

LIFE PASTORALP



LIFE16 CCA/IT/000060

Pastures vulnerability and adaptation strategies to climate change impacts in the Alps

Deliverable E.2

Report on what emerged from
consultation workshops


May, 2020



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	Institut Agricole Régional – IAR
	Institut National de Recherche pour l'Agriculture l'Alimentation et l'Environnement – INRAE
	Parc National des Ecrins – PNE
	Ente Parco Nazionale Gran Paradiso – PNGP

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List of acronyms

Acronym	Definition	Country
PNE	Parc National des Ecrins	FR
PNGP	Parco Nazionale Gran Paradiso	IT
INRAE	French National Research Institute for Agriculture, Food and Environment	FR
UNIFI	Università degli Studi di Firenze	IT
IAR	Institut Agricole Régional	IT

1 Executive summary

This deliverable presents the activities developed for the LIFE PASTORALP project in the context of Action E.2 and reports the consultation workshops held at the Parc National des Ecrins (PNE) and the Parco Nazionale Gran Paradiso (PNGP) in 2018, 2019 and 2020.

Based on a participatory-based process, two boards of stakeholders (one in each case study area) were built and invited to participate to online consultations, individual interviews and workshops. The stakeholder groups included representatives from local institutions, networks, farmers, technicians, etc. They were built to collect information about the local pastoral systems, challenges and opportunities, and to co-develop scenarios for supporting the project's actions. In particular, the stakeholder consultations were meant to support the actions related to the socioeconomic tasks and disseminate the results of the project. Two stakeholder meetings were organized in June 2018 and two workshops in February 2019 in the case study areas. **The second-phase workshops scheduled for the end of 2019 and spring 2020 had to cope with logistic issues associated with the COVID-19 pandemic.** The scheduled events were either replaced by targeted interviews with stakeholder representatives or postponed to fall 2020.

The stakeholder activities provided valuable information and important insights into both the adaptation capacity and the sensitivity to environmental changes of the local pastoral systems. On that basis, a conceptual framework was developed to assess the vulnerability to climate change able to include a wider range of stress factors such as wolf predation, local governance and policy implementation. The workshops were also noteworthy to highlight the differences that exist in the pastoral systems' farming practices of the two case studies. This has been an essential step in our progress to define an analytical framework that fits into the different organisational structures and adaptation capacities of the pastoral sectors in both the PNE and PNGP.

2 Introduction

Action E.2 aims at disseminating the project's results, discussing issues and retrieving information on the main pastoral management practices, and assessing the vulnerability of the pastoral systems in the case study areas. The action is divided in four sub-actions. The present document reports on the two consultation workshops that were organized at Parc National des Ecrins (PNE) and Parco Nazionale Gran Paradiso (PNGP).

The consultation process was based on a mix of individual interviews and questionnaires, and collective meetings. The selection of the stakeholders was supported and organized by the local teams in the PNE and PNGP to perform an appropriate stakeholder analysis and engage as wide as possible existing networks, associations, local institutions, etc. (Reed et al., 2009). In particular, the consultation process involved online questionnaires and two workshops in each case study region. The first workshop was to discuss the general features of the local pastoral systems and define a general framework of analysis. The second workshop was to perform a semi-quantitative expert-based assessment of the adaptation drivers in the case study regions.

Firstly, the stakeholders were asked to fill a questionnaire to rank the most important socioeconomic indicators able to describe the sustainability of the local pastoral systems and identify the main drivers of socioeconomic change. Subsequently, two meetings were organized at PNE and PNGP respectively for the co-construction of a framework able to describe the adaptation processes. The consultations relied on participatory cognitive mappings with the aim to generate a network of relations fitting to the local systems and able to feed into the next analytical steps, namely the adaptation model of task C5.3 and tasks in Action C6. The outcomes of the meetings were processed by INRAE (Ecodéveloppement unit) to refine the networks and build a Fuzzy Cognitive Mapping model. The model is intended to be discussed in two meetings with the stakeholders and in particular with farmers. Due to the logistic and social problems created by wolves' attacks (just before a meeting) and the COVID-19 health crisis, these two events were substituted by individual interviews for the PNE area and postponed to fall 2020 for the PNGP case study area.

3 Methods

The involvement of stakeholders was the basis for the design and assessment of an analytical framework concerning the climate change adaptation strategies and opportunities. The involvement of the stakeholders followed a participatory-based process, which was carried out between 2017 and 2020 with a group of local stakeholders including farmers, technicians and representatives of local institutions such as the Parc National des Ecrins and the local Chambre d'Agriculture in France, and the Parco Nazionale Gran Paradiso, Institut Agricole Régional and Agenzia Regionale Protezione Ambiente in Italy. Around 20 and 30 stakeholders were involved in the PNE and PNGP, respectively. The stakeholders were invited to join a board to discuss and debate on the local pastoral systems, and the challenges and opportunities linked to climate changes in the two case study regions. The selection of the stakeholders was facilitated by the existence of the established Alpages Sentinelles working group and its network in France, as well as a network of institutions in Piemonte and Valle d'Aosta in Italy. The participatory process also involved several interviews and informal discussions, which were developed in parallel with the collection and analysis (e.g. GIS analyses) of biophysical and ecological data.

The participatory process involved two stages. The first stage was focused on exploratory activities to outline the major drivers and factors impacting on the local pastoral systems. The second stage was designed to use the collected information to develop a network of analysis able to assess different adaptation strategies in the socioeconomic contexts of the different local pastoral systems. NB: in this deliverable only the participatory-related steps are described.

3.1 First stage participatory process

A survey with local farmers was carried out in the PNE to assess their perception of climate change and the main response strategies that were considered feasible to reduce the risks connected to climate such as droughts, extreme events, vegetation changes, etc. (Fig 1).

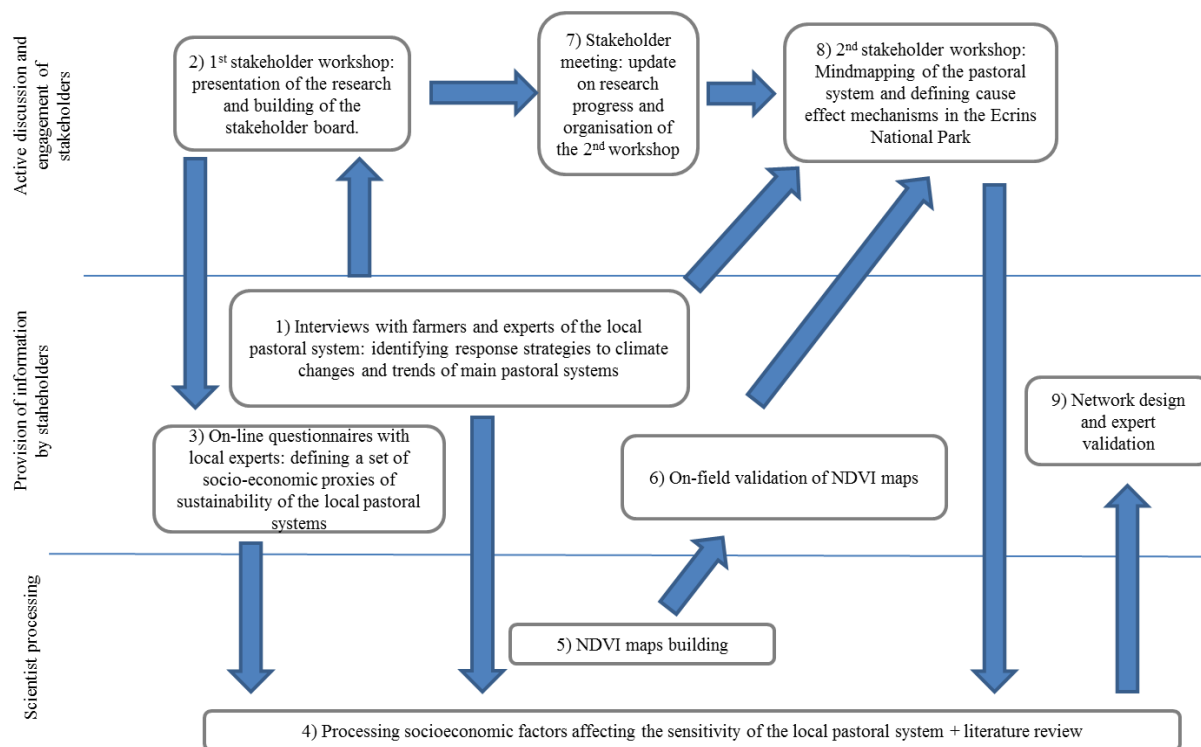


Figure 1. Outline of the participatory-based and analytical processes for the assessment of adaptation strategies in the LIFE Pastoralp Project.

The exploratory survey concerned 10 questionnaires carried out between 2017 and 2018 that allowed to define a list of adaptation strategies according to the farmers' objectives (reported in Brien, 2018). A similar survey with local farmers was carried out in the PNGP in 2018 focusing on perception of climate change and adaptation strategies to cope with climate risks (11 interviews reported by the PNGP, cf. appendix). These surveys allowed to define a set of potential strategies for adaptation to climate changes. To assess the performance of the different strategies in the local pastoral systems, different workshop were organised in the two case study areas. A first stakeholder meeting round was held on April, 29th 2018 in Noasca (Italy) and on June 2018 in Gap (France), in PNE and PNGP (the list of presence is available in an attachment to the present document). The aim of the meetings was to facilitate a general discussion about critical issues in reference to climate changes, to identify and characterize the main local pastoral systems and to define the scope and objectives of the socioeconomic analysis. The meetings objective was also to ensure support for the project activities from the local institutions. Afterwards, an online questionnaire was sent to the stakeholders (10 stakeholders in France and 10 stakeholders in Italy) to rank a set of socioeconomic proxies relevant for the sustainability of the local pastoral systems (the questionnaire is provided in

the appendix). The questionnaire was based on a wide review of literature aimed at categorizing broad categories of sustainability indicators for livestock systems (Lebacqz et al., 2013). The review provided a broad list of issues of concern such as profitability, autonomy, etc. that the stakeholders ranked as ‘non-relevant’, ‘relevant’, or ‘very relevant’ for the sustainability of the pastoral systems to discuss drivers and challenges affecting the case study regions, and to outline potential impacts of climate changes on the local pastoral systems.

The Parc National des Ecrins (France) and the French National Research Institute for Agriculture, Food and Environment (INRAE) organized a second workshop on February, 6th 2019 at the PNE centre in Gap (France) on adaptation strategies of pastoral systems to climate change (list of invitees is available in the appendix).

Local elected representatives, staff from protected areas and from conservation and farming organizations, farmers, researchers, etc. were invited to the meeting (27 persons invited and 19 participants). During the workshop, the participants identified the main factors influencing the local pastoral systems and shared their vision about the future evolution of alpine climate, as well as their local knowledge of the territory, in order to generate new, innovative and creative ideas. A mind-mapping approach was employed to facilitate the discussion around the impacts of climate change on alpine pastures (changes in rainfall patterns, quality of grass, water scarcity), according to various climate change scenarios (global warming limited to +2 °C above pre-industrial levels, or over +2°C). The mind maps concerned both economic and social issues, regarding in particular the evolution of mountain farming. Based on the outcome of the first meetings and questionnaires, the discussions focused on several drivers and factors such as the Common Agricultural Policy (CAP), the alpine economy’s increasing reliance on tourism, and wolf predation: all participants shared their vision about the future and their local knowledge, in relation with possible adaptation strategies to climate change.

The second workshop in the PNGP was held two weeks later, on February 20th 2019, in Ivrea (Italy). 28 stakeholders including staff from protected areas and from conservation and farming organizations, farmer’s representatives, local public bodies, environmental associations, etc. and 4 researchers from the LIFE PASTORALP Project were present at the meeting. The meeting followed the same agenda as the workshop in France and the same general objective of identifying key factors influencing the local pastoral systems, co-developing shared vision of future scenarios and generating innovative ideas. However, in the meeting in Italy farmers were invited but only two farmers’ representatives attended the

meeting. The discussion also concerned the necessity of a legal framework in order to face the CAP reform, and on the potential changes of pastoral practices considering the need for more sustainability, and the conflict between pasture management and other drivers linked to land management like depopulation, ageing of livestock farmers, etc.

During the two stakeholder workshops of the first stage, the direct and indirect mechanisms affecting the sensitivity of livestock farming to climate changes were put in relation following a mind-mapping approach to facilitate the identification of cause-effect relations and the elements affected (i.e. 'sensitive') to climate changes. That exercise allowed the definition of a set of drivers that the stakeholders considered relevant for reducing (or exacerbating) the sensitivity of the pastoral systems to climate changes impacts. The range of actors, institutions, conditions, etc. discussed in the stakeholder workshops were then evaluated considering relevant literature on the issue (e.g. Marshall et al., 2014; Maru et al., 2014; Berrouet et al., 2018). The cause-effect mechanisms and the drivers identified by the local stakeholders were depicted in the conceptual network, and then validated with local experts during tailored interviews (3 interviews with pastoral experts in Italy and 4 in France) where the conceptual network was presented and the connections explained (Figure 2). The aim of the final validation was to collect feedbacks about the general rationale, the definition of the sensitivity to climate changes and response strategies and/or mechanisms. During the interviews, the experts were asked to notice any missing issues that was considered relevant in the local pastoral systems.

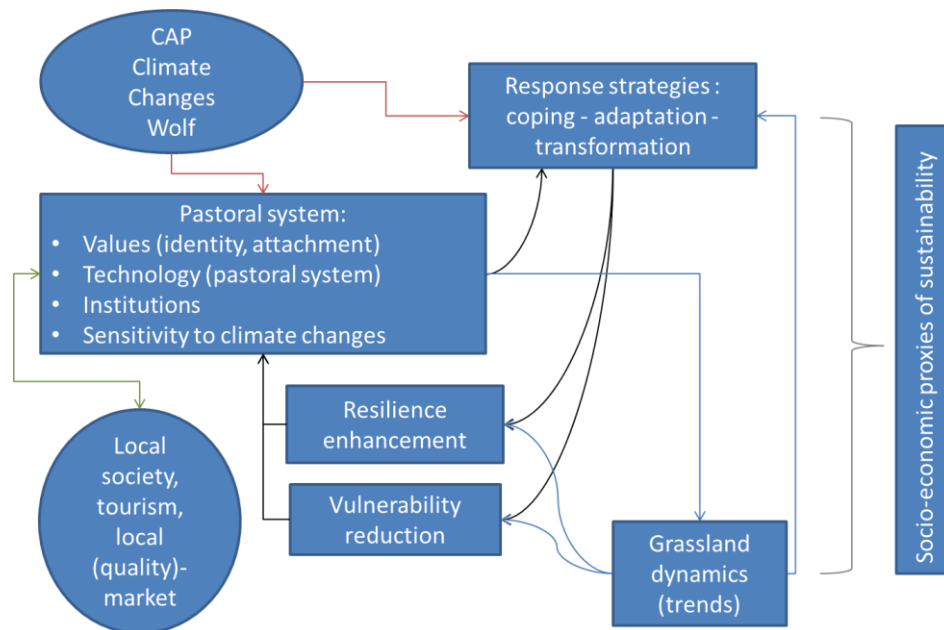


Figure 2. General factor categories considered in the mind-mapping approach to understand resilience and vulnerability of the pastoral systems with a specific focus on climate change impacts. Squares include factors driving the local pastoral systems; circles include factors exogenous to the pastoral systems.

3.2 Second stage participatory process and deviations from the schedule

The second stage of the adaptation strategy assessment concerned the development of a network outlining the variables and feedback relations between climate change variables and the drivers of the pastoral systems in the two case study regions. That process aimed at employing the information collected in the first stage to define a network of relations fitting to the analysis based on the Fuzzy Cognitive Mapping (Van Vliet et al., 2010) (Figure 3).

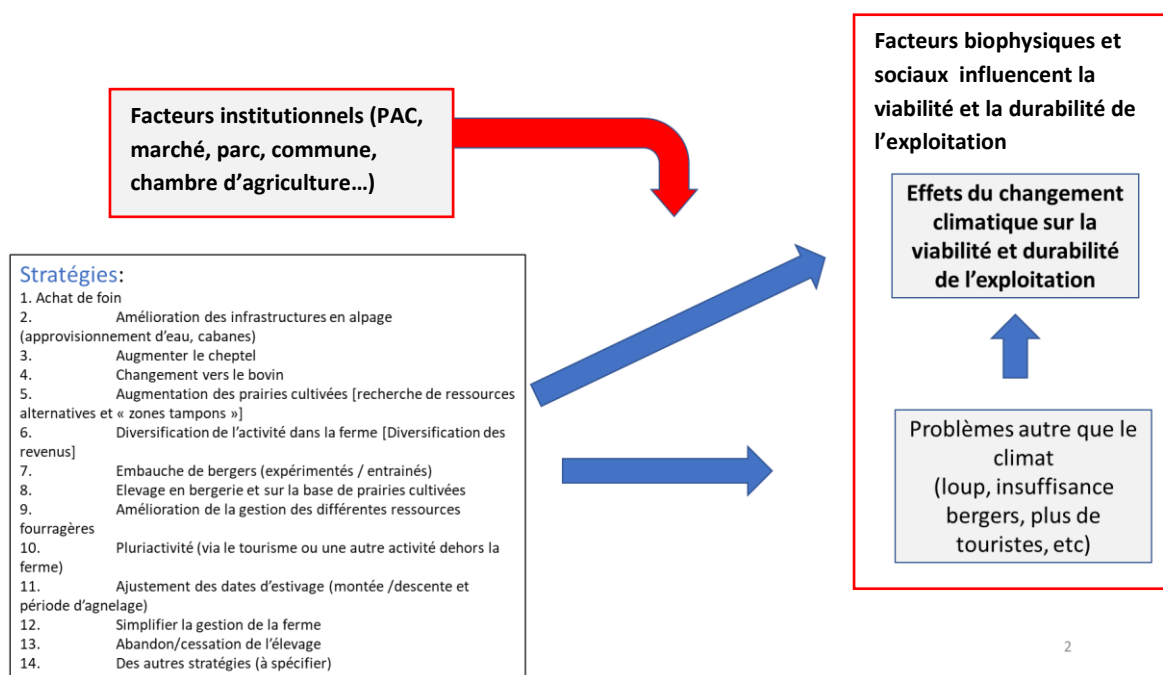


Figure 3. General network outlining the functioning of the PNE pastoral system based on the outcome of the PNE workshop. A similar network (translated in Italian) was developed for the PNGP.

This sort of graph able to highlights how different drivers act on farmers' strategies. In our case, biophysical (climate) and socioeconomic drivers (wildlife pressure, job situation, level of tourism...) act directly on individuals behaviors and institutional drivers operate as contextual conditions that guide farmers' way of choosing her strategies.

The networks were intended to be discussed in ad-hoc meetings with local stakeholders of the two case study regions but force-majeure issues caused changes in the planned schedule. In the PNE, unusual wolf attacks occurred in November 2019 hampered the organization of a consultation meeting because of the unavailability of farmers and the exacerbation of local contrasts. As a collective meeting was not possible, a set of six individual interviews was carried out with local farmers based on a pre-structured questionnaire. The interviews were carried out in December 2019 and January 2020. The objective of the interviews was twofold: to design and discuss the feedbacks among the elements included in the pastoral system network, and to assign weight for the relevance of the relations. In Italy the meeting was scheduled for March 2020, but the COVID-19 emergency in Italy forced to postpone the event and did not allow to carry out individual interviews. Currently, a meeting is scheduled for fall 2020 in Valle d'Aosta with local farmers but that is to be confirmed in accordance with national dispositions.

4 Results

4.1 Outcomes of the first stage participatory process

The stakeholder activities in PNE and PNGP allowed to identify a broad set of factors, either directly or indirectly linked to climate change vulnerability of the local pastoral systems, and to define a range of aspects that were usually present in other works targeting climate change and livestock farmers in other regions (Marshall et al., 2014). In particular, diversification of resources and income, knowledge and autonomy (i.e. the inverse of incentive-dependency) were deemed relevant socioeconomic drivers affecting the sensitivity and adaptation capacity to climate changes of the local pastoral systems (Table 1). Even though the comparison with the literature outlined several similarities, the expected impact of some of these factors outlined peculiarities clearly linked to the socioeconomic context of the case study regions. For instance, sense and attachment to the place, and occupational identity were all considered positive by the stakeholders, whereas in some studies these factors have been considered as negative and a hurdle to change. Finally, some factors that were not included in literature were considered important by the stakeholders in the local context (e.g. conflicts and incentives/autonomy).

	Socioeconomic drivers of sensitivity to climate changes	Expected impact on reducing the sensitivity according to local stakeholders and literature
Drivers considered relevant by local stakeholders and present in literature	Diversification of income and resources	+
	Revenue and business size	+/-
	Training /knowledge	+
	Attachment to occupation	+/-
	Sense of place	+/-
Drivers of sensitivity considered relevant by local stakeholders but not in literature	Social network	+
	Local marketing	+
	Conflicts	-
Drivers of sensitivity considered relevant in literature but not by local stakeholders	Autonomy (from incentives)	+/-
	Employability	+
	Access to credit	+
	Family size	-

Table 1. Socioeconomic drivers of the local pastoral systems affecting the sensitivity to climate changes according to the stakeholders' opinion and comparison with results reported in literature.

The first meetings with the stakeholders in the two case study regions allowed to develop an online questionnaire for local experts aimed at the identification of a set of socioeconomic indicators and proxies of major importance for the pastoral systems in each area (Figure 4). The stakeholders ranking of the preliminary list of the socioeconomic factors highlighted the most critical aspects that were important to consider, and helped to identify the potential connections between climate changes, their effects on the pastoral resources, and the range of impacts on the pastoral socioecological system. The results from the questionnaires outlined that especially social aspects were considered relevant and, in particular, factors related to knowledge and expertise of the farmers such as training and attachment, the identity of farmers such as sense of place and occupational identity were ranked as very relevant by the local stakeholders. Besides this, economic issues related to local marketing and diversification

were also considered relevant. Finally, the relatively high rank of conflicts was mainly related to the problematic management of sheep predation by wolves.

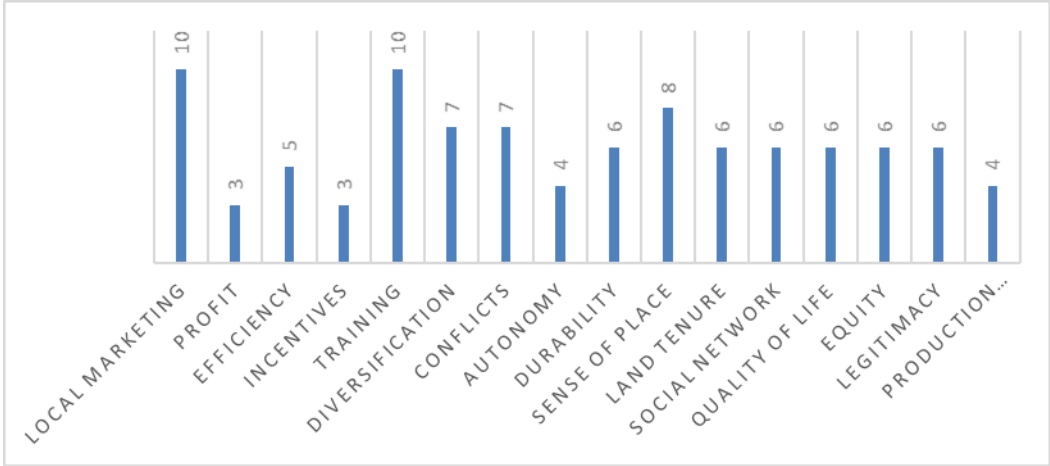


Figure 4. Socioeconomic issues rated by the local stakeholders in the case study areas (aggregated results from 20 questionnaires). Numbers on top of the bars refer to the number of stakeholders that rated the socioeconomic variable as “very relevant”.

The mind maps developed in the workshops (cfr. photos in Appendix) allowed the building of preliminary causality networks that represented the basis for the subsequent research activities, in particular of the socioeconomic units of the LIFE PASTORALP Project (Fig. 5). The identification of the relevant elements to be included, and the relative connections, outlined the range of cause-effect mechanisms to be prioritised. This will drive the data-collection activities that will undergo a final expert-based assessment to outline the connections characterized by main data gaps and to validate the final questionnaire to perform the climate change adaptation capacity evaluation.

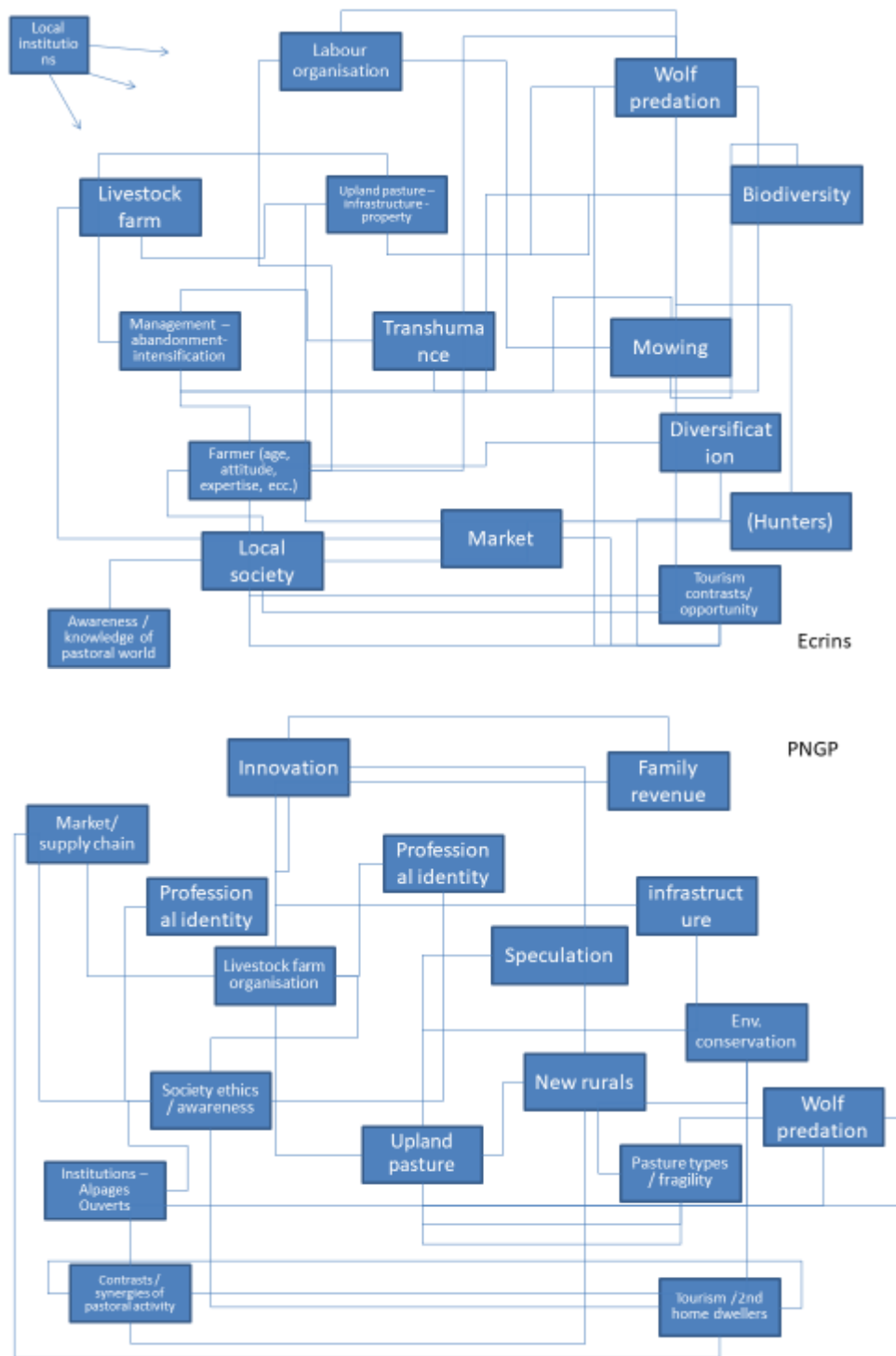


Figure 5. Causality networks derived from the mind maps developed in the workshops held at Parc National des Ecrins and Parco Nazionale Gran Paradiso.

4.2 Outcomes of the second stage participatory process

Results of the second stage are currently available for the PNE case study area only. As explained in section 3.2, in February 2020, INRAE and UNIFI together with IAR had organized a farmers' meeting in the PNGP area to carry-out the second stage workshop round, but the emergence of the COVID-19 health crisis forced us to postpone any activity including individual interviews.

The outcome of the questionnaires is resumed in the following Table 2. The preliminary results indicate that the CAP and wolf attacks are the most important factors. Then, they indicate that forage quality is more important than high forage yield in driving farmers' decision-making. To notice that climate change variables are out-degree features only. That was expected as these variables are exogenous and not influenced by the variables in the network (out-degree is the sum of the weight of the connections from that variable to the others). Other exogenous variables such as the CAP, on the contrary, were attached to both out-degree and in-degree weights. That means that variables in the network are able to influence that factor according to the farmer opinion.

Concepts	Out-degree	In-degree	Centrality
CAP	7.78	1.10	8.88
Increasing wolf predation	5.93	2.80	8.73
Hiring competent shepherds	4.25	4.05	8.30
Reducing grass quality	5.00	3.20	8.20
Search for alternative grass resources	1.30	4.87	6.17
Livestock investments	0.65	5.50	6.15
Abandonment of pastures	0.00	5.98	5.98
Meat price	3.85	1.55	5.40
Better forage management	2.35	3.00	5.35
Hay buying	0.20	5.08	5.28
Reducing grass stock	3.75	0.80	4.55
Better infrastructures on the uplands	2.60	1.88	4.48
CERPAM	4.35	0.00	4.35
Wolfdogs presence	1.20	2.78	3.98
Reducing work load	1.20	2.50	3.70
Livestock illness	0.60	3.05	3.65
Climate variability	3.30	0.00	3.30
Municipality	3.11	0.00	3.11
Indoor breeding	1.00	2.10	3.10
Adjusting grazing dates	0.30	2.75	3.05
Increasing forage crops	1.30	1.50	2.80
Administration burdens	0.70	2.03	2.73
Adjustment lambing periods	0.80	1.75	2.55
Overgrazing	0.90	1.45	2.35
Drought bottom valley	1.53	0.60	2.13
Pluriactivity	0.52	1.50	2.02
Parc National Ecrins	1.70	0.20	1.90
Less water availability	0.87	0.80	1.67
Tourism	0.00	1.38	1.38
Early frosts	1.10	0.00	1.10
Increasing grass biomass	0.00	1.10	1.10
Need of shepherds	0.00	1.00	1.00
Chambre d'Agriculture	0.90	0.00	0.90
Snow reduction	0.80	0.00	0.80
Late frost	0.80	0.00	0.80
Late snowing	0.70	0.00	0.70
DDT	0.50	0.00	0.50
New farmer entry	0.30	0.00	0.30
Diversification	0.15	0.00	0.15

Table 2. Fuzzy Cognitive Mapping: network indices. Centrality (the sum of out-degree and in-degree ranks) is an indicator of the relevance of the variable in the network.

5 Discussion

At this stage of our study, outcomes still need to be further elaborated. However, some guiding ideas draw up. The interviews and workshops with local experts and stakeholders highlight well-known drivers of farmers' strategy in both parks like the CAP subsidies or more sensitive in one (PNE) like the wolf predation, but some results commons to both are counterintuitive as the direct dependency on local resources that was not deemed as an accurate measure of sensitivity: at the current level of climate change effect on the grazing resources, herders were able to adapt as they had to adapt in their history to the past seasonal change. In a same time, our study confirmed the relevance of indirect feedbacks that may exist between adaptation capacity and sensitivity to climate changes. For instance, local conflicts (with municipalities or the neighborhood) enhance the sensibility to the climate change restricting the individual capacity of herders' adaptation (often rested on local and informal action between herders).

On other side, the driving factors of vulnerability in the two regions are expected to be similar but peculiar aspects relating to the local pastoral systems are however evident. For instance, wolf predation was more relevant in the PNE. That evidence may be likely linked to the structure of farming in the two areas:

- A sheep herds farming for meat production in PNE. If different herding technics are historically present (collective or individual herds with shepherd, transhumance and free pasture with a regular monitoring by farmers), is often the free pasture technique that was affected by the wolf predation and that was forced to change its pasture management (e.g. increasing the pooling of resources by joining farm collectives and moving from own shepherding to hiring shepherds).
- In Italy, two types of herds farming are present (a dairy cattle farming in Valle d'Aosta and sheep farming in the Piemonte side). For the Valle d'Aosta, animals (cows) are less vulnerable to wolf predation and are returned in barns in evening for milking. In the Piemonte side, the sheep herds are hugely smaller and often returned in sheepfold for the night.

All these results are preliminary. Obviously, the Covid' crisis has delayed our field works and, from our level of information, we hope that lasts fields surveys could be organized at the end of 2020. Two academic papers are expected for 2021.

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7 Appendix

7.1 Appendix A: questionnaire on adaptation strategies and perception carried out by PNGP (the questionnaire for the PNE is reported in Brien, 2018)

LIFE PASTORALP è un progetto europeo che ha come obiettivo l'analisi della vulnerabilità degli ecosistemi pascolivi ai cambiamenti climatici e l'identificazione di opportune strategie di adattamento per gli allevatori. In questo contesto, avere informazioni sulla tua percezione degli impatti e delle strategie che hai attuato o che vorresti attuare, ci è di supporto per la nostra analisi.

Data: **Ente/Territorio di attività:** Parco Nazionale Gran Paradiso

Attività: pastore/agricoltore funzionario/tecnico amministratore

altro _____

Nome dell'area: _____ **Eventuale foglio e particelle:** _____

Alcune domande rivolte a chi compila il questionario:

età: <30 30-50 >50

- sei proprietario degli animali che porti al pascolo? SI NO

altro (*es: in parte di proprietà e in parte di altri*) _____

- sei proprietario dell'alpeggio o dei terreni? SI NO

Se NO di chi sono? comune parco privato multiple

altro _____

Con che tipo di contratto lavori? annuale due anni tre anni o più

- da quanti anni pascoli in quest'area? ___18_____

- quanti e quali animali porti in media al pascolo?

ovini

bovini: latte

caprini

carne

equini

manze/vitelli

Razza/e _____

- l'allevamento è la tua attività principale? SI NO

Se NO quanto tempo dedichi all'allevamento? (in percentuale) _____

PARTE A - COSTATAZIONI/PERCEZIONI

- **1** In ambito montano la variabilità climatica stagionale è notevole. Oltre a questa, hai percepito evidenti segnali di ulteriori cambiamenti nel clima negli ultimi 15 anni? SI NO

Se SI aumento della siccità estiva

maggior frequenza di eventi estremi come : *temporali e grandinate*
 colpi di calore

sfasamento stagionale: *aumento delle nevicate tardo-primaverili*

tepore autunnale

altro _____

- **2** Queste criticità hanno influito sul tuo lavoro? molto poco per niente

- **3** Ci sono altre criticità che influiscono sul tuo lavoro?

organizzative e famigliari burocratiche infrastrutturali

Puoi specificare? _____

altro _____

- 4 Hai avuto la percezione che negli anni siano cambiate alcune caratteristiche del manto erboso? SI NO

Se SI quantità (es. *minor risorsa foraggera*)

qualità (es. *aumento di specie indesiderate*)

quali: _____

periodicità (*inteso come minor durata della risorsa foraggera, anticipo o ritardo*)

altro _____

- 5 Hai avuto la percezione che cambiamenti climatici e/o ambientali abbiano avuto un effetto sulla salute degli animali? SI NO

Se SI quali? (es.: *colpi di calore e/o disidratazione, malnutrizione, malattie, incidenti*) _____

- 6 Hai notato dei cambiamenti nel comportamento o nelle abitudini degli animali al pascolo?

SI NO

Se SI, quali? cercano maggiormente l'ombra

interrompono più frequentemente il pascolamento

si spostano maggiormente

appaiono disidratati

impiegano maggior tempo nella ruminazione

producono meno latte

altro: _____

- 7 A seguito delle difficoltà emerse, pensi che l'accesso alle risorse idriche (*abbeveraggio, irrigazione*) sia diventato più problematico? SI NO

Se SI, in che modo? _____

- **8** Nonostante la complessità e l'incertezza del lavoro in ambiente montano, hai trovato dei modi per riuscire ad adattarti a questi cambiamenti? SI NO

Se SI quali? _____

- Vuoi scriverci qualche altra percezione e/o valutazione di criticità? GRAZIE 😊

PARTE B - POSSIBILI MISURE DI ADATTAMENTO

Effettuate una valutazione di possibili azioni in grado di attenuare o risolvere alcuni dei problemi emersi rispetto ai cambiamenti climatici (fattibilità concreta economica/pratica, percezione dell'utilità nel contrastare gli impatti delle problematiche di cui sopra).

- **9** Hai difficoltà a stare dietro alle tempistiche del pascolamento derivate da misure del PSR?

SI NO

Se SI, perché? _____

- **10** Per far fronte alla perdita o riduzione del valore/produzione foraggera, far ricorso a risorse supplementari, potrebbe essere una soluzione per poter rispettare i giorni previsti di permanenza in alpeggio? SI NO

Se SI quali?

pascolamento esteso ad altre superfici (*es. popolamenti forestali pascolabili e/o arbusteti*)

ripresa della fienagione in loco (*montagna*) o altrove

acquisto di fieno/ mangimi / insilati

cambiamento nella tecnica di gestione degli animali

Specificare come:

Se NO, hai altre proposte?

- **11** Pensi che sia utile modificare il numero o il tipo di bestiame per adattarsi alle minori risorse foraggere? SI NO

Se SI, diminuzione dei capi di bestiame monticante

cambiare specie/razza/produzione principale (*latte vs carne o viceversa*) del bestiame monticante

Specificare _____

altro _____

- **12** Pensi possa essere d'aiuto integrare l'attività aziendale principale con altre attività?

SI NO

Se SI, quali?

nuove produzioni vegetali

attività agrituristica

turistica

Hai altri suggerimenti?

- **13** Sai che esistono delle misure del PSR (Regione) e PSL (GAL) che incentivano la cooperazione tra enti e privati? SI NO

- **14** Pensi che un'azione collettiva sia più efficace di una individuale?

Se SI, in quali situazioni?

ottimizzazione delle risorse

nell'ottenimento di migliori risultati

nella migliore comunicazione tra enti e persone coinvolte

altro _____

Se NO, perché? _____

- **15** Se ti venissero fornite le risorse finanziarie e/o organizzative, inizieresti una collaborazione con enti o altri privati per un'azione collettiva? SI NO

- **16** Hai mai assicurato gli animali contro eventi imprevisti? SI NO

Puoi specificare? Temporali, eventi atmosferici _____

- Vuoi scriverci qualche altra proposta di adattamento al cambiamento climatico per la gestione dei pascoli? GRAZIE 😊

7.2 Appendix B: stakeholder questionnaire for the identification of relevant drivers of sustainability in the local pastoral systems

Nella vostra realtà territoriale, considera i seguenti fattori rilevanti della sostenibilità?

	Poco rilevante	Rilevante	Molto rilevante
1. Marketing locale (ad es. prodotti tipici, certificazioni DOP / DOC, eventi tradizionali)			
2. Resa economica (ad es. produttività, profitti)			
3. Efficienza produttiva (ad es. innovazione tecnologica, miglioramenti fondiari, ecc.)			
4. Incentivi finanziari (ad es. incentivi agroambientali)			
5. Formazione professionale, eventi training, possibilità di passaggio delle conoscenze			
6. Diversificazione produttiva (ad es. agriturismo, mercati locali)			
7. Conflitti (gestione selvatici, ad es. lupo)			
8. Autonomia da fattori produttivi esterni (ad es. fieno, manodopera)			
9. Età media imprenditori agricoli, ricambio generazionale, ecc.			
10. Senso di appartenenza e conoscenza del territorio (ad es. esperienza, tradizioni)			
11. Regime fondiario (frammentazione della proprietà)			
12. Rete di relazioni sociali (ad es. associazioni, cooperative, comunità)			
13. Qualità di vita (ad es. isolamento, carico di lavoro, livello di soddisfazione, riconoscimento "sociale")			
14. Equità (ad es. accesso alle risorse collettive)			
15. Legittimità (ad es. burocrazia, partecipazione alle decisioni)			
16. Certificazioni e normativa sanitaria (ad es. igiene locali produzione)			

Dans votre entité territoriale (alpage ou exploitation ou vallée), quels facteurs vous semblent importants pour sa durabilité (économie, renouvellement de la ressource et de la biodiversité, qualité de vie.....) ?

	Pas important	Important	Très important
1. Marketing local (produits typiques, certifications AOP, événements traditionnels...)			
2. Rentabilité économique (productivité, profits...)			
3. Efficacité de la production (Innovation technologique, amélioration des terres, etc.)			
4. Incitations financières (incitations agroenvironnementales...)			
5. Formation professionnelle, événements de formation, possibilité de transmission des connaissances			
6. Diversification de la production (agrotourisme, marchés locaux...)			
7. Conflits (gestion de la faune sauvage, par exemple le loup)			
8. Autonomie des facteurs de production externes (Foin, travail...)			
9. Âge moyen des entrepreneurs agricoles, changement générationnel, etc.			
10. Sentiment d'appartenance et connaissance du territoire (Expérience, traditions...)			
11. Régime foncier (fragmentation de la propriété)			
12. Réseau de relations sociales (Associations, coopératives, communautés...)			
13. Qualité de vie (isolement, charge de travail, niveau de satisfaction, reconnaissance sociale...)			
14. Équité (accès aux ressources collectives)			
15. Légitimité (bureaucratie, participation aux décisions...)			
16. Certifications et réglementations sanitaires			

Vous êtes intéressés au projet parce-que vous êtes:

- Agriculteur
- Berger
- Décideur politique
- Technicien
- Conseiller
- Chercheur
- Association environnementale

Chasseur

Autre (spécifier) : gestionnaire d'espace naturel

Age

<30

30-40

40-50

>50

7.3 List of stakeholders invited at the workshops on February, 6th 2019 in Gap and February, 20th 2019 in Ivrea.

List of invited stakeholders (PNE)		Email address	Steering committee	Consultation workshop
Bernard ROBERT	Eleveur ovin			
				Les Orres
Pierre BELLON	Eleveur ovin	bellonpierre@orange.fr		
Charles PELLISSIER	Eleveur ovin + AS	charles-pellissier@orange.fr		yes
Didier GIRARD	Président GP du Vénéon	coucou333@wanadoo.fr	yes	yes
				Bourg d'Oisans
Alain DUSSE	Eleveur ovin + marque	dusserre.alain@wanadoo.fr		
	Eleveur ovin + AS			
Laurent GIRAUD	(inscription pour participer au Copil lors du LE)	elisabeth.crete0241@orange.fr	yes	
				Eygliers
Eric THOLOZAN	Eleveur bovin lait + AS	eric.tholozan@wanadoo.fr		yes
				Châteauroux les Alpes
Eric LIONS	Eleveur bovin viande + AS	ericlions@orange.fr	yes	yes
				Châteauroux les Alpes
Fabrice NICOLAS	Eleveur ovin – Président GP	fabrice.nicolas0082@orange.fr		yes
				La Batie neuve
Christiane MOREL	Présidente GP Tramouillon + inscription LE interview	gaec.des.vernes@orange.fr		yes
				Saint Crépin
Alban DUSSE	Eleveur ovin – Président GP + transhumance inverse + ferme auberge	gaec.lajabiore@gmail.com		yes
				Orcières
Hervé BERNAUDON	Eleveur ovin + AS	herve.bernaudon@wanadoo.fr		yes
				L'Argentière
Raymond HUSTACHE	Président GP	hustacheraymond@orange.fr		yes
				Besse
Julien BELLON	Eleveur ovin + AS	julien.bellon79@hotmail.fr		
André DAVIN	Eleveur bovin laitier	leshaies@aol.com		yes
Marie FAURE	Cécile	marie-cecile.faure0757@orange.fr		yes

Alain MOTTE	Eleveur ovin	motte.alain1@gmail.com			
Laurent MOYNIER	Eleveur bovin allaitant	moylaurent@hotmail.fr			
Nathalie OLLIVIER	Eleveuse ovins viande	n.ollivier1@laposte.net	Aubessagne		yes
Eric LESBROS	Eleveur ovin + Transhumant	nathalie.tellier0338@orange.fr	BDR		yes
Olivier BEL	Eleveur ovin ex AS	olivier.bel4@wanadoo.fr	La Roche des Arnauds		yes
Patrick MARSEILLE	Eleveur ovin + AS	patr0565@yahoo.fr	Prunières		yes
Eric FERRIER	Eleveur bovin allaitant	pic.caroline@orange.fr			yes
Pierre Yves MOTTE	Eleveur bovin allaitant	pierre-yves.motte@hautes-alpes.chambagri.fr	Saint Bonnet	yes	yes
Richard ALLIEY	Eleveur de chèvres laitières	richard.alliey@orange.fr	Les Vigneaux	yes	yes
Eleveur des Orres (voir Chantal Roux)	Eleveur ovins		Les Orres		
Vincent BELLOT	Eleveur ovin Président GP + AS	vincent.bellot@outlook.fr	L'Argentière		yes
Eleveurs(se)					
Laurent AGU	Eleveur ovin + Transhumant		BDR		yes
Pierre CALAME	Eleveur ovin + AS + grand transhumant		St Christophe		yes

List of workshop participants (PNGP)

Email address

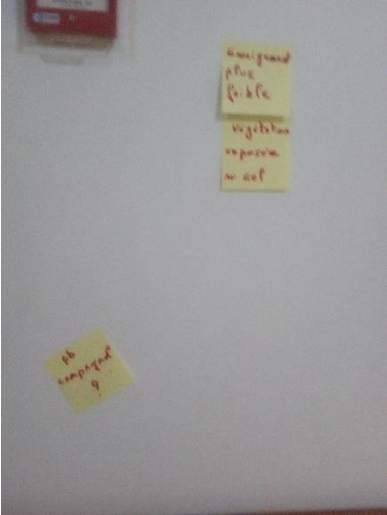
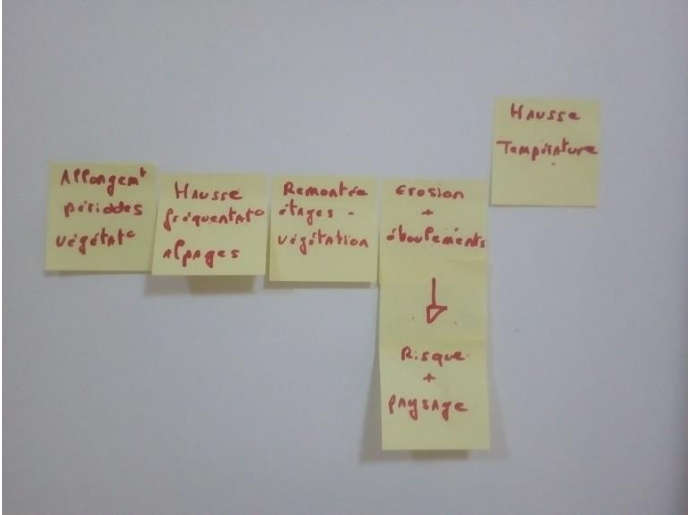
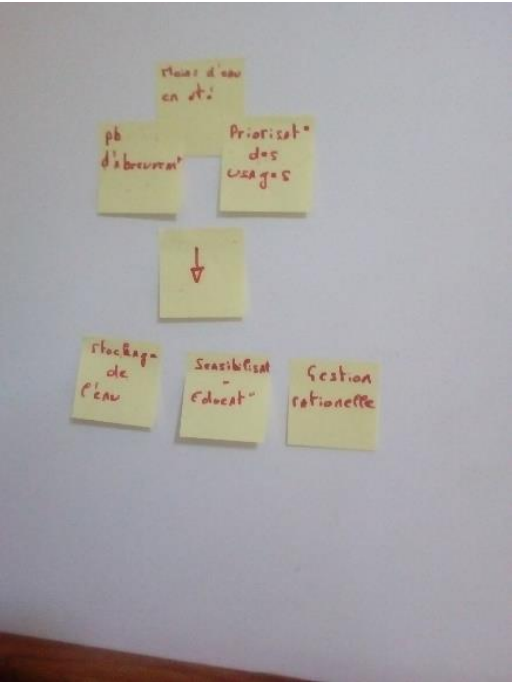
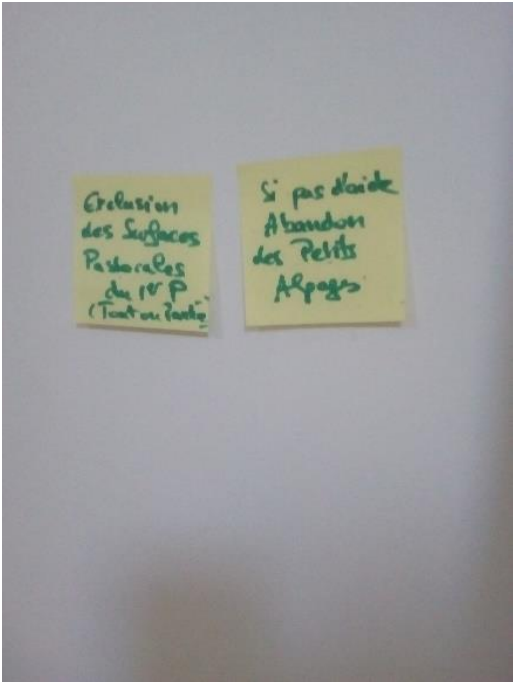
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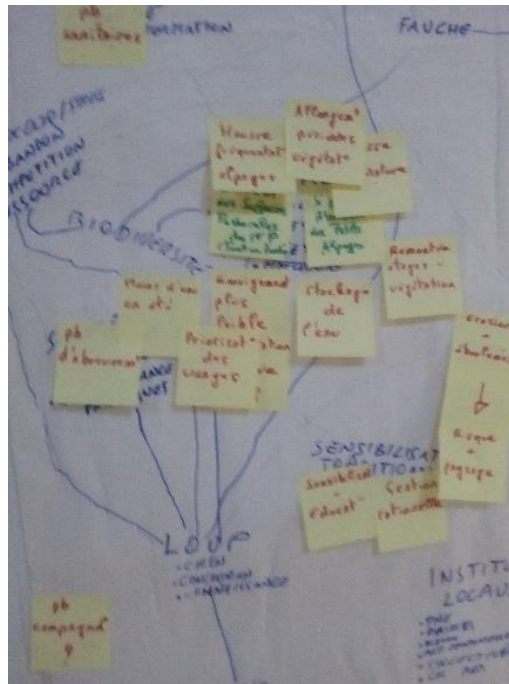
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Silvia Ghidotti	Silvia.ghido@gmail.com	PNGP

7.4 Appendix D: photos from the workshops held in Gap (France) and Ivrea (Italy) in February 2019

PNE workshop







PNGP Workshop

