> <p>2.-</p> <p>3.-</p>
--

¿Almacenan alimentos de un año para otro? Sí / No. **¿Por qué es importante almacenar los alimentos?**

.....

.....

.....

.....

AGRADECIMIENTO A LA PERSONA Y FAMILIA ENCUESTADA.

ANNEX 4. Considerations on the household dietary diversity analysis methodology

The method to estimate the household dietary diversity was the 24 hour recall method (FAO, 2010)²². No correlation to household's wealth was made with the HDDS score. Even if a high HDDS score is usually closely related to higher expenditures and access to land and resources and thus associated with the better-off households, it does not necessarily reflect the increase of diversified food due to increased access to NUS (cultivated or gathered). Hence the targeted HDD score of the wealthier households is a relative score. Some cases show that the poorer households, despite their lower income, have higher HDDS as they have even bigger dependency on diversity and the use of NUS rather than richer households. Other case shows that richer households with larger farms may have greater access to i.e. wild edible plants as they should be able to cultivate these on farm, but may not be inclined to do so due to the associated social stigma of growing the food of the poorest. Moreover, in the context, as explained above, it was neither possible nor ethical to lead a wealth-ranking analysis with nomination of households. This is why, in the context of our sample, the method of targeting the HDDS of the better-off households, even if normally useful to measure the effect of project activities targeting income generation will not be used. The SD=HS project in Peru, indeed, focuses more on having an increased HDDS on the basis of diversified sources of food species for nutrition especially those related to the increased access to diversity and use of NUS. Hence, the tertile of the highest HDDS will form the intervention target and indicator.

Accordingly to FAO's recommendations in using indicators of special interest for some micronutrients, we decided to calculate consumption of vitamin A²³ or haem-iron rich foods²⁴. The HDDS can also provide an indication of household economic access to food, thus items that require household resources to obtain, such as condiments, sugar and sugary foods, and beverages, are included in the score. It is also important to calculate the proportion of individuals consuming fats and oils as a separate indicator because oil is an important contributor to energy density and improves the absorption of plant source carotenoids and fat-soluble vitamins. As precised in the framework of analysis, in the absence of income or economic data from the baseline survey, a HDDS target will established by taking the average diversity of the 33% of households with the highest diversity (upper tertile of diversity). From each tertile, we analyze the main food sources. When interpreting the dietary diversity score, it is important to keep in mind that:

²² This methodology has to estimate the Household Dietary Diversity Score (HDDS) that reflects the households' access to a variety of foods. In this method respondents are asked to recall what has been eaten in the household over the last 24 hours during day and night, whether at home or outside the home, being asked about the source of food (whether cultivated, collected, bought etc.). Each food items composing meals are then classified in 16 food groups. Some categories are aggregated (vegetables, fruits and meat) so that the sum of the 12 food groups with aggregation was used to obtain the Household Dietary diversity Score. See FAO, 2010. Guidelines for measuring individual and household dietary diversity.

²³ The term vitamin A is used in this section for simplicity. It indicates foods containing retinol and foods of plant origin that contain retinol precursor carotenoids

²⁴ Haem iron, is more bioavailable than non-haem

iron and also enhances the absorption of non-haem iron present in the same meal. Organ meats are the richest source of haem iron.

- The dietary diversity score does not indicate the quantity of food consumed.
- Diet varies across seasons and some foods can be available in large quantities and at low cost for short periods.
- There may be urban/rural differentials in dietary diversity. Variety is often much greater in urban and peri-urban centers where food markets are adequately supplied and easily accessible.
- Accordingly to recommendations for 24 hour-recall, the survey was conducted during the worse scarcity period

In order to get an overview of households classification in terms of HDDS, tertiles were calculated and an in-depth analyze was led within each of the tertiles. The goal was to understand differences in dietary diversity within each tertile and get an indication of household economic access to food by tertile.

Annex 5. Original version of the context-adapted guidelines for the baseline methodology

1. Línea de base sobre NUS y nutrición en Lares

1.1 La encuesta

El modelo de cuestionario propuesto por Oxfam Novib constaba de tres secciones principales:

- Sección 1: Datos demográficos y estado de los medios de vida
- Sección 2: Diversidad de la alimentación en el hogar
- Sección 3: Periodo de escasez

En primer lugar, el cuestionario propuesto por Oxfam Novib fue traducido del inglés al español, y se realizó una primera contextualización de manera conjunta con la coordinación del proyecto.

Asimismo, se llevó a cabo una primera socialización de la herramienta al personal técnico y a la dirección de ANDES donde se puso en cuestión el término de “escasez” y cómo éste iba a ser traducido y explicado en quechua de manera que no surgieran conflictos por ser malentendido y asemejado al concepto de pobreza.

En un segundo momento, se hizo una primera validación de la herramienta con el coordinador de campo, tras lo cual se transformó la herramienta haciéndola más simple para su uso por parte del equipo encuestador: ej. eliminando la clasificación por grupos de alimentos en primera instancia y profundizando en el concepto de “afectados/as” por las estrategias para hacer frente a los periodos de escasez, al distinguir la existencia de posibles beneficiarios/as o perjudicados/as. Esto supuso, por otra parte, una fase intermedia en el volcado de la información de las encuestas ya que fue preciso hacer un ajuste de la información al formato de la encuesta original diseñada por Oxfam Novib.

Tras estas valoraciones, se realizaron dos sesiones con el personal técnico local en la oficina de Lares, quien iba a responsabilizarse de la aplicación de la encuesta en las comunidades, para presentar el cuestionario y contextualizarlo (haciendo las modificaciones necesarias) con su aporte, principalmente en lo que respecta a la adaptación del listado de alimentos y de las estrategias para la superación de los períodos de escasez así como para consensuar los rangos de edades y el concepto de jefatura del hogar.

Tras esta consulta, se elaboró la herramienta final consensuada para el visto bueno de la dirección de ANDES.

De manera paralela, se realizaron dos capacitaciones o talleres con el personal técnico/a local sobre el objetivo de la encuesta, conceptos básicos sobre nutrición y las tres secciones de las que constaba la herramienta para su aplicación. Asimismo, se definieron las personas que iban a formar parte del equipo encuestador y las comunidades que son actualmente parte del distrito de Lares.

Se realizó un pre-test de la herramienta para lo cual la coordinación del proyecto y el personal técnico de ANDES acompañaron al personal técnico-encuestador durante la administración del cuestionario con el fin de probar la claridad y calidad de la herramienta y controlar la adecuada recogida de información. En este sentido, se observaron algunas deficiencias (principalmente en relación con el concepto de “escasez”) que hicieron necesaria una nueva capacitación de “análisis de la experiencia de la recogida de la información” así como de “capacitaciones en campo”.

Durante el proceso de encuestado, se conformó un equipo para el control de calidad encargado de la revisión de las encuestas. Esto hizo que aproximadamente un 10% de las mismas fueran rechazadas y que se elevará en un 15 % la muestra para compensar estos errores identificados.

1.2 Grupos Focales

Los grupos focales, al igual que las entrevistas semi estructuradas, fueron las principales herramientas diseñadas para la recopilación de la información cualitativa del estudio de la línea de base, complementaria a los datos cuantitativos provenientes de las encuestas.

Los tres temas principales desarrollados a través de los grupos fueron: el análisis institucional, el ránking de bienestar-Sumaq Kausay y la identificación y flujo de NUS.

Se hizo un primer diseño del guión para los grupos focales a partir de los materiales proporcionados por Oxfam Novib que fue socializado con el personal técnico de ANDES. En este taller se adaptó la metodología de acuerdo a los saberes tradicionales. En este sentido, se presenta la versión adaptada de los GF tras la validación:

- ❖ Análisis institucional, compuesto de las siguientes partes:
 - Identificación y listado de las instituciones y organizaciones presentes en Lares
 - Clasificación por orden de importancia utilizando la yupana
 - Definición del tipo de actividades de las instituciones priorizadas
 - Definición del tipo de relación entre las instituciones priorizadas y las comunidades
 - Consensuar las conclusiones

- ❖ Clasificación de los hogares de acuerdo a la percepción de “bienestar”:

Se decidió cambiar el término “bienestar” por el concepto del Sumaq Kausay, más cercano a la cosmovisión andina, facilitando, de esta manera, una mejor comprensión del objetivo perseguido por parte de los y las participantes de los grupos

 - Definición de bienestar e identificación de sus criterios
 - Valorización de los criterios e identificación de los desaparecidos en las comunidades
 - Definición de las desigualdades y de sus niveles en las comunidades sobre la base de los criterios determinados anteriormente
 - Definición del bienestar intra e inter comunidades
 - Consenso de las conclusiones

- ❖ Flujo de NUS:
 - Discusión del concepto de NUS y sus criterios más importantes según las

- comunidades
- Determinación del listado de NUS, en el período de escasez y en período de abundancia
- Valorización de las NUS más importantes según la comunidad
- Definición de su valor nutricional, alimenticio y medicinal
- Definición de los flujos de UN y de las personas responsables de su recogida a través de un mapa participativo.
- Determinación de la disponibilidad de las NUS silvestres de acuerdo a la época del año a través de un calendario estacional y determinar cuáles han desaparecido en los últimos años

Al mismo tiempo, en el taller de validación y capacitación, se sistematizaron los pasos de manera que sirvieran de “ayuda para la facilitación” y se establecieron unas preguntas para la sistematización rápida, debido a la premura de los tiempos para la redacción del informe final de base, destacando los temas clave a tratar en los grupos focales.

Es de señalar que para la determinación de los y las participantes de los grupos focales se tomó en cuenta a los grupos ya conformados de las Escuelas de Campo así como la población de las comunidades y la afinidad con el proyecto. En este sentido, se desarrollaron dos grupos focales para la determinación de los criterios del Buen Vivir y el análisis institucional, uno correspondiente a la zona alta (comunidades de Pampacorral y Maucau) y el otro correspondiente a la zona media (comunidades de Ccachín, Choquecancha y Rosaspata). En cuanto a la identificación de las NUS y sus flujos se llevaron a cabo cuatro grupos focales: dos se llevaron a cabo con mujeres (Choquecancha y Pampacorral) y dos con varones (comunidades de Maucau y Ccachín). La facilitación de los grupos se desarrolló en quechua y, en todos los casos, fue acompañada (para su reconducción en caso fuera necesaria) por la coordinación del proyecto.

1.3 Entrevistas semi estructuradas

El guión previamente diseñado, en base a los materiales proporcionados por Oxfam Novib, fue adaptado tras su socialización con el personal técnico quedando simplificado a siete preguntas focalizadas:

1. Discusión sobre el concepto de NUS
2. Definir cuáles serían los 4/6 NUS más utilizados por familia
3. Flujo de NUS: ¿Dónde crece? ¿Cómo la obtiene? ¿Son silvestres, cultivadas? Quién recoge (hombres, mujeres, niños/as), ritual o ceremonia de recolección, existe trueque/intercambio de estos productos.
4. Usos nutricional/alimentario/medicinal, que partes se comen de la planta. Cómo es cocinado. Cuándo es consumido (período de suficiencia, períodos de escasez o a lo largo de todo el año)
5. Disponibilidad de NUS y prácticas de conservación
6. Tendencias en el consumo de NUS bajo las perspectivas de género y generacional
7. Fuente de conocimiento de las NUS

Se acordó realizar las entrevistas a personas participantes de los GF consideradas como “sabias” y a que el/la entrevistador/a fuera responsable de la sistematización de la misma.