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Smoothing down arbitrariness in planning: From SWOT to participatory decision making

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3 **Draft version (Jan. 2022) after first revision round**

4 **Abstract**

5 SWOT analysis is frequently employed in land use planning, the literature proposes improved versions for
6 reducing decision-making arbitrariness, however some drawbacks remain. The purpose of this paper is to
7 design the methodological steps of a participatory land use planning, through a three-fold SWOT yielding a
8 strategy optimal in terms of both congruence with the residents' vision and feasibility. Residents are
9 interviewed first, through open-ended questions allowing them to express their ideas unconditionally.
10 Institutional players are involved next, through a modified Nominal Group Technique. Factors' prioritization
11 is reached through an automatic algorithm that synthesizes the opinions of residents and institutional players
12 without compensating high importance to the former with low importance to the latter and vice versa, so
13 that information from the two sources is treated separately and the community's view dominates. The
14 prioritization is based also on the interconnections of factors, for ensuring the feasibility of the consequent
15 strategy. The results of our illustrative application show that this method can induce a community-based
16 entrepreneurial land use. Unexpectedly, in the small area considered, institutional players take into greater
17 consideration the development perspective of local businesses, compared to residents, who display a greater
18 environmental consciousness and commitment to biodiversity conservation.

19

20 **Keywords:** participatory planning process, stakeholders priorities, sustainable tourism
21 development, Nominal Group Technique, Electre III.

22

23 **Highlights**

- 24 • An innovative three-fold SWOT methodology is proposed
- 25 • Prioritization is based also on a criterion of strategic feasibility
- 26 • Arbitrariness of decision-making is reduced
- 27 • It can induce a community-based entrepreneurial land use
- 28 • Residents are more environmental conscious than institutional players

29

30

31

32 **1. Introduction**

33 The investigation of the social impacts of land use changes has led to the recognition of the need to widen
34 the decision-making community in planning and managing the evolution of a territory, by reconciling
35 conflicting perspectives of different stakeholders, and boosting interactive and empowering learning
36 processes (Patel et al, 2007; Dragouni et al, 2018; Karimi & Adams, 2019). Inasmuch as it is expected to lead
37 the territory into a future consistent with the residents' values (Su & Wall, 2014), a bottom-up approach to
38 land use planning and management can configure the conservation of the local natural and cultural heritage
39 as an empowering driver of the residents' quality of life (Colomb et al, 2014; Ridderstaat, 2016), rather than
40 as an obstacle to fully exploit the local resources, for their social and economic needs (Almeida et al, 2017;
41 Almeida et al, 2018; Queiros & Mearns, 2018). Furthermore, an actual participatory process can induce a
42 community-based entrepreneurial land use, able to boost economic growth and stop depopulation in
43 peripheral areas, while pursuing careful environmental and historical sites protection (UNESCO, 2012; Ooi et
44 al, 2015; Oevermann et al, 2016; Cucari et al, 2019). Moreover, the direct involvement of the locals permits
45 to discover the hidden potentials of the territory, such as folk traditions and tales, which could contribute to
46 the local development, but live in the memory of residents and could not be otherwise accessible to decision-
47 makers (Alexander et al, 2018; Sawatsuk et al, 2018).

48 Despite the general consensus regarding the necessity of involving residents in planning the
49 development of their territory, in practice the local community is normally given little room to express its
50 opinions (Lawton & Weaver, 2015). Residents' suggestions tend to be marginalised by decision-makers
51 (Dragouni et al, 2018) and their participation often reduces to a narrow consultation, where their power to
52 influence land use and development policies is minimum (Spencer, 2010; Marzuki et al, 2012). Disappointing
53 experiences are due to the political, socio-cultural and methodological difficulty of implementing a truly
54 bottom-up decision-making process (Landorf, 2009; Idziak et al, 2015; Khazaei et al, 2015). With reference
55 to the methodological aspects, SWOT analysis is very frequently employed in land use planning processes,
56 because of its ease of construction and interpretation (e.g. Ioppolo et al, 2013; Kovačević et al, 2018; Sisto et
57 al, 2018, Iandolo et al, 2019).

58 SWOT analysis belongs to the wide family of Multicriteria Decision Analysis methodologies, aimed at
59 eliciting stakeholders' perspectives and ideas. It consists in the detection and representation on a quadrant
60 of four types of factors: the strengths (internal resources, skills and competences) a territory/organization
61 can leverage on; the weaknesses (internal obstacles and deficiencies) it must overcome; the opportunities
62 (external positive events and circumstances) it can exploit; and the threats (external risks and barriers) it
63 must avert for achieving the proposed goal. In its original basic form, SWOT is a wholly qualitative and simple
64 analysis. But precisely by reason of its simplicity, it yields non-prioritized results, that can be exploited by the
65 local authorities as a scientific legitimation of - possibly unpopular - political decisions already taken. To
66 overcome this issue, the extant literature developed various improved SWOT versions, but a relevant margin
67 of decision-making arbitrariness, that prevents the local community and the less powerful stakeholders from
68 actually affecting the final choices regarding their own territory, still remains. Most of the improved SWOT
69 analyses are based the Quantitative Strategic Planning Matrix (QSPM, David, 1986), the Analytic Hierarchy
70 Process for independent factors (AHP, Saaty, 1977; Aczel & Saaty 1983) or the Analytic Network Process for
71 interdependent elements (ANP, Saaty, 2001). The advantage of QSPM lies the briefness of the
72 questionnaire (compared to other methods), but it may yield many tied ranks, which leave the selection of
73 the final strategy to the policy-makers' arbitrariness. On the opposite, AHP and ANP produce more consistent
74 rankings, being based on pairwise relative importance ratings, but they require a lot of time and effort from
75 interviewees. For the sake of feasibility, normally pairwise comparisons regard only a few SWOT elements,
76 pre-selected or pre-aggregated by the researchers or experts, reintroducing some arbitrariness. Moreover,
77 the output of the analysis could be an unfeasible strategy, as feasibility considerations regarding the
78 complementarity of factors does not enter the analysis directly (Dragouni et al, 2018).

79 The objective of this paper is to propose a three-fold SWOT analysis able to reduce decision-making
80 arbitrariness further and increase the influence of the local community on land use planning, by yielding a
81 strategy that is optimal in terms of both congruence with the residents' vision and feasibility. The
82 methodology is illustrated through an empirical application to the case of Alfonsine, a small Italian rural area,
83 where land use planning must address conflicting interests between industrial expansion, conservation of

84 the local biodiversity and the structuring of a sustainable tourism offer. The optimal strategy, detected
85 through our three-fold SWOT, consists in leveraging on the local history and traditions, the typical
86 enogastronomy, the Gothic Line cycle-pedestrian path, the tranquillity of this rural area and the typical
87 Romagnola hospitality, in order to attract the promising market segment of slow tourists.

88 This paper continues with the exposition of our SWOT methodology, where each step is
89 contextualized in the current state of the art. Afterward, an empirical application is presented, in order to
90 show how the methodology works in practice. The results of the application are discussed with reference to
91 the advantages and limitations of the proposed method in section 4, before drawing concluding remarks.

92

93 **2. Background**

94 **2.1 European territorial cooperation and sustainable tourism development**

95 The European Union (EU) promotes many regional and transnational cooperation initiatives, as important
96 levers of the European integration (Prokkola, 2011). In this context, the European Commission (2014) calls
97 for the implementation of the Community-Led Local Development approach, for avoiding inconsistencies
98 between development strategies and residents' goals and priorities, while ensuring sustainability. The focus
99 on sustainability requires that development processes improve the material and non-material well-being of
100 the local community, including its cultural integrity and social cohesion, preserve intergenerational and
101 intragenerational equity, maintain biological diversity and ecological systems, and protect cultural assets
102 (Lane, 1994; UNESCO, 2012).

103 Sustainable tourism is increasingly considered a privileged means to reconcile the conservation of
104 natural and cultural resources with the economic growth and the improvement of residents' quality of life,
105 if managed by the indigenous community (Williams & Shaw, 2009; Coria & Calfucura, 2012; Giampiccoli &
106 Saayman, 2014; Cucari et al, 2019; Kertész et al, 2019). Tourism shapes the territory and landscape identity
107 (Rovira Soto & Clavé, 2017) thus, it is fundamental that it develops according to the local community's values
108 (Su & Wall, 2014). This is expected to favour a welcoming attitude, that is crucial for tourist satisfaction and
109 hence for the success of the tourism sector (Sharpley, 2014). In fact, the co-creation of the tourism

110 experience implies a land use shared with visitors, a conception of the territory as the result of interactions
111 that evolve dynamically, forming a complex system of human capital, institutions, organizations, resources
112 and attractions (as explained by Cucari et al, 2019; landolo et al, 2019). Due to this complex and dynamic
113 configuration of land use, tourism development produces changes in land use demand and preferences, that
114 impact the natural environment and the cultural heritage (Mao et al, 2014), so it is fundamental that it is
115 driven by the host community, for avoiding the deterioration of its quality of life (Colomb et al, 2014;
116 Ridderstaat, 2016).

117 Consistently, a growing number of European Territorial Cooperation programmes (Interreg), focus
118 on sustainable tourism as a main driver of regional development (Nilsson et al, 2010), and recommend
119 dialogue and collaboration with the local community, especially in the planning process (e.g. Waterton &
120 Smith, 2010; European Commission, 2014; Ooi et al, 2015). In this context, SWOT analysis has been a very
121 common tool, used to identify the characteristic elements that mostly impact the development of a peculiar
122 territory (landolo et al, 2019). Initially, the traditional SWOT was carried out by policy-makers directly.
123 Recently, more complex analyses can be brought about within European territorial cooperation projects by
124 academic experts, who are increasingly involved in cooperation initiatives, since the 2014-2020 programming
125 period.

126 The empirical application of the methodology presented in this paper regards an Italian town
127 involved in the Interreg A Italy-Croatia project EXCOVER - Experience, Discover & Valorise Hidden Treasure
128 Towns and sites of the Adriatic Area, started in 2017 and afferent to the third development axis "Cultural
129 heritage and arts". The focus of EXCOVER is on the need of balancing tourism flows between overcrowded
130 seaside destinations and ten small towns of the hinterland, that are essentially unknown, but rich in cultural
131 and natural heritage. The core aspect of EXCOVER is the involvement of the local communities. The three-
132 fold SWOT described in section 2 has been originally designed to identify sustainable tourism development
133 strategies and plan related land uses.

134

135 **2.2 Towards a three-fold SWOT analysis**

136 Introduced in the sixties for qualitatively investigating the strategic positioning of corporations, SWOT
137 analysis has been applied to many different contexts (Dess, 2018). Nowadays this analytical tool is still
138 frequently employed in various fields, for example in the assessment of COVID-19 prevention and control
139 (Wang & Wang, 2020), the selection of renewable energy resources (e.g. Wang et al, 2020), the helpfulness
140 of non-invasive evaluation methods of learning processes (Tinga et al, 2020). In the recent literature about
141 land use planning and management, SWOT analysis has been used to identify internal and external factors
142 affecting forested ecosystems (e.g. Starr et al, 2019), regional growth (e.g. Moschidis & Ismyrlis, 2018), rural
143 development (e.g. Sisto et al, 2018), natural parks (e.g. Arsić et al, 2018), coastal zones (Ioppolo et al, 2013)
144 and cultural heritage management (e.g. Fan & Xue, 2018), as well as sustainable tourism development (e.g.
145 Vázquez de la Torre et al, 2013; Zorpas et al, 2018; Nermin, 2019).

146 A main motive of the long-lasting success of SWOT analysis lies in the ease of interpretation and use
147 by policy-makers, who are the main recipients of the results (Kovačević et al, 2018), as aide in decision-
148 making for resource management and organizational strategy formulation (Starr et al, 2019), for prioritizing
149 local actions (Arsić et al, 2017), investigating the current situation and how it may evolve (Ghorbani et al,
150 2015), ensuring the feasibility of development plans (Carrión Mero et al, 2018), eliciting stakeholders' vision,
151 mission, goals, and highlighting best versus worst practices (Sawatsuk et al, 2018). The main limitation of the
152 original SWOT analysis, deriving from its qualitative nature, consists in its inability to sort factors by
153 importance, so that policy-makers are presented with a (even long) list of elements that can be confronted
154 to detect various strategies, but the choice of which one to implement is arbitrarily made by decision-makers.
155 To overcome this problem, some quantitative methods have been employed to integrate qualitative
156 information and grade the reciprocal influence of the elements (Ioppolo et al, 2013) or, more commonly,
157 prioritize strategic interventions, in particular: the Quantitative Strategic Planning Matrix (QSPM, David,
158 1986), the Analytic Hierarchy Process for independent factors (AHP, Saaty, 1977; Aczel & Saaty 1983) and the
159 Analytic Network Process for interdependent elements (ANP, Saaty, 2001).

160 The QSPM (Quantitative Strategic Planning Matrix) aggregates absolute importance scores collected
161 through a survey or deep interviews about pre-defined SWOT factors. For example, Ghorbani et al. (2015),

162 for developing ecotourism in Kaji Namakzar Wetland, ask a panel of experts to weight and score the factors
163 identified by the researchers. While Koshteh (2018), for planning sustainable tourism in the Central Zagros
164 Mountains, identifies SWOT factors by means of a structured questionnaire to residents and then lets experts
165 assigning importance weights. As the final factors' ranking is anyway based on summing importance weights,
166 it allows high scores by some stakeholders to compensate for low scores from others, for the same factor,
167 that is an undesirable methodological property, from the perspective of participatory processes, if the
168 stakeholders represent conflicting interests. The main advantage of QSPM is the briefness of the
169 questionnaire (compared to AHP and ANP), but it may yield many tied ranks, due to the compensation effect
170 of the summation. In fact, many consultations with stakeholders could be necessary, for readjusting
171 importance weights so that a more precise strategic indication can be provided (e.g. Ghorbani et al, 2015).

172 On the opposite, AHP and ANP are based on pairwise relative importance ratings, thus they require
173 a lot of time and effort from interviewees, but produce more consistent rankings. For the sake of feasibility,
174 normally pairwise comparisons regard a few SWOT elements, pre-selected or pre-aggregated by the
175 researchers or experts, reintroducing some arbitrariness. For example, Fan and Xue (2018), for planning a
176 sustainable cultural industry in Shaanxi, as well as Nermin (2019) for developing tourism in Zonguldak, invite
177 experts to choose the three most important factors related to the analysis' goal and then to make pairwise
178 comparisons of the top ones, for AHP analysis. This way, factors that are not very important per se, but are
179 closely connected to the selected strategic alternative (and thus should be taken carefully into account in
180 implementing the final strategy), may be neglected, as their disappear from sight after the first analytical
181 step (we address this issue by quantifying each factor's 'strategic relevance', in subsection 3.4).

182 ANP analysis is even longer and more demanding for interviewees, because all the possible relations
183 of interdependence between SWOT factors must be assessed. For example, in the study by Arsić (2017),
184 policy-makers and managers who detected and rated factors for the development of ecotourism in National
185 Park Djerdap, carried out a truly massive work. Their opinions are then used for ANP in a fuzzy setting, that
186 is computational complex, but is able to capture the nuances that characterize human perceptions. Starr et
187 al. (2019) bring about an ANP-based SWOT for supporting the active management of the cross-timbers forest

188 resources in three states of the USA, by limiting to 16 the factors under analysis. While this simplifies the
189 stakeholders' rating task, it may neglect factors that should be considered, inasmuch as connected with the
190 strategy that, ultimately, is left to the decision-makers arbitrariness. Moreover, none of the mentioned
191 methods allows to consider different information separately, for instance the opinions of contrasting groups
192 of stakeholders, or expressed in different circumstances, within a single analysis (of course, it is always
193 possible to bring about separate analyses with each group of stakeholders and then compare results,
194 embedding the SWOT tool in a broader process, carried out for eliciting stakeholders' views and
195 perspectives).

196

197

198 **3. Methodology**

199 In order to overcome some limitations of the extant methods (highlighted in subsection 2.2), we employ
200 Electre III algorithm (Roy, 1991), for synthesizing the opinions of residents and those of institutional players,
201 without compensating high importance to the formers with low importance to the latter and vice versa.
202 Moreover, this method allows to set a dynamic importance threshold consistent with a truly bottom-up
203 participatory approach to land use planning and management. Although our SWOT methodology is quite
204 complex, it keeps results' ease of use as a democratic decision-making support. In the first step, a residents'
205 survey, mainly based on open-ended questions, is carried out to collect the ideas of the local community.
206 Contrary to the standard practice (e.g. Arsić et al, 2018; Koshteh, 2018; Mikulić et al, 2018) we do not present
207 the locals with a list of factors, defined by experts or policy-makers, and ask them just to rate their
208 importance, but we give residents the opportunity to express their opinion freely, about the issues they
209 consider actually relevant (Lawton & Weaver, 2015). Open answers are then categorized into SWOT
210 quadrants through a manual content analysis, aimed at distinguishing internal from external factors, without
211 cutting details. The resulting matrix is discussed in a focus group, making use of a modified Nominal Group
212 Technique (NGT, see: Delbecq et al, 1975), with local authorities, experts and main stakeholders. Through
213 this second step, three goals are pursued: (a) the disambiguation of factors appearing as both strengths and

214 weaknesses, or opportunities and threats, in the residents' answers; (b) the completion of the matrix with
215 new elements added by participants; (c) the assignment of importance scores to each SWOT factor. Finally,
216 Electre III algorithm (Roy, 1991) is applied to the so adjusted SWOT matrix, in order to: (a) synthesize the
217 opinions of residents and institutional players without compensating high importance (of SWOT factors) to
218 the former with low importance to the latter and vice versa, so that information coming from the two sources
219 is treated separately and the community's view dominates, according to the democratic bottom-up principle;
220 (b) prioritize SWOT factors based on both their strategic relevance and the stakeholders' perceived
221 importance; (c) select the most effective strategy for the territory development. With 'strategic relevance'
222 of a factor we mean the possibility to link it with others (e.g. a strength with the opportunities that it allows
223 to grasp; a threat with strengths that could mitigate it, etc. see Kazemi et al, 2018) to form a consistent
224 strategy. Considering this aspect in the prioritization of SWOT factors is a crucial innovation, because it avoids
225 the possibility that the most important factors of each quadrant cannot be connected in a feasible strategy,
226 so that the final decision is left wholly to policy-makers. This work has important practical implications, as
227 the proposed methodology, combining qualitative and quantitative research approaches and tools, can be
228 helpfully employed in any area for the community-based land use planning and management.

229

230 **3.2 Involving residents through surveys**

231 As highlighted by Lawton and Weaver (2015), residents' surveys can be valuable tools for collecting the local
232 community's ideas about how to develop the territory the way that maximizes benefits and minimizes costs.
233 Thus, they can be fruitfully used in land use planning and management, especially in areas endowed with
234 natural and cultural heritage, that are shaped by a complex intertwining of social, political, environmental
235 and cultural factors, which can either hinder or help the local development, and the knowledge of which
236 might be widespread among the resident community, so not easily accessible to policy-makers (Sisto et al,
237 2018). But most questionnaires are composed by closed-ended questions, constraining interviewees to
238 respond by merely rating items deemed to be important by the survey designers, local authorities or experts
239 (e.g. Arsić et al, 2018; Koshteh, 2018; Mikulić et al, 2018).

240 Conversely, a truly bottom-up land use planning process should allow residents to express their
241 opinion freely, about the issues *they* consider actually important. This is made possible by open-ended
242 questions (as in Lawton & Weaver, 2015; Koshteh, 2018), that are very rarely employed, because open
243 answers require much more time and effort to be processed by the researchers. Simultaneously, open-ended
244 questions require a much greater cognitive endeavour, time availability and commitment by respondents,
245 compared to items rating, thus they may drastically reduce response rates and increase drop-out rates. On
246 the other hand, since open responses cannot be given randomly (as it may happen with numeric scores),
247 they appear more reliable.

248 Thus, the first step of our three-fold SWOT analysis consists in submitting an open-ended questions-
249 based questionnaire to the local community. In appendix we report the questionnaire designed for our
250 empirical application, that regards sustainable tourism development. It can be adjusted to different
251 territorial realities, by replacing ‘tourism’ with the sector expected to drive local development (e.g. mining
252 or forestry), or by indicating ‘local development’ in general, if the area under investigation is endowed with
253 resources that can sustain diverse development lines. It is noteworthy that we do not ask directly about
254 strengths, weaknesses, opportunities and threats, because different respondents may give these terms
255 heterogeneous meanings, especially if unfamiliar with SWOT analysis. Rather, we ask why they would/would
256 not choose their town as touristic destination if they did not live there, and which political, environmental,
257 legal or infrastructural aspects could hinder/help the local development. Then, appointed experts categorize
258 answers properly (distinguishing between external and internal factors), so forming the provisional SWOT
259 matrix, to be discussed in the next methodological step.

260

261 **3.3 A modified Nominal Group Technique**

262 The NGT (Delbecq et al, 1975) is a qualitative method, that originally provided for participants to express
263 their ideas, which are then grouped into categories, discussed, organised and ranked by importance through
264 anonymous voting (Chapple & Murphy, 1996). It has been employed in many different contexts, for example
265 to: explore the residents’ attitudes towards natural reserves (Queiros & Mearns, 2018), develop green

266 economy criteria (Law et al, 2017), plan sustainable tourism (e.g. Khazaei et al, 2015; Xia, 2015), measure
267 socio-cultural carrying capacity of host communities (Mansfeld, & Jonas, 2006; Mansfeld, 2015), empower
268 citizens through participation in decision-making processes (Spencer, 2010). The persistent popularity of NGT
269 is due to its effectiveness in reaching group consensus, synthesising the opinions of participants, with
270 different bargaining power and interests, in the form of group opinion. NGT also avoids the bias derived from
271 unstructured interactions, where certain individuals tend to dominate and other are not given voice or do
272 not dare to speak out (Queiros & Mearns, 2018). Moreover, by involving also the least represented
273 stakeholders, this technique allows to identify a large set of issues and, through in-depth discussion,
274 minimises the bias that can derive from the variability in concepts interpretations (Law et al, 2017). Recent
275 literature often adopts NGT versions, modified as a function of the purposes of specific studies, also
276 combined with other qualitative methods (e.g. Queiros & Mearns, 2018; Dragouni et al, 2018; Duglio et al,
277 2019).

278 We adapted the NGT methodology, to be employed in focus groups, as the second step of our mixed
279 methodology. We suggest to reach a number of participants between eight and fifteen. It is recommended
280 to form a balanced group in terms of gender, age and affiliation to the sector that is expected to lead the
281 local development (following a non-probabilistic purposive sampling design, Queiros & Mearns, 2018).

282 We advise to prepare working posters displaying the provisional SWOT matrix, resulting from the
283 residents' survey, where elements to be disambiguated (as they appear as both strength and weakness or
284 opportunity and threat, e.g. "beautiful natural environment" and "neglected natural environment") should
285 be signalled with a symbol. Participants must be introduced to the goals and context of the focus group, given
286 an explanation of the NGT methodology and an overview of the work schedule. Then, the moderator reads
287 and clarifies the initial SWOT factors, then gives participants five minutes to think of disambiguation of
288 contradictory elements and of other factors they would add (and take notes). Afterward, each participant is
289 assigned at least 5 minutes to discuss his reflections with the group. As the aim of the meeting is not only to
290 collect and verify information, but also to start a dialogue and a collaboration between the public and the
291 private sectors, the local authorities and entrepreneurs, free interactions are very fertile, therefore no

292 maximum time should be set for (interactive) speeches. It is important to encourage everyone, especially the
293 most reticent individuals, to express their opinions, even if already exposed by others, highlighting the
294 importance of exploring each issue under all perspectives. During participants' speeches, the moderator adds
295 all the emerged elements to the matrix and deletes double entries, once reached group consensus on
296 disambiguation. Finally, participants rate the importance of each SWOT factor by using stickers (Dalton,
297 2019), the playful aspect of which favours involvement and adds a little fun. Furthermore, to mitigate the
298 risk that leader participants could influence the others, we suggest to bring about this last step during a
299 coffee break, held in the same working room. This way, the group splits (somebody is engaged at the coffee
300 station, somebody with the snacks dishes, others with stickers, with spontaneous rotation) and the attention
301 on what the others are doing, as well as the social pressure on voting, lowers.

302

303 **3.4 Electre III-based strategy selection**

304 The last step of our three-fold SWOT analysis consists in the application of Electre III, a multicriteria decision
305 analysis algorithm, that ranks alternatives based on pairwise comparisons of the input matrix rows (Roy,
306 1991), in order to reach three objectives. The first objective is that of synthesising the opinions of residents
307 and institutional players consistently with a truly bottom-up participatory approach (i.e. consistently with
308 the logic that underpins the collection procedure – steps 1 and 3 in figure 1), thanks to a dynamic threshold
309 set so that the view of the local community dominates. The synthesis is brought about without compensating
310 high importance (of the SWOT factors) to residents with low importance to institutional players and vice
311 versa, so the information derived from the two sources is combined but treated separately.

312 The second objective of this third step is to prioritize SWOT factors based on both their strategic
313 relevance and their importance to stakeholders. Commonly, only the latter is considered to this aim (e.g.
314 Arsić et al, 2017; Fan & Xue, 2018; Nermin, 2019; Starr et al, 2019), but it could be the case that the top
315 elements of each quadrant do not bind from a strategic point of view. In fact, feasible SWOT-based
316 development strategies consist in grasping opportunities or avoiding threats by leveraging strengths or
317 removing weaknesses (Ioppolo et al, 2013; Kazemi et al, 2018; Koshteh, 2018). If acting on the most

318 important strength/weakness allows to take just an unimportant opportunity or to fight an unimportant
319 threat (or in case the most important opportunity/threat can be addressed by means of an unimportant
320 strength/weakness), no clear strategy is objectively indicated by the SWOT results. To avoid this possibility,
321 we rank each SWOT factor considering also the importance of the elements of the two complementary
322 quadrants (e.g. if the factor concerned is a strength, the complementary quadrants are opportunities and
323 threats; if the element is a threat, the complementary quadrants are strengths and weaknesses) that
324 combine with it to form a consistent development strategy. This way, we reach the third objective of the
325 application of Electre III, that is selecting the most effective strategy for the territory development, just by
326 reporting the strategic actions connected to the first-ranked factor.

327 Therefore, we start by writing a 'strategic array', where each strength and weakness (resulting from
328 the residents' survey and the focus group) is linked to all the opportunities it (hopefully) allows to grasp and
329 all the threats it (hopefully) permits to avoid (e.g. Kazemi et al, 2018, figure 1). An array, instead of a matrix,
330 because it is very unlikely that all the SWOT elements bind with the same number of complementary factors
331 (e.g. a strength may allow to grasp an opportunity only, but another one could permit to fight two threats
332 and to take three opportunities). The strategic array is the reference to build the input matrix, that has all
333 SWOT factors by row and six columns. The first column contains the normalized importance score obtained
334 by each factor in the focus group. To compute it, we count all the stickers of the same colour pasted next to
335 each factor, multiply the number of stickers of the colour meaning 'important' (to the aim of territory
336 development) by 600, the number of stickers representing 'neutral' by 400 and that of stickers meaning
337 'unimportant' by 200. The 'institutional importance score' of each SWOT element is the sum of the
338 mentioned quantities, that is divided by the sum of such scores over all the factors, so that it ranges between
339 0 and 1. The second column of the input matrix contains the relative frequency of each factor in the residents'
340 survey, that is the number of open-ended answers including that factor, divided by the number of all the
341 answers weighted by the number of factors they contain. This way, the 'community-based importance score'
342 is normalized too, although interviewees can indicate various factors in each answer, assuring scale
343 comparability with the institutional importance score.

344 The third column of the input matrix contains the sum of the institutional importance score of the
345 factor and those of the same-sign strategically complementary elements. With 'same-sign' we mean
346 strength-opportunity and weakness-threat (e.g. if the factor concerned is a strength, that binds with two
347 opportunities in the strategic array, this column contains its institutional importance score summed to those
348 of the two opportunities; if the factor is a threat, bound with a strength and a weakness, in this column we
349 put the sum of its institutional importance score and that of the weakness). The fourth column is similar, but
350 institutional importance scores are summed to those of the opposite-sign complementary elements
351 (strength-threat, weakness-opportunity). Values in the fifth and the sixth column are computed the same
352 way of those in the third and fourth respectively, but using community-based importance scores instead of
353 the institutional ones.

354 Each column of the input matrix constitutes a criterion based on which SWOT factors are ranked. The
355 first two columns represent the importance to stakeholders, while the others quantify the strategic relevance
356 of each element. Then each criterion is given a weight. The choice of criteria's weights is crucial in the
357 construction of composite criteria, because the resulting ranking can change drastically when changing
358 weights (Greco et al, 2019). Since no weighting scheme is exempt from criticism, it is up to the researcher to
359 select the one that fits at best his specific research issue (OECD, 2008). Equal weighting (or no weighting) is
360 the forced choice if all the criteria are equally important (Bandura, 2008), otherwise, weights can be data-
361 driven (e.g. Assaker et al, 2014), based on the opinion of experts (e.g. Huang and Peng, 2012) or arbitrarily
362 determined (e.g. Croes, 2011). We choose data-driven weights consistently with the goal of the analysis,
363 equal to the standard deviation of the column divided by the sum of the standard deviations of all the
364 columns for normalization. The rationale is that the more different the criterion's values between SWOT
365 factors, the more important that criterion to rank them.

366 Once built the input matrix, based on the strategic array, and the vector of criteria's weights (σ_k),
367 three thresholds for each criterion (k) must be set. The indifference threshold (q) represents the extent to
368 which the value of a criterion can differ between two SWOT factors, which can still be consider equivalently
369 important for territory development. The preference threshold (π) determines the extent to which the value

370 of a criterion for a SWOT element must be higher than that for another factor, to consider the former more
 371 important than the latter. The veto threshold (v) attributes to a (or a set of) criterion (k^*) a determinancy
 372 above that of all the others (beyond that given by its weight), so that, if a SWOT element reaches higher
 373 levels of all the other criteria, but the second outperforms it with reference to k^* by v , the latter is more
 374 important for the territory development. Then, $\pi \leq q \leq v$.

375 Electre III proceeds by comparing the values of each criterion between two SWOT factors at a time
 376 (k_d, k_j for the pairwise comparison of the values of criterion k for the d -th and the j -th factor). The overall
 377 concordance index $C(k_d, k_j)$, ranging between 0 and 1, is the weighted average of each criterion's

378 $c(k_d, k_j)$:

379

$$380 \quad c(k_d, k_j) = \begin{cases} 1 & \text{if } k_d \geq k_j - q_j(k_d) \\ 0 & \text{if } k_d + \pi_j(k_d) \leq k_j \\ \frac{k_d - k_j + \pi_j(k_d)}{\pi_j(k_d) - q_j(k_d)} & \text{otherwise} \end{cases} \quad (1)$$

381

382 Thus, $c(k_d, k_j)$ is equal to 1 if the d -th SWOT factor is equivalently important or more important for the issue
 383 at stake than the j -th element; equal to 0 if the d -th factor is not more important than the j -th element;
 384 $c(k_d, k_j) \in [0,1]$ if none of the two factors is clearly more important than the other. Any outranking of the
 385 j -th element over the d -th factor, as measured by the concordance index, is overruled if $k_d^* \geq k_j^*$ by a value
 386 larger than v for the most determinant (veto) criterion/a. To ensure a bottom-up approach to land use
 387 policy-making, the veto criteria are those based on residents' opinions.

388 The situation where the d -th factor is generally more important than the j -th element, but the latter
 389 is ranked above the former (i.e. $k_j^* \geq k_d^* + q_j(k_d)$), is taken into account through the discordance index
 390 $Z(k_d, k_j)$. It ranges between 0 and 1, being the weighted average of each criterion's $z(k_d, k_j)$:

391

$$392 \quad z(k_d, k_j) = \begin{cases} 0 & \text{if } k_j \leq k_d + \pi_j(k_d) \\ 1 & \text{if } k_j \geq k_d + v_j(k_d) \\ \frac{k_j - k_d - \pi_j(k_d)}{v_j(k_d) - \pi_j(k_d)} & \text{otherwise} \end{cases} \quad (2)$$

393

394 where if $z(k_d, k_j) = 1$, the j -th element is not more important than the d -th factor; if $z(k_d, k_j) = 0$, the
395 former is more important and the difference is higher than v , while the third case represents the
396 intermediate situation.

397 Afterwards, the measures defined above are employed in the computation of the $F^2 - F$ degrees
398 of credibility (with F the number of SWOT factors all together) of the resulting outrankings, $B(k_d, k_j)$:

399

$$400 \quad B(k_d, k_j) = C(k_d, k_j) \prod_{z(k_d, k_j) > c(k_d, k_j)} \frac{1 - z(k_d, k_j)}{1 - C(k_d, k_j)} \quad (3)$$

401

402 $B(k_d, k_j)$ values are compared pairwise twice. First starting from the highest and descending to the lowest
403 (first pre-order), then vice versa (second pre-order) as follows. The outranking credibility of the SWOT
404 element ranked first in each pre-ordered is the reference level for the others: $\lambda_{i,1} = \max\{B(k_d, k_j) \forall d, j\}$ in
405 the first pre-order and $\lambda_{i,1} = \min\{B(k_d, k_j) \forall d, j\}$ in the second one. Then, the other factors are ranked by
406 confronting their outranking credibility that, to be assigned the next rank, must be greater (smaller in the
407 second pre-order) than the discrimination threshold ($\lambda_{I,r}$ for the first pre-order, $\lambda_{II,r}$ for the second pre-
408 order, $r = 2, \dots, F$) linked to the credibility value by a linear relation:

409

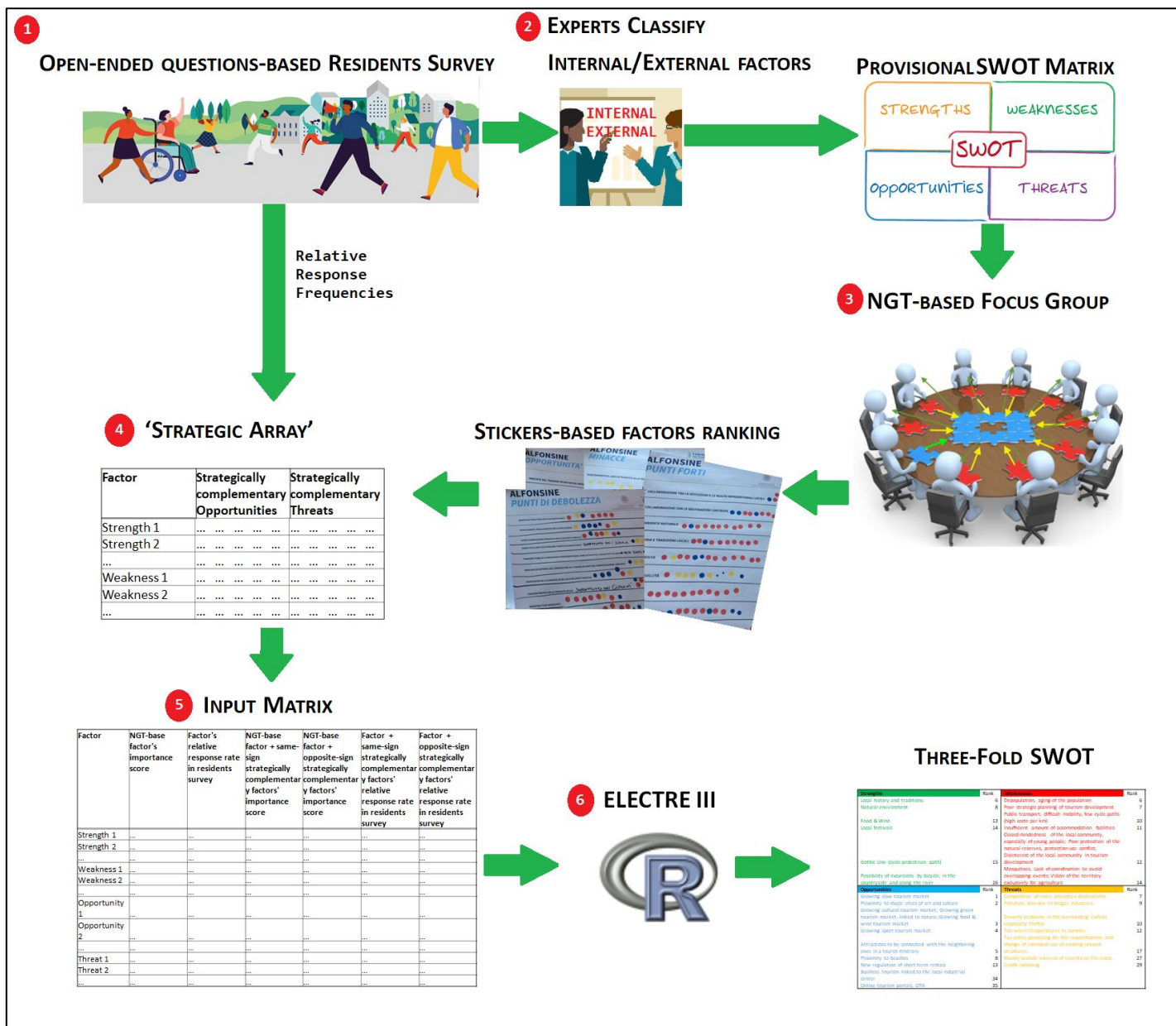
$$410 \quad \lambda_r = \alpha + \beta \lambda_{r-1} \quad (4)$$

411

412 If $B(k_d, k_j) > \lambda_{r-1}$ and $B(k_d, k_j) - B(k_j, k_d) > B(\lambda_r)$, the d -th factor is given a score of +1, while the j -th
413 element is given a score of -1, as the former is more helpful than the latter to the aim of territory
414 sustainable development. The final ranking is obtained based on the sum of such scores (Mazouk, 2011).

415

416 The whole procedure is described in Figure 1.



417

418 Figure 1. Schema of the procedure to construct the three-fold SWOT matrix¹.

419

420 **4. Empirical application**

421 **4.1 Empirical setting**

422 Alfonsine is a municipality of 106,79 square kilometers in the hinterland of lowland Ravenna province, with
 423 a population of 11,993 inhabitants, according to the figures provided by local policy-makers. It hosts a natural

¹ Images' sources: <https://residentvoiceindex.com/>; https://bow-now.com/media/column/swot_analysis; <https://www.valut-azione.net/strumenti-e-metodi/ngt-nominal-group-technique/>; <https://www.kpl.gov/catalog/item/?i=ent://LYNDA/0/LYNDA:105847>

424 reserve, included in the Po Delta Park, that offers the possibility of excursions by bicycle, in the countryside
425 and along the river. The local cultural heritage includes the Sanctuary of the Madonna del Bosco, the
426 birthplace of the main Italian poet of Neoclassicism, Vincenzo Monti, as well as many sites of historical
427 interest, related to the Partisan Resistance. Notwithstanding the rich heritage of Alfonsine, tourist arrivals
428 were just 846 in 2015 (last available figure, provided by local policy-makers). Most visitors are school classes,
429 business travellers and people stopping in the area just for a touch-and-go visit. The local GDP was 175.44
430 million euro in 2016 (last available figure, provided by local policy-makers), mainly produced by the local
431 factories, in particular the fruit processing and biogas industries. However, the local economic growth cannot
432 further rely on the expansion of industrial plants, that would endanger too much the flora and wildlife of the
433 natural reserve.

434 We selected this particular case study, because this conflict between the traditional driver of
435 economic growth, the conservation of the natural resources and the deployment of the local tourism
436 potential, that implies contrasting preferences on land use policies, makes this area especially interesting
437 from the perspective of sustainable development. The focus on sustainability makes this empirical
438 application very current, given the climate change threat and the decline in biodiversity and environmental
439 quality, that central Europe regions are experiencing In fact, sustainable tourism promises to combine
440 biodiversity conservation and regional growth through community-managed development processes (Coria
441 & Calfucura, 2012; Antonakakis et al, 2015; Dragouni & Fouseki, 2017; Kertész et al, 2019).

442 Thus, we applied our SWOT methodology, in order to retrieved information about the hidden
443 attractions of the territory (Alexander et al, 2018; Sawatsuk et al, 2018) and identify the optimal strategy to
444 develop sustainable tourism. The residents' survey (first step) was brought about between June and
445 September 2019 by local experts, who know the area from within and are much trusted by the host
446 community. This latter aspect is fundamental, because we relied on availability sampling (Daniel, 2012), as it
447 is very common in surveys of this kind, and residents are more available to answer if interviewed by known
448 and trusted local people. In fact, 99 face-to-face interviews were carried out, returning 100% valid
449 questionnaires. The NGT-based focus group was hold on November the 27th 2019 with 8 participants: the

450 mayor and a city council representative, the local representative of the confederation of artisans, the 3 main
451 entrepreneurs in the local tourism sector, a member of the natural heritage management body and one of
452 the cultural heritage management body. Participant were selected due either to their experience and
453 knowledge of potentials and criticalities of local businesses and heritage, or for their institutional role as
454 policy-makers.

455

456 **4.2 Results**

457 Residents' answers to the open-ended questions-based survey highlight that, to the aim of developing
458 sustainable tourism, Alfonsine can leverage on the long-lasting collaboration between local institutions and
459 businesses, but also with neighboring destinations, which offer complementary tourist attractions.
460 Moreover, the beauty of the pristine natural environment was pointed out as a main strength, besides the
461 local history and folk traditions. Also the widest labyrinth in Europe inside a corn field, hosted in Alfonsine,
462 the quiet of the place, museums and local festivals, traditional food and wine were identified as pillars of the
463 local tourism supply. In addition, the low price levels and bike-friendliness of the area should appeal tourists.
464 Respondents highlighted that the main local weaknesses lie in the lack of accommodation facilities,
465 depopulation and consequent lack of human resources, poor strategic planning of tourism development,
466 insufficient quantity and variety of events and tourist attractions. Tourist development finds obstacles also
467 in the poor public transport and rail connections, in the scarce interest of the local community for the tourism
468 sector and its closedness towards innovations. Moreover, citizens complain about the lack of funds for
469 investments, in particular for restoring and conserving historical buildings.

470 Before COVID-19, residents believed that the recent growth of the sport tourism, cultural tourism,
471 food and wine tourism, green tourism and slow tourism markets represented an important opportunity for
472 the local sustainable tourism development. Moreover, the proximity to the beaches and to mayor cities of
473 art and culture, consitutes an occasion to intercept some of many tourists targeting those mature
474 destinations, who could be interested in adding more variety to their trip, with a visit to Alfonsine.

475 Meanwhile, the air and water pollution, mainly due to biogas plants, that damage the ecosystem and speed
 476 up the decline of the local biodiversity, especially with reference to fish species, represents a serious threat
 477 to the possibility of Alfonsine to develop green and sport (related to fishing) tourism. Further external factors
 478 that may hinder sustainable tourism development, to the eyes of residents, are the unpleasantly warm
 479 temperatures in the summer and the fierce competition from more successful destinations with a similar
 480 tourism offer.

481 Descriptive statistics of the respondents are displayed in table 1.

482

SEX		AGE CLASS				
Female	Male	15-24	25-34	35-44	45-64	≥65
65%	35%	7%	16%	23%	29%	24%
EDUCATION						
Middle school		High school		University degree		NA
10%		59%		22%		9%
INCOME (Euro)						
5.000-9.999		10.000-19.999		20.000-39.999		NA
1%		16%		10%		73%
OCCUPATION						
Employee	Housewife	Retired	Self-employed	Student	Unemployed	NA
42%	2%	23%	24%	2%	3%	3%
SECTOR OF OCCUPATION						
Agriculture	Industry	Tourism	Non-tourism-related Services			NA
2%	12%	9%	73%			4%

483 Table 1. Descriptive statistics of the residents sample

484

485 During the NGT-based focus group, we observed the well-known tendency of the weaker stakeholders
 486 to adapt to the position of the politically most powerful (or socially dominant) subjects (Van Tejlilingen
 487 et al, 2006). On the one side, the presence of local authorities constituted a precious occasion for the
 488 civil society to speak out directly to politics on a neutral ground, the neutrality of which was ensured by
 489 the academic moderators. On the other side, this political presence influenced the interactions between
 490 participants, by playing down complaints against the local administration. This mechanism may have
 491 biased the resulting development strategy and land use policy (Currie et al, 2009), if the SWOT analysis
 492 were based on the focus group only, or if residents were asked questions about topics pre-selected in

493 the focus group. For example, it is likely that factors like ‘the lack of support for tourism entrepreneurs
494 from the municipal administration’ would have not emerged.

495 Compared to residents, institutional players took into greater consideration the problems and the
496 development perspectives of local companies (possibly also because the owners of the main tourism-
497 related businesses were present). Entrepreneurs felt strongly encouraged by finding unexpectedly that
498 they all agreed on the changes to be made to land use allocation, in order to boost tourism development
499 and sustainable growth. Their unity of purpose gave them strength in front of the local administration
500 and their understanding of the potentials of the territory brought to the politics’ knowledge interesting
501 opportunities. The latter might be taken with no public expenses, just by (bureaucratically) adjusting the
502 intended use of certain areas of private land, in full respect of the natural reserves. For example, some
503 business owners would like to convert old abandoned farmhouses into accommodation structures or
504 school farms, but they cannot get the permission. The political representatives showed availability to
505 remove such obstacles, confirming the capability of an actual participatory process to induce a
506 community-based entrepreneurial land use (as claimed by Cucari et al, 2019), of which traditional
507 decision-makers may never have thought. Alfonsine is not new to innovative land use plans, brought
508 about by private residents, as the owner of a local agritourism built the widest labyrinth in Europe inside
509 a corn field, that is currently the most appreciated attraction of the area (Stacchini, 2020).

510 Compared to the institutional players’ concerns, from the residents’ answers it emerges a greater
511 sensitivity to the environmental criticalities, a stronger will to protect the natural resources and ensure
512 a sustainable land use. The local community tends to see the industrial center of Alfonsine as a threat,
513 due to pollution and possible industrial spills in waters where protected fish species can be endangered.
514 Conversely, institutional players consider the industrial center as an opportunity to develop business
515 tourism and also school tourism. This finding brings a relevant theoretical contribution to the extant
516 literature, which tends to assume that participatory processes lead to a lower or equal consideration of
517 heritage protection, compared to non-participatory ones (Dragouni et al, 2018). While residents of
518 Alfonsine showed a greater environmental consciousness and commitment to biodiversity conservation.

519 The experts of the natural and cultural heritage were decisive, in the focus group, as they pointed
520 out cultural events of the surroundings (e.g. the Streets of Dante) that could be connected to local
521 cultural traditions of which the local community, especially the young people, is losing awareness. They
522 suggested that residents should be trained to rediscover the cultural heritage of their territory, so that
523 they can promote Alfonsine as a cultural destination, for example on social media, and devise new
524 events and tourism attractions related to the local history and traditions. The experts brought also an
525 important contribution by highlighting the characters of attractiveness/dissatisfaction of the SWOT
526 factors from the perspective of tourists, which was partly missing in the local community's answers. In
527 fact, residents are used to think of the land of Alfonsine for rural use only, identifying economic growth
528 exclusively with the expansion of industrial plants, which they fear for the serious impact on the
529 environmental quality. They can hardly believe that their town can become a successful touristic
530 destination, because it is very different from the typical Italian destination (main art cities, beaches,
531 alpine resorts). Therefore, it is crucial that, in the prosecution of the Project, tourism experts and
532 academic partners convey trust in the fact that this territorial diversity, that is the unique place identity
533 of this small land, can be the driver of sustainable tourism development, instead of an obstacle,
534 especially after the COVID-19 outbreak and during the Ecological Transition.

535 The 'strategic array', resulting from linking each strength and weakness to the related opportunities
536 and threats, can be read in terms of 43 different possible sustainable development strategies (among
537 which the last step of our methodology selects the optimal one. See table 3 in Appendix). Turning to the
538 Elctre III algorithm, since the input matrix contained many values equal for lots of SWOT factors, we
539 selected the thresholds parameters that minimize the number of tied ranks, to reduce the policy-
540 makers' arbitrariness. The linear equations describing the dynamic thresholds employed in this
541 application are as follows:

542

$$543 \quad q_j(k_d) = 40 - 0.1k_d \quad (5)$$

$$544 \quad \pi_j(k_d) = 20 - 0.2k_d \quad (6)$$

545
$$v_j(k_{ResI}) = 0.5 + 2k_d \quad (7)$$

546
$$v_j(k_{ResII}) = 0.25 + 1k_d \quad (8)$$

547

548 The resulting SWOT matrix is shown in table 2.

549

Strengths	Rank	Weaknesses	Rank
Local history and traditions	6	Depopulation, aging of the population	6
Natural environment	8	Poor strategic planning of tourism development	7
Food & Wine	13	Public transport, difficult mobility, few cycle paths (high costs per km)	10
Local festivals	14	Insufficient amount of accommodation facilities	11
Gothic Line (cycle-pedestrian path)	15	Closed-mindedness of the local community, especially of young people; Poor protection of the natural reserves, protection-use conflict; Disinterest of the local community in tourism development	12
Possibility of excursions by bicycle, in the countryside and along the river	16	Mosquitoes; Lack of coordination to avoid overlapping events; Vision of the territory exclusively for agriculture	14
Museums	17	Insufficient quantity of restaurants; Ruining abandoned buildings, neglected cultural and cultural heritage	16
Alfonsine Liberation Day (April 10)	18	Scarcity of tourist services	19
Birdwatching	20	Restrictions on opening hours of natural attractions	20
Labyrinth	25	Insufficient amount of events and tourist attractions, especially for young people	21
Tranquility	28	Lack of public support for local trade	22
Typical Romagnola hospitality	29	Lack of training on tourism and local culture, especially in young people	23
Environmental education initiatives	31	Lack of support to tourism entrepreneurs by the municipal administration	26
Fruit processing industry	33	Lack of funds available to make investments	27
Presence of the railway; Low prices	36	Little collaboration with neighboring destinations	30
Central and strategic geographical position	37	Inadequate infrastructures	31
		Lack of destination promotion and marketing initiatives	32
		Pessimism, lack of predisposition to entrepreneurship and innovation, especially in young people	33
		Lack of collaboration and communication between institutions and local business realities; Lack of an information center	34
		Few meeting places for young people	38
Opportunities	Rank	Threats	Rank
Growing slow tourism market	1	Competition of more attractive destinations.	7
Proximity to mayor cities of art and culture	2	Pollution, also due to biogas industries.	9
Growing cultural tourism market; Growing green tourism market, linked to nature; Growing food & wine tourism market	3	Security problems in the surrounding valleys (especially thefts).	10
Growing sport tourism market	4	Too warm temperatures in summer.	12
Attractions to be connected with the neighboring ones in a tourist itinerary	5	Tax policy penalizing for the requalification and change of intended use of existing unused structures.	17
Proximity to beaches	8	Mainly seaside interest of tourists on the coast.	27
New regulation of short-term rentals	13	Credit rationing.	29
Credit consortium, subsidized loans, public guarantees for investments	16		
Delta park; School tourism	17		
Streets of Dante	20		
Demand for niche tourism	24		
Business tourism linked to the local industrial center	34		
Online tourism portals, OTA	35		

Table 2. Final SWOT Matrix. The number beside each factor is the rank it obtained in the unique ranking (including all the factors, not divided by quadrant) yielded by Electre III.

550
551
552

553 The final SWOT matrix shows the factors of in quadrant by importance, and their final overall rank
554 (where 1 indicates the most important factor and 38 the least important one). Then, the optimal strategy
555 is easily identified by looking at the strategic array (appendix, table 3) and selecting the row
556 corresponding to the SWOT factor ranked first, which turns out to be the opportunity constituted by the
557 growing demand for slow tourism. By leveraging on the local history and traditions, the typical
558 enogastronomy, the Gothic Line cycle-pedestrian path, the tranquillity of this small rural area and the
559 typical Romagnola hospitality, Alfonsine might attract many slow tourists. Although data were collected
560 before the COVID-19 pandemic, this development strategy, recommended by our three-fold SWOT,
561 remains valid and looks even more promising in the post-COVID-19 era. If the pandemic lasts, we expect
562 travellers to continue seeking for the least crowded destinations, offering wide green spaces where
563 distances can be comfortably kept, minimizing the risk of infection, maximizing safety and relax.
564 Moreover, if mobility restrictions persist, proximity tourism will continue being a forced choice and
565 Alfonsine will benefit also from its central geographic position in the region. Whether the pandemic
566 ends, the Ecological Transition, that is being prepared in Europe, might affect mobility and tourism
567 demand similarly (European Environment Agency, 2016). Thus, any case Alfonsine should enjoy a
568 thriving development, if the strategy yielded by our SWOT is effectively implemented.

569 However, according with table 2, many weaknesses could prevent the successful development of the
570 town based on slow tourism. Given the centrality of the resident-visitor interaction for this specific
571 tourism product, the depopulation, the closed-mindedness of the host community, the lack of training
572 in tourism and local culture (especially in young people), and the disinterest in tourism development
573 must be overcome. Moreover, the COVID-19-related fears could jeopardize the typical Romagnola
574 hospitality, as residents may become hostile towards visitors (Kour et al, 2020). Therefore, in the
575 prosecution of the Project, a strong communication effort is being devoted to mitigating the possible
576 fears of the local community, by remarking that the territory of Alfonsine, thanks to its natural reserves,
577 rural areas and peripherality, is the ideal place for safe tourism. Education programs, also integrated in
578 the school curriculum, and awareness-raising campaigns might lead residents to (re)discover the

579 potentials of their own territory and understand how it could configure an attractive tourism offer,
580 discarding the dominant vision of the territory as an exclusively rural area. It is crucial to instil trust in
581 the possibility to reshape the local reality the way that encourages young people and families to remain
582 in their origin town and work in the tourism sector, so that also the tourist services gap will be filled.

583 Based on the results of our application, the priority weakness is the poor strategic planning of tourism
584 development. The need of a sustainable (community-based) tourism development planning proved to
585 have become even more pressing after the COVID-19 outbreak, in summer 2020, when Italian peripheral
586 areas off the beaten tourism tracks were unexpectedly stormed by visitors, in search for safe and green
587 destinations. Travellers chose places they believed nobody would visit, as usual, finding local hospitality
588 businesses and destination managers unprepared, and straining the resources of the territory. In order
589 to grasp future similar opportunities sustainably, it is crucial that local businesses and land management
590 institutions organize access to attractions, spaces and services to host tourist inflows larger than could
591 be expected in the past. Thus, the sustainability of the tourism sector can be significantly improved
592 through a bottom-up development planning approach based on the present methodology and the
593 consequences of the pandemics on the tourism market trends make our work even more topical.

594 When comparing the SWOT matrix resulting from the application of our methodology (table 2) with
595 that obtained by weighting residents' survey responses by their relative frequency (Appendix: table 4),
596 as well as with that emerging from the NGT-based focus group with institutional players (Appendix: table
597 5), the impact of the consideration of the factors' strategic relevance in the prioritization algorithm is
598 apparent. This evidence suggests that neither residents nor institutional representatives autonomously
599 took into account the interconnections of factors impacting the local development nor the feasibility of
600 the consequent strategic actions, in the formulation of their opinions.

601

602

603 **5. Discussion and conclusion**

604 **5.1 Discussion**

605 SWOT analysis is an informative tool very frequently employed in land use planning processes, especially
606 in those based on community participation, because of its ease of construction and interpretation. The
607 traditional qualitative method did not allow to prioritize SWOT factors through a transparent data-
608 driven technique. Thus, local authorities could devise a strategy/policy arbitrarily, exploiting the
609 traditional matrix as a scientific legitimation of - possibly unpopular - political decisions, taken
610 independently on the residents' priorities. Quite recent literature proposed improved SWOT versions,
611 based on mixed methods that reduce the decision-making arbitrariness, ranking factors by importance
612 scores. Among those, the QSPM (Quantitative Strategic Planning Matrix) is based on importance
613 judgements, collected through a survey about pre-defined SWOT factors, that does not allow
614 interviewees to freely express their own views, and thus hinders a truly bottom-up land use planning
615 process. This drawback affects also the Analytic Hierarchy Process (AHP) and the Analytic Network
616 Process (ANP), that are based on pairwise comparisons of factors by interviewees. For the sake of
617 feasibility, a few factors can be considered in these methods and they are normally pre-selected or pre-
618 aggregated by the researcher, reintroducing some arbitrariness. The methodology proposed in this
619 paper proposes to solve this problem by interviewing residents first, through open-ended questions
620 allowing them to express their ideas unconditionally, and involving institutional players next, in a
621 modified NGT-based focus group.

622 Another source of arbitrariness affecting the QSPM consists in its tendency to yield many tied ranks,
623 leaving the decision-maker free to pick out. This issue can be solved with both AHP and ANP methods,
624 but at the cost of a lot of time and effort from interviewees, who must compare many pairs of factors.
625 In this regard, the methodology proposed in this paper introduces an important improvement, by using
626 Electre III, which permits to minimize tied ranks, by relying on pairwise comparisons and also through
627 thresholds calibration, but has the advantage of making comparisons automatically, without requiring
628 so much time and efforts from interviewees.

629 Moreover, AHP and ANP rank factors on the basis of a single criterion, while our Electre III-based
630 methodology allows to consider multiple criteria, but also multiple sources of information, which can be

631 treated separately, avoiding the compensation between low scores for some criteria and high scores for
632 others. This is a further desirable methodological improvement brought by this study, because it permits
633 to process opinions of different stakeholders groups within a single analysis, instead of performing a
634 separate analysis for each group and then compare results.

635 In addition, none of three mentioned methods takes into account the feasibility of the output. In
636 fact, it can happen that the top-ranked factors in each quadrant of the matrix do not match in a feasible
637 strategy. In such cases, some arbitrariness is reintroduced, as policy-makers can pick the land use policy
638 they like the most, between those compatible with the SWOT results. This is a reason of the persisting
639 doubts about the effectiveness and cost-benefit convenience of participatory decision-making
640 processes. As highlighted by Dragouni et al. (2018), community participation remains an “idealistic”
641 concept as far as the decisional process or the outcomes are unfeasible. By introducing the ‘strategic
642 relevance’ (as defined in subsection 3.4) as an additional criterion to prioritize the SWOT matrix, we
643 bring a decisive innovation, that ensures the feasibility of development plans (as required by Carrión
644 Mero et al, 2018). Moreover, the output of our three-fold SWOT points out a single (feasible) optimal
645 strategy, instead of a bundle of alternatives among which to choose arbitrarily.

646 The application of Electre III makes also the democratic decision-making process more feasible and
647 less time-consuming with reference to the formation of consensus, that is reached through an algorithm,
648 harmonizing different opinions automatically, rather than by favouring the adjustment of stakeholders’
649 ideas through social dynamics of interactive feedbacks (Currie et al, 2009). The latter mechanism may
650 be not only time and cost-inefficient, but also biased by the tendency of the weaker stakeholders to
651 adapt to the position of the politically most powerful or socially dominant subjects (Van Teijlingen et al,
652 2006). If the SWOT analysis were based on the focus group only, or if residents were asked questions
653 about topics pre-selected in the focus group, it is likely that factors uncomfortable for the most powerful
654 stakeholders would have not emerged. But we interviewed residents first, letting them express their
655 vision freely, and, after collecting the institutional views and perspectives through the NGT-based focus
656 group, we set Electre III so that their opinions prevail over those added by institutional players. Thus,

657 the most powerful stakeholders could not avoid addressing uncomfortable issues rose by the local
658 community and, although these were downrated in the NGT procedure, their final priority is determined
659 more than proportionally by residents.

660

661 We demonstrated the proposed methodology through an empirical application to the case of Alfonsine,
662 a small Italian rural area, where land use planning must address conflicting interests between industrial
663 expansion, conservation of the local biodiversity and environmental quality, and the structuring of a
664 sustainable tourism offer. The optimal strategy, detected through our three-fold SWOT, consists in
665 leveraging on the local history and traditions, the typical enogastronomy, the Gothic Line cycle-
666 pedestrian path, the tranquillity of this small rural area and the typical Romagnola hospitality, in order
667 to attract slow tourists, an increasing market segment, at least before the COVID-19 pandemic.
668 However, also in case the pandemic persists, the green wide spaces and the absence of crowd, that
669 characterize Alfonsine, should be even more attractive, for the safety and security they ensure.
670 However, given the centrality of the resident-visitor interaction in slow tourism, the depopulation, the
671 closed-mindedness of the host community, the lack of training in tourism and local culture (especially in
672 young people), and the disinterest in tourism development must be overcome, for this slow tourism-
673 based development strategy to be effective.

674

675 **5.2 Limitations and future research directions**

676 Although our three-fold methodology inherits from the traditional SWOT the advantage of being easily
677 interpreted, its complexity of construction represents its main limitation. However, simpler methods do
678 not offer the functionalities we needed to bring more democracy and feasibility, as well as less
679 arbitrariness, in the decision-making process. Thus, this innovative SWOT can be accomplished in land
680 use planning projects providing for the contribution of heritage experts and universities, who can bring
681 about advanced analyses like this. However, this limit could be alleviated by automatizing the procedure
682 that leads from the 'strategic array' to the final output, for example with an user-friendly R package.

683 Another limitation of this work consists in the fact that, despite having significantly reduced arbitrariness
684 in the selection of the optimal strategy, the choice of the sector expected to drive the development of
685 the territory remains top-down. In our empirical application, this issue is mitigated by the circumstance
686 that Alfonsine was selected for a cross-border tourism development project by the European Union,
687 that evaluated the suitability of this rural area to become a sustainable destination and the consistency
688 of the Project's goals with the identity of the territory. However, future research could improve the
689 proposed methodology by adding a preliminary phase, when residents are given adequate tools to
690 identify the sector on which they want to lever the local development. In our application, we built the
691 strategic array following the common matching logic (Kazemi et al, 2018). We had no time nor resources
692 to construct the array together with institutional players, in a further focus group, based on a sound
693 qualitative method. But trying this path could be interesting, as it may be the case that some local
694 specificities, related to the place identity, emerge. In general, the proposed SWOT methodology might
695 bring interesting insights if used in further researches focusing on different areas, with different land
696 use traditions and development drivers.

697 The methodology presented in this paper can be fruitfully employed in all types of land use policy-
698 making, territorial planning and bottom-up development processes. In view of the environmental
699 challenges the world is currently facing, mainly due to climate change, our three-fold SWOT, founded
700 on a sustainability-oriented participatory approach, can be especially useful for elaborating green gas
701 house emissions and carbon reduction policies able to take into account the local community's socio-
702 economic needs and perspectives. Similarly, this methodology can be employed in re-deigning urban
703 mobility, switching to renewable energy sources, but also for devising a strategy for implementing the
704 digital transition or welcoming the fourth industrial revolution the way that each peculiar community
705 perceives as the most beneficial and smoothest.

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