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1 **How can different stakeholders contribute to rural landscape planning policy? The case**
2 **study of Pralormo municipality (Italy)**

3 Paola Gullino^{a*}, Marco Devecchi^{ab}, Federica Larcher^{ab}

4

5 ^aDepartment of Agricultural, Forest and Food Sciences, University of Turin, Largo Paolo
6 Braccini 2, 10095, Grugliasco (TO), Italy

7 ^bResearch Centre for Rural Development of Hilly, University of Turin, Largo Paolo Braccini
8 2, 10095, Grugliasco (TO), Italy

9

10 *Corresponding author: post-doctorate fellow; email: paola.gullino@unito.it; phone: 0039-
11 0116708799; fax: 00390116708798

12

13 **Abstract**

14 In rural landscapes, historical values and traditional crops are in conflict with recent commercial
15 demand and social needs. For sustainable development, it is essential to find a methodology
16 able to conjugate cultural and historical values with socio-economic trends. In order to identify
17 shared actions, strategies and policies for the management of rural historical site, an integrated
18 empirical work was developed. The main goal was to understand how to promote a bottom-up
19 planning approach, including stakeholder perceptions in policy actions and planning strategies
20 for historical rural landscapes. Pralormo municipality (Piedmont, north-west Italy) was chosen
21 as case study. We developed a methodological framework to understand if the participatory
22 approach can contribute to landscape planning from the local to the regional level. Field
23 observations, landscape and historical analysis, farmers' interviews and two focus group
24 meetings were performed. This study shows that complex socio-cultural and economic drivers
25 affect the future of the studied rural area. The assessment of land use scenarios can play an
26 important role in promoting the understanding of such uncertain systems. Shared actions,
27 strategies and policies were identified for the planning of rural historical site. In the case of
28 Pralormo, which is transferrable to other European historical rural areas, we promoted the
29 adoption of a new local landscape planning strategy with positive fall-out on the regional scale.
30 Linking food and landscape quality, preserving ancient settlement, maintaining traditional land
31 uses and promoting educational activities in farm are considered the most important issues for
32 sustainable development.

33

34 **Keywords:** historical rural landscape, focus group meetings, interviews, farmers, landscape
35 scenarios

36 **1. Introduction**

37 Rural landscapes are characterised by dynamic and continuous changes (Antrop, 2005).
38 They are the result of a continuous land re-organisation to adapt their use and spatial structure
39 to the changing of economic and social demands. According to Sandker et al. (2010), rural
40 landscapes are considered as mosaics of land cover types providing ecosystem services and
41 developing opportunities for the multiple needs of diverse stakeholders. In Europe since the
42 1950s the different rural systems have been evolving in two opposite directions: intensification
43 and monoculture *versus* marginalization and abandon (Skaloš et al., 2011, Larcher et al., 2013).
44 Moreover, in the European Union (EU) since 1990, several rural landscapes were in transition,
45 losing their primary agricultural functions, traditional crops, and historical land uses (Meeus et
46 al., 1990; Cullotta and Barbera, 2011). The European Commission's Agri-Environmental
47 Measures (2005) refer to maintain the sustainable farming systems, to sustain traditional
48 landscape and to promote and rural development. In Europe, many historical rural landscapes
49 have been subjected to transformations following land abandonment or crop conversion caused
50 by processes of polarisation towards more urbanised areas (Pedroli et al., 2016). Recently in
51 Italy, the Italian Statistical National Institute (ISTAT) measured in 50% the loss of cultivated
52 lands between the 1930 and 2010. Urban sprawl and land consumption played a fundamental
53 role in this process (Romano and Zullo, 2014).

54 Protecting, sustaining and valorising historical agricultural landscapes are considered
55 priorities by the international community. In 2003, the FAO GIAHS project (Globally
56 Important Ingenious Agricultural Heritage System) addressed the relationship between
57 agricultural heritage systems and their landscape and outlined the need to safeguard them over
58 time. Furthermore, up to 2016, 17 historical agricultural sites had been included in the World
59 Heritage List as 'cultural heritage' by the United Nations Educational Scientific and Cultural
60 Organization (UNESCO, 2016). These sites are mainly recognised for their distinctive

61 agricultural systems and historical features such as cultivation practices, land uses, productions
62 or traditional cultivations techniques (Gullino and Larcher, 2013). In this context,
63 multidisciplinary studies should be applied and specific actions, policies, measures and
64 management plans should be developed. Choi and Sirakaya (2005) and Dearborn and
65 Stallmeyer (2009) recognised a conflict between heritage protection and tourism development
66 and identified the need to develop policies and effective management strategies. These authors
67 outlined that what remains unclear is how the sustainable concept can concretely assume a
68 dynamic character and, moreover, how people's awareness changes through generations. The
69 identification of landscape planning policies, strategies and actions for historical rural areas is
70 a priority (Agnoletti, 2014).

71

72 *1.1. Participatory process for rural landscape planning*

73 The participatory approach allows to understand local actors' perspectives and problems
74 and to identify strategies for supporting the agriculture (Pinto-Correia et al., 2014; Cleary and
75 Hogan, 2016; Prasad Pant and Hambly Odame, 2016). The public participation can be used as
76 instrument for landscape planning too (Stenseke, 2009). Moreover, following the European
77 Landscape Convention's (ELC, 2000) recommendations concerning the need to take into
78 account people perception in landscape planning, public consultation has recently become an
79 increasingly important tool in the decision-making process. Jones and Stenseke (2011)
80 illustrated and compared different experiences of public participation across Europe. Local
81 participation evolved as a strategy in the conservation and maintenance of biological and
82 environmental resources and historical values in cultural landscapes. In the ELC the concept of
83 landscape was defined and 'means an area, as perceived by people, whose character is the result
84 of the action and interaction of natural and/or human factors'. In general, landscape is
85 differently understood and perceived by each stakeholder (Larcher et al., 2013). Rural

86 landscapes are non-static features and places that define people's livelihoods, identities, and
87 belief systems. According to Tress et al. (2007) and Antrop (2006) landscape is considered an
88 integrating concept that refers both to a physical reality that originates from the continuous and
89 dynamic interaction of natural processes and human activity and to immaterial existential
90 values and symbols that the landscape embodies.

91 For evaluating the sustainability of rural landscape over time according to cultural and
92 historical values, the "active" management is considered a primary goal. Gullino et al. (2015)
93 affirmed that a dynamic sustainability can be ensured through the evaluation of several
94 parameters and by the definition of an integrated planning approach. In this context, the
95 involvement of different stakeholders in the participatory process and the creation and
96 exploration of future landscape scenarios contribute to the development of sustainable future
97 landscapes (Bohnet and Smith, 2007; Tress and Tress, 2003). Moreover, to maintain farming
98 activity, historical crops and traditional elements, the recognition of qualifying elements and
99 the participation of local people are essential activities. With this approach the population
100 becomes more aware and responsible in the management process.

101

102 *1.2 Research aim*

103 New tools and techniques, based on multi-disciplinarity, increased the ability to monitor
104 and to explore changes in land cover over time (Pedroli et al., 2007; Barbera and Cullotta, 2012;
105 Almeida et al., 2015). According to these authors, we developed an integrated conceptual
106 framework. Frequently, historical values and permanences and traditional cultivations are in
107 conflict with commercial demand and social needs. To apply a methodology able to conjugate
108 the cultural and historical values with the socio-economic trends and create pathways for
109 planning historical rural landscapes, a multidisciplinary study was developed. The method was
110 applied in Pralormo municipality (Piedmont, North-West Italy) as a case study.

111 The key goals of the research were:
112 - to develop an integrated empirical work promoting a bottom-up planning approach;
113 - to employ participatory approach (interviews) identifying problems and qualifying elements
114 perceived by local farmers;
115 - to identify shared actions, strategies and policies for rural historical landscape planning.
116 The development of integrated empirical work proposed in this paper, should be related to the
117 context used and to the focus' research. The methodological framework combines landscape
118 theoretical study with different participatory approaches. This pilot application demonstrates
119 how stakeholders participation would influence landscape planning process in rural areas.

120

121 **2. Material and methods**

122

123 *2.1. The study area*

124 The case study was the Pralormo municipality (44° 51' 39" North, 7° 54' 9" East)
125 (Piedmont Region, north-west Italy) and it is characterised by several agricultural patterns and
126 land uses. The municipality covers about 2980 ha with flat areas and hills ranging in altitude
127 from 260 to 1300 m above sea level. The rural mosaic is a non-specialised and fragmented farm
128 pattern of cereals (70%), grassland pasture (25%), woods (3%) and vineyards (2%). In 2013
129 there were 102 farms with 2042 ha of cultivated lands (Agricultural Statistical Census).
130 Pralormo municipality represents the diversity of the characteristic mosaic of the Pianura
131 Padana irrigated flat area. In fact, the landscape is dominated by different agricultural systems
132 combined with small-scale mosaics of other land uses resulting in a specific landscape
133 character.

134 A methodological approach to explore landscape scenarios was applied to Mértola
135 municipality in southern Portugal by Loupa Ramos (2010). In that case, the author decided to

136 study this site because it was considered fragile in terms of rural landscape and classified as
137 critical in terms of population density. By contrast, also considering the European trend
138 (Temme and Verburg 2011), we decided to study Pralormo municipality because in this site the
139 agricultural activity is already an important socioeconomic resource and, during the last decades
140 it has progressively increased in terms of cultivated surface (+30%). The evolution of
141 agriculture over time was analysed by checking the ISTAT data of the Census of Agriculture
142 between 1980 and 2010. This unusual dynamic shows how the agricultural sector continues to
143 represent the most important socio-economic resource for this municipality. Moreover, the area
144 is characterised by clay soils that in the past were exploited by inhabitants for building
145 fishponds. Since XIX century, these structures provided water for irrigation and were used for
146 tench fishing. Today in Pralormo municipality, a total of 102 fishponds characterize the
147 landscape. In this context, identifying actions, strategies and policies for conserving land uses
148 and landscape features were also our research aims.

149

150 *2.2. Methodological framework*

151 We developed a methodological framework to understand how the participatory
152 approach can contribute to landscape planning from the local to the regional level. In Italy
153 (Fig.1), the landscape policy is based on regional regulatory constraints and requirements
154 applied at landscape unit scale without effects on the municipality level (Fig.1A). Decisions
155 taken at the local level, on the other hand, can influence other municipalities in the same
156 landscape unit without effects on the regional level (Fig.1B). We considered that the empirical
157 work proposed, starting from the municipality level, can promote the exchange in each direction
158 by involving stakeholders from all the political levels (from municipality to regional level) (Fig.
159 1C). Moreover, the main political target of Pralormo was to adopt new landscape planning
160 policy to promote and enhance the rural landscape, and its cultural and historical features,

161 integrating all the qualifying elements in a project of sustainable development. Resulting from
162 our research, an integrated empirical work, actions, strategies and policies would be
163 implemented into planning documentations of the rural historical landscapes, as well as would
164 be involved into decision-making process.

165 The methodological framework applied in this research project was illustrated (Fig. 2).
166 Firstly, with the aim to identify historical permanences of rural landscape and theoretical
167 qualifying elements, historical and landscape analysis were performed. The first part of the
168 research was carried out by analysing documents and references from historical archives and
169 libraries: historical cartography and documents from the XVIII and XIX centuries were
170 collected. The evolution of the rural landscape in Pralormo and the identification of the
171 theoretical qualifying elements and historical permanences were also identified by the authors
172 as experts, through field observation (including photo documentation), the historical survey and
173 the comparison of ancient documents with present cartography and bibliography. In parallel,
174 with the aim to identify problems and qualifying elements perceived by local farmers a
175 participatory approach was employed. Interviews were used.

176 Secondly, interviews results and historical data were analysed and processed for
177 proposing driving forces and future landscape scenarios. We used the focus group technique to
178 question policy-makers (PM) and civil society stakeholders (CS). Table 1 lists the type of
179 stakeholders involved during the first (interviews) and the second (focus group meetings) steps.
180 Therefore, farmers, landowners, planners, policy administrators and experts' expectations
181 might differ in many ways although they all refer to the same reality. For this reason, all these
182 actors were involved in our study, using different participatory techniques.

183

184 *2.3. Proposed driving forces and construction of landscape scenarios*

185 The initial step of this participatory research was a farm survey to investigate how land
186 is managed in Pralormo and to identify possible future landscape scenarios. A wide variety of
187 scenarios and methods used for their development exist in the literature. Palang et al. (2000)
188 decided to construct their scenarios using an holistic approach based on historical analysis to
189 predict future landscapes. Kok et al. (2006) integrated historical information and narrative
190 storylines that describe three possible directions of future change until 2030. By contrast, van
191 Berkel et al. (2011) used interviews combining these methodologies, we built landscape
192 scenarios integrating historical and landscape analysis and interviews.

193 Table 2 shows the questionnaire used for the farmers' interviews. Using this protocol,
194 we investigated the farm structure and the rural landscape. According to Bohnet and Smith
195 (2007), for ensuring that the researcher covered the same topics in each interview, we decided
196 to use a qualitative semi-structured questionnaire. Questions were open, allowing follow up
197 prompts to discuss issues and encourage explorations of topics raised by the farmers'
198 interviews. Moreover, the survey included questions on the farm, the production activities, the
199 land uses, and the subsidy payments received by the regional Rural Development Programme
200 (RDP, 2007-2013). Regarding interviews, in line with Patel et al. (2007), Acs et al. (2010), and
201 Pasākarnis et al. (2013) we selected a group of participants based on age and farm types. In our
202 study, we identified and interviewed 10 local farmers as representative of different farm types
203 based on enterprise mix and land holdings younger than 50 years old. We aimed to characterise
204 the agricultural sector and to have a significant representation in the answers, so the choice of
205 the farmers depended on the farm type.

206 The results came from the interviews and the historical landscape analysis allowed to
207 identify the proposed driving forces to be discussed during the focus group meetings, and old
208 and new elements useful for the scenario assessment. In particular, problems and qualifying

209 elements perceived by farmers combined with historical permanences and theoretical
210 qualifying elements were used and proposed.

211

212 *2.4. Focus group meetings*

213 Regarding focus group technique, two one-day meetings were organised and two main
214 goals were achieved. The first was the discussion of interviews results and the outlining of the
215 main driving forces of local landscape transformation, while the second was the analysis of
216 Pralormo future landscape scenarios and participant preferences. According to Lastra-Bravo et
217 al. (2015), driving forces can be defined as factors that influence and cause land covers and
218 land use transformations. Several driving forces affect landscape elements, land uses and
219 agricultural activity resulting into changes of landscape in the study area. Bürgi et al. (2004)
220 identified five major types of driving forces: socioeconomic, political, technological, natural,
221 and cultural. The authors outlined the importance of studying driving forces by developing
222 interdisciplinary and integrative works. In our study, we decided to consider the driving forces
223 as expressed by the community that represent their decisions (Schneeberger et al., 2007).

224 In this study, for reducing potential conflicts and influences, two small participant
225 groups were involved by administrators and policy-makers (PM) and the other by civil society
226 stakeholders (CS), members of local organisations and associations, residents and freelance
227 professionals. Two focus group meetings with PM and CS were organised to identify the
228 driving forces and their effects on rural landscape. We decided to involve PM and CS in order
229 to understand how the rural landscape is perceived by the main users and managers and how to
230 guide possible future transformations. In agreement with Bijlsma et al. (2011) and to prevent
231 the influences between PM and CS, we decided to involve as stakeholders different types of
232 actors from various organisations, local associations, administrative levels, and networks, and
233 hence were guided by different concepts, tasks, and opinions, and by different roles. The

234 stakeholder panel was expected to join the main community representatives and should cover a
235 variety of interests, aspirations, expectations and points of view. For PM, rural landscape is a
236 medium to better target policy decisions toward landscape management and planning. For CS,
237 rural landscape is perceived and evaluated differently, because of links to their background,
238 interests and experiences. The integration of both opinion groups contributed to develop a
239 bottom-up approach and identify different driving forces and possible landscape effects. In
240 agreement with Mauchline et al. (2012), in order to generate constructive discussions and to
241 improve the chances of reaching consensus on such technical and complex issues, only few
242 stakeholders should be involved. According with Reed et al. (2009) and Bui et al (2016)
243 different types of stakeholders were selected among each group. Moreover, like Breton Morris
244 et al. (2011) and Larcher et al. (2013), each focus group followed the same steps separately to
245 avoid influencing each other.

246

247 **3. Focus group scheme**

248 The methodology of the driving force and future scenario analyses followed the same
249 procedure within each focus group meeting.

250 The main steps of each focus group were as below.

251 • Experts. Presentation of the research aim and interview's results. Regarding driving
252 forces three questions were asked:

- 253 1. Which driving forces will change Pralormo's rural landscape in the next 20 years?
- 254 2. What effects will those driving forces have on Pralormo's rural landscape?
- 255 3. Can you assign a score to each driving force using the classification scale (from 1 = low
256 importance to 5 = high importance)?

257 • Participants. Identification of driving forces and definition of their landscape effects;
258 discussion and classification (shared score).

259 • Experts. Presentation of the landscape elements that could transform and change rural
260 landscape in the next 20 years. Regarding landscape scenarios one question was asked:

261 1. Which elements would you select in relation to utility, feasibility and beauty scenarios?

262 • Participants. Construction of landscape scenarios.

263

264 After presentation of interview results (PowerPoint, Microsoft, Office 2010),
265 participants discussed the themes about land use policies and landscape transformations and
266 highlighted which driving forces might alter the rural area over the next 20 years. Then, the
267 group was asked to imagine the effect of such driving forces on Pralormo's landscape.
268 Afterwards, each participant wrote on individual cards what she/he believed to be the two
269 primary possible effects caused by the previously defined driving forces. Each participant
270 explained her/his chosen effects to the others. Experts collected the cards and immediately
271 composed a placard that displayed the focus group's defined driving forces with their potential
272 effects. Later, participants assigned a landscape shared score related to the importance of the
273 driving factors over the next 20 years (1= low importance; 5= high importance) in relation to
274 the landscape effects identified. The assignation of the values was the result of an open
275 discussion among participants and allowed them to classify the shared driving forces.

276 The second part of the focus group session was the scenario evaluation. During the focus
277 group meeting an exploratory forecasting methodology was employed. Through elaboration of
278 the interviews, experts presented several elements that could change Pralormo's landscape in
279 the next 20 years Adobe Photoshop (Elements 6.0). During the focus group meetings, each
280 participant selected the elements or added others creating her/his scenarios in relation to Utility,
281 Feasibility and Beauty, defined as follows:

282 - Utility: identifying the elements that improve the development and the welfare
283 of humans and landscape;

- 284 - Feasibility: identifying the elements that are more realistic and achievable;
285 - Beauty: identifying the elements that improve the quality of landscape (aesthetic
286 value).

287

288 **4. Results**

289

290 *4.1. Historical permanences and theoretical qualifying elements*

291 Regarding historical permanences and theoretical qualifying elements recognition, we
292 decided to report in this paper, the most important documentation of XVIII and XIX centuries
293 found in the archives. All the historical documents were reported in Gullino et al. (2013). The
294 list of archives consulted, the original name of document, the year, the kind of documentation
295 and the information acquired are reported in Table 3. The analysis of historical documents and
296 cartography confirmed the importance of agricultural activity in Pralormo municipality.
297 Historical literature, cartographies, figured land registers and cadastral maps allowed us to
298 understand the historical permanences and landscape structure, with particular attention to
299 settlements and cultivation types. The mixed landscape mosaic and the thriving agricultural
300 activity can be considered as theoretical qualifying elements. Most of the present farms,
301 fishponds and land use types were already present in the XIX century. Crops, woods, and
302 grassland pasture were the main historical cultivations and were maintained for centuries. By
303 contrast, winegrowing and orchards had greatly decreased. In the past, different autochthonous
304 vineyards were cultivated, each one characterised by typical agricultural features and
305 techniques. Nowadays, only a few vineyard plots are cultivated, especially in the hilly areas.
306 Historical permanences and traditional elements were identified: historical farm buildings, fish
307 ponds, hedgerows, woody areas, and traditional cultivations. During scenarios' evaluation
308 (Focus group meetings) these elements were proposed and showed to participants.

309 *4.2. Interviews' results: problems and qualifying elements perceived*

310 The analysis of interview results permitted us to identify the problems and the qualifying
311 elements perceived by Pralormo farmers. The 40% of farmers surveyed had a cereal address
312 and practiced livestock. Indeed, the majority of grain production is used for the livestock
313 activity. The analysed farms have an average extension of 20 ha. There are significant
314 differences in farm sizes. In particular, the cereal farms are the largest (> 50 ha), while the
315 floriculture and horticulture farms are less extensive (≤ 5 ha). The 80% of the farmers began
316 between 1995 and 2000 and they took over old farms and plots. Their activity is mainly family-
317 owned. The 90% of farmers interviewed transform agricultural and livestock products directly
318 on site and sell their products in the farm or in the markets of neighboring municipalities. The
319 60% are educational farms and they are associated with producer cooperatives. In the last three
320 years, the 90% of the farmers have enlarged the surface cultivated and increased production
321 and breeding. Some of their products are typical and some are niche products highly sought
322 after in the market. Several processed and transformed products are marked as original
323 denomination certificated (DOC) or original denomination and guaranteed production (DOCG).
324 Among the specialties that are produced/grown, there are several traditional agricultural
325 products (PAT) registered and recognised by the Italian Ministry of Agriculture, Food and
326 Forestry (list updated in 2015). The products' diversity and identity can be considered as a
327 qualifying element. About the 50% of the farmers received regional payments during the period
328 2007-2013 (Council Regulation 1968/2005), most related to the laboratory of transformation
329 and to the educational structures and projects.

330 Concerning rural landscape transformation, all farmers think that Pralormo landscape is
331 changing. By contrast with national trends, this phenomenon is not strictly linked with constant
332 urbanization: only the 20% of farmers is worried about the urban soil consumption linked with
333 the loss of the economic value of agriculture. In the last few years intensive farming has strongly

334 increased (+ 25% maize production), otherwise winegrowing and natural elements decreased.
335 The farmers though that there are many qualifying elements that should be valorised, in
336 particular the historical farms, the fishponds, the natural elements (hedgerows and woody
337 areas), and the system of paths and roads, assessing 4.5/5 points to Pralormo landscape. As
338 regards the future (2020), new and not traditional cultivations (hazelnut) will lead to a
339 deterioration of the agricultural landscape, decreasing the score (2.5/5). Recently, in this area
340 also a new system for renewable energy production was built (photovoltaic system). Half of
341 farmers assumed future land policy linked to agriculture and rural development sectors, and
342 urban planning would bring significant deterioration in the rural landscape quality. These
343 potential trends could determine the abandonment of agriculture and the development of new
344 residential, infrastructure, and service demands.

345

346 *4.3. Focus group' results: shared driving forces and effects on rural landscape*

347 The analysis of focus groups' results permitted us to identify shared driving forces
348 affecting rural landscape. Table 4 lists the 5 driving forces proposed by experts (E) compared
349 with the 7 identified by policy-makers (PM) and the 4 by civil society stakeholders (CS). We
350 can observe that some driving forces are similar: diffusion of new technologies connected with
351 intensive production and landscape planning tools. As said by farmers, soil consumption was
352 not identified as a potential driving force by the two groups of stakeholders. Table 5 and Table
353 6 show the influence on landscape over the next 20 years (landscape effects) identified by PM
354 and CS for each driving force and their impact on the Pralormo's rural landscape.

355 Both groups outlined the importance of agricultural activity for the studied area. PM
356 underscored the coexistence of two driving forces, intensive and extensive productions. The
357 first is linked with only negative effects, the second with only positive effects on landscape
358 quality. According to CS, the diffusion of new technologies connected with intensive

359 production maintains the agricultural activity and preserves the rural landscape from hydro-
360 geological disruption, but has several negative effects. These effects are mainly related to
361 environmental and agronomical aspects. The rural quality of life was interpreted by both groups
362 as ‘farmer well-being’. Supporting farmers’ incomes was favorably viewed. CS think that EU
363 policies can positively influence the landscape quality, determining positive effects
364 (agricultural production, historical crops and the expansion of natura areas) and favoring the
365 ecotourism demand. They highlighted that European support for farmers’ income and activity
366 diversification brings positive results, for reinforcing traditional cultivations and producing
367 services and other products beyond the primary goods. The reduction of farmers’ income could
368 have only negative effects and the rural landscape would be negatively influenced by
369 marginalization processes. PM outlined the lack of generational turnover in agriculture and
370 demographic problems. However, they identified the support qualifying landscape elements
371 (fishponds) as the most important driving force that could bring positive results. CS identified
372 landscape planning tools as the most important driving force for increasing biodiversity.

373 Regarding the urban sector, stakeholders had contrasting opinions. PM underscored the
374 current conflict between agricultural and urban interests caused by upgraded building stock. CS
375 highlighted ‘strong’ local landscape planning policies. Some policies could have positive
376 effects if correctly applied; for example, the restoration of historical buildings and rural farms.
377

378 *4.4. Focus group’ results: scenarios*

379 Starting from the *status quo* of Pralormo rural landscape (2013), new residential and
380 industrial buildings, fishponds, hedgerows, hazelnut cultivation, monocultural system linked
381 with intensive production, woody areas and intensive livestock were proposed (Fig. 3).
382 Pralormo rural landscape was illustrated with these elements, results by previously analysis.

383 The mean ratings assigned to Utility, Feasibility, Beauty scenarios by civil society stakeholders
384 and policy-makers was reported (Fig. 4).

385 Regarding the Utility scenario, both groups considered as the most useful elements: the
386 woody areas, fishponds and hazelnut cultivation landscape. CS also outlined the development
387 in the future of new buildings (residential and industrial) and the presence of intensive
388 production (intensive livestock and monocultural systems). Moreover, CS identified other new
389 elements (fruit, honey and wood production, and organic agriculture).

390 Regarding the Feasibility scenario, CS and PM considered fishponds as the most
391 important landscape element. Both groups outlined woody areas, hazelnut cultivation,
392 hedgerows and row trees as secondary elements. Intensive livestock farming and agriculture
393 were particularly mentioned by CS. Also for this parameter, CS considered the development of
394 new buildings as a realistic landscape element.

395 Regarding the Beauty scenario, both groups considered fishponds, woody areas and
396 hedgerows and row trees as elements able to improve the visual quality of Pralormo's
397 landscape. CS and PM had similar opinions and few elements were selected.

398 By contrast with farmers' opinions, energy crops were not considered by PM and CS.
399 Analysing the three scenario preferences, it is possible to identify some elements that are at the
400 same time useful, realistic and beautiful (fishponds, woody areas). Regarding new residential
401 and industrial buildings, PM and CS had discordant opinions. In fact, PM considered that new
402 residential buildings are not necessary but they are feasible and nice. CS thought that new
403 buildings are useful and realistic.

404

405 **5. Discussion**

406 Analysis of interviews and focus group results identified shared qualifying elements.
407 Several landscape components were considered by local farmers, policy-makers and civil

408 society stakeholders as potential resources. For example, woody areas and fish ponds were
409 useful, feasible and beautiful. According to policy-makers, these landscape elements will be
410 valorised and preserved in the near future. In our study, the recognition by society and in
411 particular by the local stakeholders of cultural values of historical agricultural sites could be a
412 strategy for preserving them over time. By contrast, urban sector and energy crops were not
413 considered as possible solutions in the future. From this participatory study emerges that the
414 changing driving forces perceived by the stakeholders are linked to market international trends,
415 while their landscape effects are site-specific. The political response to the trend of globalisation
416 is to apply strategies able to increase the local valorisation. The recognition and focus on
417 traditional values and resources and the defence of traditional land uses are possible solutions
418 for ensuring agricultural activity. Indeed, the multifunctional system, the diverse and typical
419 agricultural products, the production of high-quality food, the transformation processes of these
420 products and direct sales, can be regarded as having the most important potential for the
421 Pralormo municipality. These elements can be considered as economically and socially
422 beneficial and as constituting a win-win scenario in the global market.

423

424 *5.1 How can different stakeholders contribute to landscape planning policy?*

425 This paper shows that there are complex socio-cultural and economic drivers affecting
426 the future(s) of the rural area studied. Regarding the conflict between landscape values and
427 society demands on land use resources, we think that empirically based research integrating
428 landscaping, sociological and historical approaches applied in the case study of the Pralormo
429 municipality, can be a useful tool, first to find plausible landscape futures, and second to trigger
430 discussions with the public regarding their aspirations. In this context, the recognition of
431 historical permanences and theoretical elements combining with the development and
432 assessment of land use scenarios should play an important role in promoting the understanding

433 of complex and uncertain decision making systems. In our study, interviews and focus group
434 results show that the agriculture sector is the greatest driving force shaping Pralormo landscape,
435 in the past, today and in the future. According to Loupa Ramos (2010) and Pinto-Correia et al.
436 (2016) although policy-makers and civil society stakeholders expressed different expectations,
437 perceptions, and attitudes in the discussions and they imagined different landscape scenarios.
438 In this context, the application of an integrated approach is a fundamental step for participatory
439 landscape planning. Both farmers' interviews and focus group techniques, shared actions,
440 strategies and policies were proposed for the planning of rural historical site (Fig.5). The
441 creation of a specific label, the direct sale in farm, the optimization of transformation food
442 process and the intensification of mixed farming could/should be considered possible actions
443 to apply. Linking food and landscape quality, preserving ancient settlement, conserving
444 cultivations, maintaining traditional land uses, promoting educational activities in farm,
445 valorizing educational farm and optimizing food quality are possible strategies. Supporting
446 farmers' income, developing rural development programs, increasing mixed systems and
447 implementing multifunctional system are the main policies proposed.

448 Regarding landscape effects identified by PM and CS, against urban sprawl and
449 intensification farming trend, the conservation of mixed systems (low intensity, small-scale
450 traditional mixed farming) and the promotion of a sustainable agricultural systems are also
451 international priorities (Andersson et al., 2014; Oteroz-Rozas et al., 2015). In particular, for
452 rural development policy in Europe improving the competitiveness of the agricultural and
453 forestry sectors, increasing biodiversity and the quality of life in rural areas, and encouraging
454 diversification of the rural economy are the main goals. Regarding this topic, Pedrolí et al.
455 (2016) showed that the engagement of the local community can be re-activated at the landscape
456 level and that it can responsibly be involved in shared policies and decisions.

457

458 **6. Conclusions**

459 The case study described in this paper, based on theoretical and empirical studies reveals
460 the main problems and offers possible solutions which should be reflected in the legislation to
461 encourage the development of rural areas. Our results have been implemented and integrated in
462 Pralormo municipality land use policies and could be useful for regional/national planning. In
463 conclusion, we consider that the empirical approach used can contribute to landscape planning
464 from the local to the regional level. In the case of Pralormo, which is transferrable to other
465 European historical rural sites, we promoted the adoption of a new local landscape planning
466 strategy with positive fall-out on the regional/national scale.

467 We think that the possible/potential solutions identify in this project could be considered
468 a useful tools for planning historical rural sites. Moreover, linking food and landscape quality
469 is considered an important issue for sustainable development in both rural and peri-urban areas.
470 Also linking rural landscape with food quality and obtained products (Products of protected
471 origin) should be considered a strategic measure and could be implemented. In fact, the
472 multifunctional system, the diverse and typical products, production of high-quality food, the
473 transformation processes of these products and direct sales, can be regarded as having the most
474 important potential and value for historical rural sites. Using different measures and actions is
475 possible to connect the concept of food - agriculture with historical, cultural, social and
476 environmental values. It is an opportunity for the development of rural areas, for example
477 Pralormo municipality, and at the same time a challenge.

478 We have shown how it is possible to apply a conceptual framework in order to better
479 evaluate the future of rural historical landscape. We have demonstrated that the interaction
480 between different stakeholders allowed to construct alternative visions of agricultural
481 development and new possible scenarios. Stakeholder participation in environmental decision-
482 making has been increasingly sought and embedded into national and international policy (Bui

483 et al. 2016; McKee, 2015; Kvakkestad et al. 2015; Pinto Correia and Kristensen, 2013). We
484 think that contrary to environmental aspects, participatory studies about rural landscape are not
485 ‘translated’ into specific programmes or measures. In this context, to identify shared
486 development policies and agri-environment programmes, it is essential to analyse farmers’
487 attitudes towards their role and their landscape management goals. In our study, local farmers
488 were considered the first actors of the participatory process applied. With their activity, they
489 manage large areas of the landscape and they contribute to maintain and plan it.

490 Despite the difficulties regarding historical rural landscapes, translating actions and
491 strategies into practice is an essential step for ensuring traditional values. In rural planning
492 processes it is important properly to consider the interests, preferences, problems and targets of
493 the different stakeholders, and to understand that these positions can change and evolve (van
494 Berkel and Verburg, 2011). We conclude that public consultation using interviews and focus
495 group meetings is a capable method with which to assess people perceptions. Analysing
496 personal awareness of the driving forces and transformations affecting rural landscapes and
497 their effects in the next 20 years should be considered a way to support future local planning
498 policies according to historical and cultural values.

499

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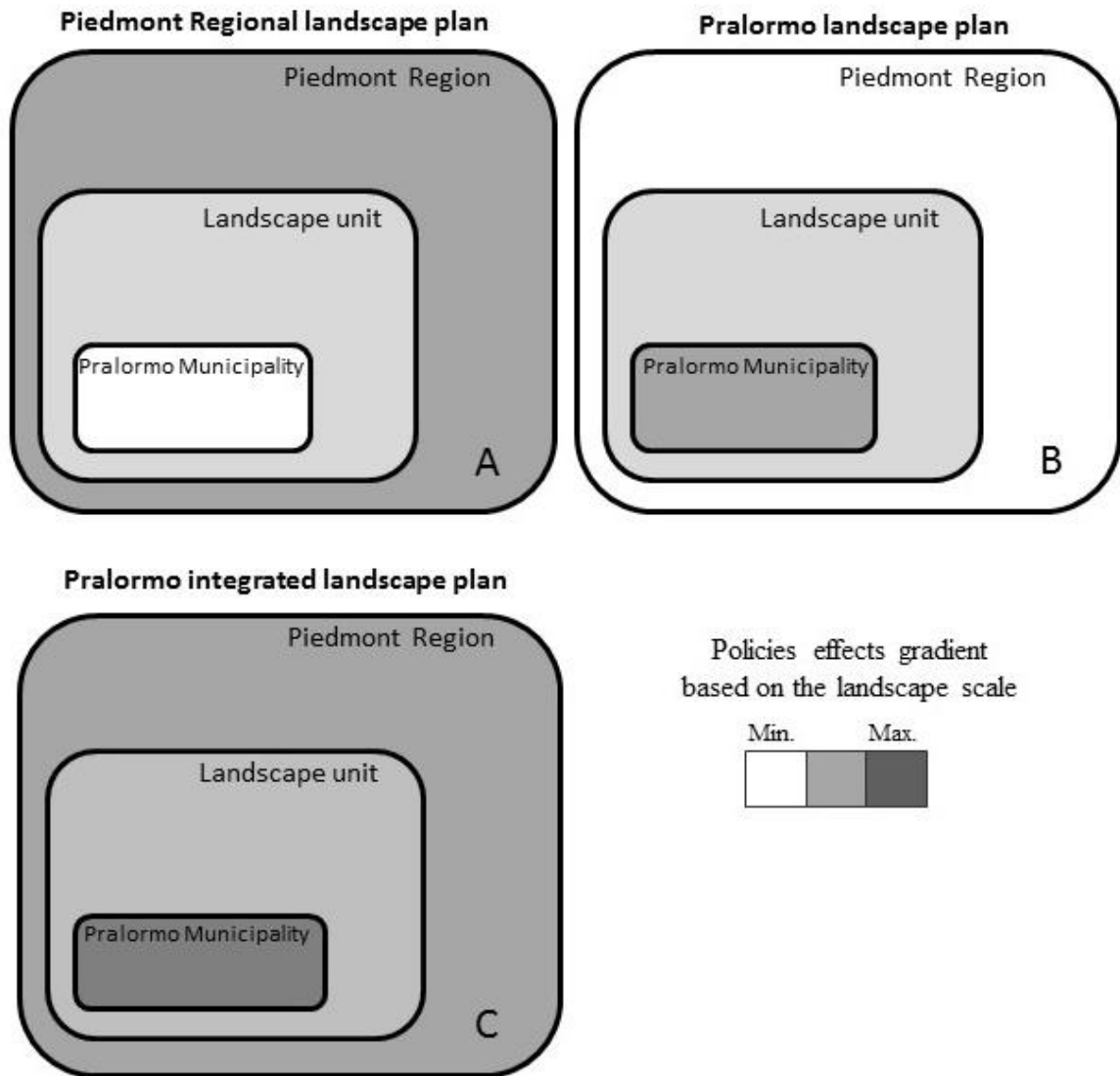
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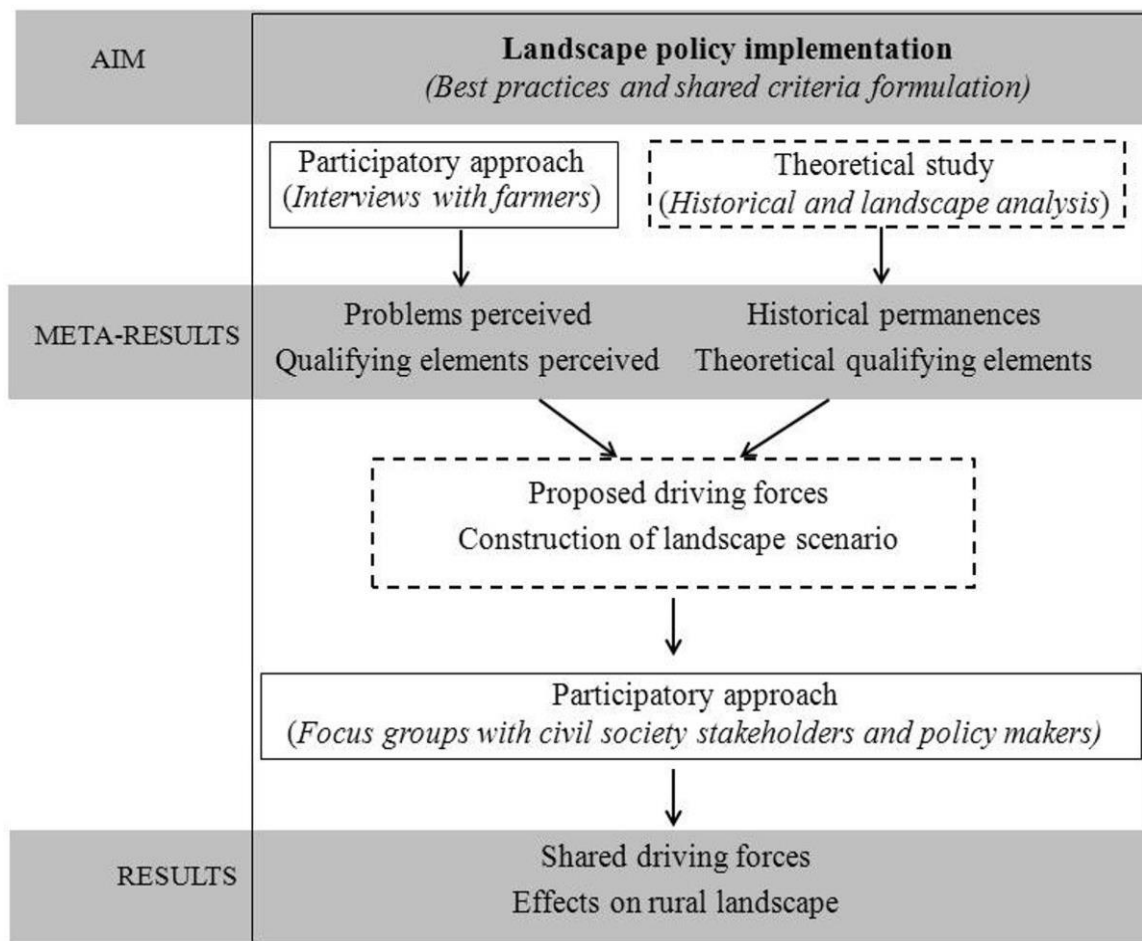
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645 **Figures**
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Figure 1. Scheme of the policy effects gradient at different landscape scales in Piedmont: the regional approach (A), the municipality approach (B), the integrated empirical work proposed (C).



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Figure 2. The methodological framework applied in the research.

STATUS QUO



ELEMENTS PROPOSED



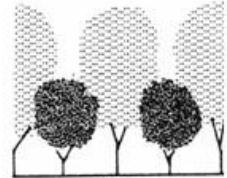
New residential buildings



New industrial buildings



Fishponds



Hedgerows



Hazelnut cultivation



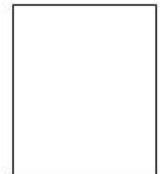
Monocultural system



Woody area



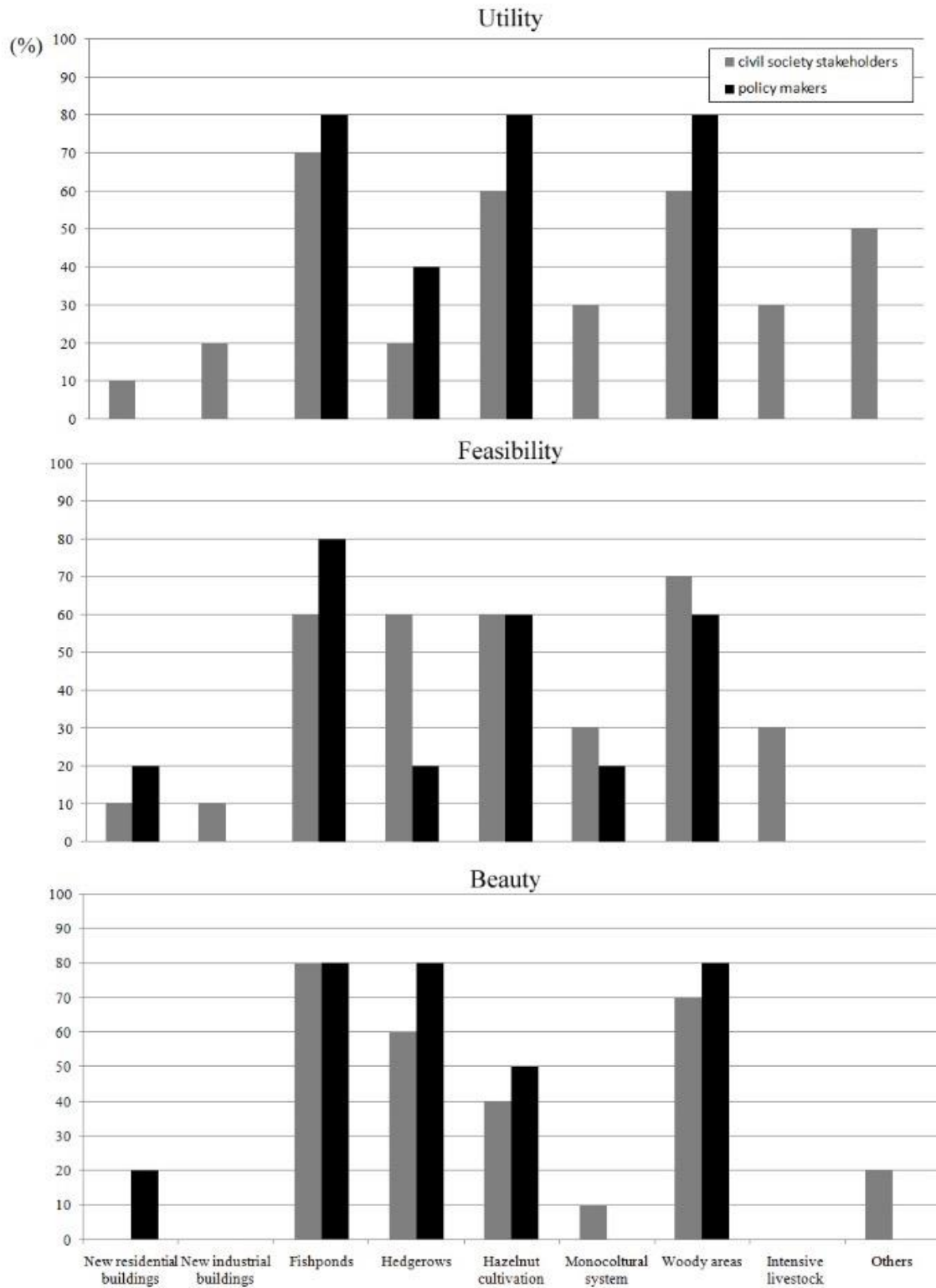
Intensive livestock



Others

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Figure 3. Landscape scenario assessment. *Status quo* of Pralormo's rural landscape and elements proposed.



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 671 **Figure 4. Mean ratings assigned to Utility, Feasibility, Beauty scenarios by civil society**
 672 **stakeholders and policy-makers.**

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Figure 5. Actions, strategies and policies identified for the rural historical landscape planning

680 **Tables**

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683 **Table 1. Type and number of stakeholders involved in interview step and focus group**
684 **step. Between brackets is the number of invited people for each type.**

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Type of stakeholders	Participant number (invited)
<i>Farmers interviewed</i>	
Grain farmer	2 (2)
Livestock	2 (2)
Horticulture grower	2 (2)
Flower grower	1 (1)
Wine grower	1 (1)
Fish farmer	1 (1)
Fruit grower	1 (1)
<i>Policy-makers focus group</i>	
Municipality organisation	4 (5)
Regional organisation	1 (1)
<i>Civil society stakeholders focus group</i>	
Agricultural institution	1 (1)
Other local organisations	4 (5)
Freelance professionals	5 (6)
Researcher	1 (1)
Hotelier	0 (2)

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688 **Table 2. Questionnaire for farmers' interview**

Questions	
The farm...	<p><i>What is the size of your farm?</i></p> <p><i>When did you begin your farming activity?</i></p> <p><i>Which kinds of cultivations are practiced?</i></p> <p><i>How do you sell your products? Where?</i></p> <p><i>Do you transform your products obtained?</i></p> <p><i>Do your products have a certificate of origin?</i></p> <p><i>Have you introduced new crops in the last five years? Which?</i></p> <p><i>Did you receive EU payments during the period 2007 to 2013?</i></p>
The landscape...	<p><i>Do you think that Pralormo's landscape has changed over time?</i></p> <p><i>How will the rural landscape change in the next five years?</i></p> <p><i>What score would you assign to your rural landscape (2015)?*</i></p> <p><i>What score would you assign to your rural landscape (2020)?*</i></p> <p><i>What are the landscape elements that could change the agricultural landscape?</i></p> <p><i>What are the qualifying elements that should be valorised?</i></p> <p><i>What are the problems that should be solved?</i></p> <p><i>Do you have any other comments?</i></p>

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690 *score from 1(low) to 5 (high)

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706 **Table 3. The list of archives consulted, the kind of documentation, original name and year**
 707 **and the information acquired.**
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Archive name and localization	Original name	Year	Type of documentation	Information acquired
Archive of Turin, Sezioni Riunite (TURIN)	Tippo delle Bealere	1731	Map	Fishponds and irrigation system
	PLAN GEOMETRIQUE 1/ de la Commune de Pralormo.	1806	Cadastral map	Land use types, and farm buildings
	Plan parcellare de Pralormo	1806	Figured land register	Cultivations practiced and settlements character
Archive of Turin, Sezione Corte (TURIN)	INFORMATIVA dei Signori intendenti del Piemonte sulla materia dei boschi.	1784	Literature	Land use types and woods features
	Figura dimostrativa delle strade che da Torino tendono alla Città di Asti et Alba	1784	Map	Landscape structure and settlements character
	Notizie topografiche e statistiche sugli Stati Sardi.	1847	Literature	Cultivations practiced, production, agricultural features and techniques
Archive of the Royal Agricultural Academy (TURIN)	CARTA MODERNA/ DEGLI/ STATI SARDI/ DI/ TERRAFERMA	1844	Map	Landscape structure
	Dizionario geografico storico-statistico-commerciale degli Stati S.M. il re di Sardegna	1847	Literature	Land uses, techniques, productions and traditional cultivations
Archive of Pralormo (Pralormo)		1899-1920	Photo Postcards	Landscape structure

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710 **Table 4. Driving forces identified by experts (E), policy-makers (PM) and civil society**
 711 **stakeholders (CS)**

Driving Forces (E)	Driving Forces (PM)	Driving Forces (CS)
Diffusion of new technologies connected with intensive production	Diffusion of new technologies connected with intensive production	Diffusion of new technologies connected with intensive production
Maintenance of technologies and crops connected with extensive production	Maintaining of technologies and crops connected with extensive production	
EU policies directed towards supporting farmers' income and activity diversification in rural areas		EU policies directed towards supporting farmers' income and activity diversification in rural areas
		Local landscape planning policies (urban buildings and rural farms)
Soil consumption		
	Upgraded building stock (historical buildings)	
Landscape planning tools	Landscape planning tools	Landscape planning tools
	Lack of generational turnover in agriculture/demographic problems	
	Reduction of farmers' income	
	Support qualifying landscape elements (fishponds)	

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715 **Table 5. Importance of driving forces and landscape effects according to the policy-**
 716 **makers (PM)**

Driving Forces (PM)	Landscape Effect (+)	Landscape Effect (-)	Score (1-5)
Diffusion of new technologies connected with intensive production		Increased intensive cultivation (maize) Few productive cultivations Few farms	3
Maintenance of technologies and crops connected with extensive production	Valorisation of hill areas Landscape mosaic heterogeneity Consolidation and spread of crops and agricultural methods connected with quality food production		1
Upgraded building stock (historical buildings)		Conflict between agricultural and urban interests	4
Landscape planning tools	Visual landscape improvement		3
Lack of generational turnover in agriculture/demographic problems		Increase of marginal areas	4
Reduction of farmers' income		Abandon of historical cultivations which are not cost-effective (vineyards) Introduction and significant spread of new crops (hazelnuts, energy crops)	4
Support qualifying landscape elements (fishponds)	Recovery abilities of ancient fishponds Valorisation of wet habitat linked with fishponds Increase of fishing activity		5

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719 **Table 6. Importance of driving forces and landscape effects according to the civil society**
 720 **stakeholders (CS)**

Driving Forces (CS)	Landscape Effect (+)	Landscape Effect (-)	Score (1-5)
Diffusion of new technologies connected with intensive production	Land preservation from hydro-geological disruption	Devaluation of typical products Abandon of historical cultivations which are not cost-effective Depletion of soil fertility (risk of environmental pollution) Transformation of farm management	4
EU policies directed towards supporting farmers' income and activity diversification in rural areas	Organic and specialised agriculture Typical agricultural products Quality productions Expansion and consolidation of traditional (and/or niche) cultivations in the richest areas Consolidation and spread of cultivation practices linked to specialty farming production Expansion of forest and natural areas Ecotourism demand	Increased marginal areas Loss of agricultural land	3
Local landscape planning policies (urban buildings and rural farms)	Policies for restoration of existing buildings: valorization of historic city centres and rural farms	Deterioration in quality of building stock Abandonment of rural buildings New buildings policies: loss of agricultural land to new housing New buildings policies: loss of visual landscape quality	2
Landscape planning tools	Increased biodiversity		5

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