

Urban Food Policies and their influence on the development of Territorial Short Food Supply Chains: The case of cities in Colombia and Spain

1. Introduction

In the last decades, different economic, social, environmental and institutional factors have shaped a scenario for food, in which a Global Agrifood System (GAS) has imposed itself over time. GAS is formed by transnational corporations, large agri-food companies and corporate retailers (Ilbery et al., 2004; Whatmore et al., 2003). In this system, food provisioning is characterised by three mutually reinforcing processes: 1) disconnecting (farmers and consumers); 2) disembedding (food and territory); and 3) ‘disentwining’ (farmers and suppliers) (Ilbery and Maye, 2015).

However, the design and diffusion of different, more sustainable Food Systems (FS) has become a high priority issue both at the scientific level and the international political agenda. The challenges of achieving more sustainable FS have involved a number of transitions in the public policy sphere, implying a change from the classical sectoral policy approach, which sometimes is fragmented and hard to implement (Lang and Barling, 2012; Sonnino et al., 2019) to a new integrated and systemic approach (Galli et al., 2020; IPES Food, 2019). In this regard, there is considerable debate in the academic literature over land use and food security and the range of possible futures for the FS (Mora et al., 2020). Some studies have identified urbanization, food consumption and diets as key drivers of future land use (Fritsche et al., 2015). For example, there are currently competing forms of land use that deepen the dependence of urban food systems on GAS, leading to a reduction in urban food production and urban food security (Olsson et al., 2016). This situation is caused by the lack of a specific policy for food production in peri-urban and urban regions, as there is for land use for housing areas and other building activities, recreational activities, as well as for the conservation of biodiversity and cultural values (Morgan, 2015).

The goals of new food policies should include coordinating and aligning actions across different policy domains and levels of government (IPES Food, 2019), promoting the participation of all actors in the food territory (FT) (Galli et al., 2020), as well as addressing current challenges and priorities such as the Sustainable Development Goals (SDGs). In the latter area, Alternative Food Networks (AFN) emerge as an innovative vehicle for creating a

34 more sustainable food paradigm, which aims to simultaneously respond to demands of food
35 security and sustainability (Marsden and Morley, 2014).

36 Recent examples, both empirical and theoretical, have positioned cities as the optimal
37 scale for Urban Food Policy (UFP) innovation (Brand et al., 2019; Moragues-Faus and Sonnino,
38 2018; Moschitz, 2018; Sonnino, 2016; Sonnino et al., 2019), as they foster understanding of
39 local FS dynamics and dialogue between civil society and local governments. This new
40 approach also demands a broad reorganisation of the strategic tools in UFP to drive ‘bottom-
41 up’ processes (Galli et al., 2020; Reina-Usuga et al., 2020).

42 However, the transition towards an integrated approach in public policies is not achieving the
43 expected results, neither at the level of integration nor implementation (Galli et al., 2020; Pe'er
44 et al., 2019). For example, in the area of sustainable food systems, despite the fact that many
45 cities have adopted UFPs, which include AFN; and many others have joined global initiatives
46 such as the Milan Urban Food Policy Pact (MUFPP), which is first of all a Pact signed by city's
47 mayors ([https://www.milanurbanfoodpolicypact.org/wp-content/uploads/2020/12/Milan-
48 Urban-Food-Policy-Pact-EN.pdf](https://www.milanurbanfoodpolicypact.org/wp-content/uploads/2020/12/Milan-Urban-Food-Policy-Pact-EN.pdf)); improvements in food security, effective stakeholder
49 participation and legitimacy of processes are not having the expected impacts (Blay-Palmer et
50 al, 2020; Brand et al., 2019; Doernberg et al., 2019; Moschitz, 2018; Sonnino et al., 2019).
51 Sonnino et al. (2019) highlight that an increasing number of municipalities are experimenting
52 without financial support and without an overarching policy framework. This suggests the need
53 for more tools and design elements for UFPs to truly achieve their purpose.

54 Although the approaches proposed for UFPs allude to an integrative focus, they have
55 not yet embraced a territorial perspective considering all the elements that shape and define the
56 territory. Therefore, the key factors that could explain the success in promoting sustainable
57 urban food systems, as well as the most appropriate mechanisms and UFPs to foster them, have
58 not yet been sufficiently identified. This manuscript presents an analysis of the boost that UFPs
59 have given to one of the most widespread forms of AFN, the Territorial Short Food Supply
60 Chains (TSFSCs), through a comparative study of two cities with different geographical,
61 demographic and UFP integration features. The specific objectives are: 1) to prioritise the
62 territorial factors that strengthen TSFSCs in the cities of Bogotá (Colombia) and Córdoba
63 (Spain), one of these factors being UFP; 2) to identify how the UFPs interrelate with the other
64 prioritised territorial factors in both cities, and 3) to analyse the influence of UFP
65 implementation on the development of TSFSCs, through social capital analysis, in each city. In

66 the first section of this paper, we show a framework over territorial approach based on Latin¹
67 literature of territorial agrifood system and AFN, which brings to the concept of Territorial
68 Short Food Supply Chain (TSFSC). In the second section, we apply this approach to two case
69 studies – Bogotá (Colombia) and Córdoba (Spain) - and conclude with a discussion of how
70 UFP can foster TSFSCs as a sustainable vehicle for the FS.

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72 **2. Territorial approach: A theoretical framework**

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74 **2.1 From space to territory**

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76 The approach to the food issue from different geographies highlights the singularity of
77 the narratives that emerge in each place and that shape food strategies (Sonnino, 2016), which
78 are limited or enhanced by the territorial factors specific to the place where they are developed.
79 Here, the notion of territory goes beyond the reductionist and static idea of a mere given
80 physical space, provider of natural and material resources, to be conceived as a process of social
81 construction determined by local actors and their interactions to enhance the value of territorial
82 resources (Pecqueur, 2001; Sánchez-Zamora et al., 2014). Thus, territory can be understood as
83 a complex system composed by: i) the topographic metric space and its territorial resources
84 (Lamara, 2009; Moine, 2006).; ii) territorial agents, who are the actors that make territory
85 (Campagne and Pecqueur, 2012), and iii) the institutional agreements, with the potential for
86 generating social capital (Lamara, 2009; Moine, 2006; Woolcock and Narayan, 2000). The
87 specific combination of the three elements mentioned above, lead to the territorial factors or
88 also known as territorial capitals (Emery and Flora, 2006). Thus, the interaction of territorial
89 factors influences the processes of territorial organisation (D'Aquino, 2002) and is closely
90 linked to the study of collective action (Moyano, 2005) and governance (Candel, 2014).

91 The territorial approach has extensive implications for policies linked to rural areas
92 (FAO/OCDE/FNUDC, 2016), underpinned by the theoretical framework of the endogenous
93 development. For instance, the Common Agricultural Policy (CAP) and in particular its 'second
94 pillar' – the Rural Development Regulation -, includes it. The dimension associated to local
95 development highlights the use of endogenous resources available in the territory, to stimulate
96 and promote economic growth (Vázquez Barquero, 2005) and to overcome the challenges of
97 food security (FAO/OCDE/FNUDC, 2016). This approach acknowledges the heterogeneity of

¹ *Latin* refers here to countries where Romance languages are spoken (mainly French, Italian, Spanish and Portuguese) both in southern Europe and Latin America.

98 the features of the territories and communities, and encourages the representation of local
99 priorities in the decision-making processes (Ramos and Garrido, 2014). Therefore, the
100 territorial approach could be a useful complement to achieve integrated UFPs and increase their
101 capacity to transform urban FS.

102

103 *2.2 Territory and Alternative Food Networks*

104

105 In the academic literature, two theoretical perspectives are differentiated to tackle the
106 concept of the AFN: the first focuses on the role of production and the possible contribution of
107 this type of network to sustainable rural development (Goodman et al., 2012; Ilbery et al., 2004;
108 Mundler and Laughrea, 2016; Renting et al., 2012); and the second on the active role of urban
109 consumption from the perspective of sustainable consumption as social movements, or as
110 attempts to transform FS structures (Lamine et al., 2012; Moragues-Faus, 2017; Renting et al.,
111 2012; Sonnino, 2016; Sonnino et al., 2014). However, public policy support to AFN has been
112 mainly based on the first production perspective and has been included in rural development
113 programmes (Galli et al., 2020; Pothukuchi and Kaufman, 1999). Only recently, many cities
114 and regions have made up their UFPs. Some of them have included AFN not only in a
115 production perspective, but also in a consumption promotion perspective. However, there are
116 many other cities that, without having a specific UFP, have joined international initiatives such
117 as the MUFPP, as a first step towards a future design of such a UFP (Candel and Pereira, 2017;
118 Doernberg et al., 2019; Filippini et al., 2019; Sibbing et al., 2019; Sonnino, 2016). Although
119 the emergence of UFPs is promising (Sibbing et al., 2019) and many have an orientation
120 towards AFN, there is still a great uncertainty about how UFPs are designed, how they are
121 applied in normative and in practice, and who should foster and implement them (Cretella,
122 2019).

123 The new relationships between production and consumption, developed within AFNs,
124 are closely linked to the territory where they are developed, as this gives them a unique feature
125 (González et al., 2012). AFNs are broader than localized agrifood systems (SYAL), as the
126 former are not only limited to specialty products (such wine, olive, or cheese), but also include
127 a larger diversity of ordinary food products embedded in the territory. (Lamine et al., 2019).
128 However, AFNs shares some characteristics with SYAL, such as that a wide variety of plants,
129 indigenous breeds and traditional knowledge accumulated over time flow through them,
130 contributing to the preservation of the cultural heritage of the territories (Sanz-Cañada and
131 Muchnik, 2016).

132

133 *2.3 Territorial Short Food Supply Chains*

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135 One of the prominent types of collective action in the agrifood sector within the AFN,
136 is the Territorial Short Food Supply Chain (TSFSC). It is defined as forms of rural-urban
137 interaction of different food actors, with their knowledge and interests, who converge to
138 develop collective visions around a specific food territory, with objectives related to sustainable
139 values, and with a clear focus on agrifood governance (Reina-Usuga et al., 2018). In this
140 context, food territory is understood as the social construction (resources, actors and
141 agreements) around food issues, in particular linked to guaranteeing the right to food and food
142 sovereignty.

143 According to Reina-Usuga (2018), TSFSCs can have two distribution channels (without
144 being mutually exclusive): one through direct sales (such as farmers' markets), and another with
145 a single intermediary between production and consumption (such as local shops). They are
146 characterized by: (i) a strong social base that supports them and facilitates their development;
147 this indicates that TSFSCs are supported by the social capital formed among the food actors
148 involved and is an essential element for their emergence and growth; (ii) the participation of
149 small farmers and retailers; (iii) building trust and quality standards among the linked actors
150 (institutional agreements), and iv) linkages with alternative/diverse economies (e.g. social and
151 solidarity economy, economy for the common good, etc.). Coordination mechanisms of the
152 SFSCs are mainly settled in the social and market sphere, and foster 'spaces of deliberation'
153 that bring together a wide variety of actors with different interests, e.g. civil society, private
154 agents, and local government, promoting processes of learning and collective action, thus
155 configuring a reflexive and networked governance. These two governance approaches
156 (reflexive and networked) operate in tandem, with important complementary and synergistic
157 effects that foster food democracy (Reina-Usuga et al., 2020). Thus, TSFSCs replace competing
158 market relationships with trust and collaboration, while renewing the chain of command
159 hierarchies with a more horizontal structure (Bevir, 2012). This aspect acquires importance
160 given the consolidation and concentration of power that has been identified in the GAS over
161 the last 20 years, both in the supply of inputs and in the distribution of food (McMichael, 2009;
162 IPES-Food, 2017). These unequal relationships in food chains are recognised as one of the
163 greatest vulnerabilities to food security (Moragues-Faus et al., 2017).

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165 **3. Material and methods**

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167 **3.1. Case studies**

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169 The cities of Bogotá (Colombia) and Córdoba (Spain) were selected due to the growth
170 experienced in recent years by the TSFSCs and the different nature of each UFP in each city,
171 the former being linked to a food supply plan and the latter to an international framework policy.
172 Furthermore, the international scope of the research is based on the representativeness of both
173 cities of two very different contexts. Bogotá has the typical characteristics of alternative Latin
174 American AFNs, such as: peasant agriculture (Ranaboldo and Arosio, 2014), agroecological
175 practices (Van der Ploeg et al., 2010), local trust labels (van der Ploeg et al., 2012), and
176 international cooperation assistance (through NGOs) (Reina-Usuga et al., 2020). On the other
177 hand, Córdoba represents European AFNs, characterized by certified organic agriculture
178 (González et al., 2012), high consumer involvement (Moragues-Faus, 2017; Renting et al.,
179 2012) land and transport property rights (Fonte and Cucco, 2017), and support from the
180 Common Agricultural Policy (CAP) (Moragues-Faus et al., 2017).

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182 **3.1.1 Bogotá (Colombia)**

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184 The city of Bogotá, with a population of 8,181,047 inhabitants (DANE, 2018)
185 concentrates the commercialization of fruit and vegetable products in the Central de Abastos
186 de Bogotá (Corabastos), the central supply market of the city. It is estimated that local shops,
187 market places and specialised shops (which supply 60-65% of final consumption), are supplied
188 with almost 100% of the perishable products by Corabastos (Galindo, 2015). In Bogotá, about
189 65% of the food consumed is supplied by peasant economies (Gutierrez, 2016) and there is
190 evidence of a high level of intermediation in the supply food chain (Parrado and Molina, 2014).

191 Regarding UFPs, these have been promoted in the cities of Bogotá and Medellín, being
192 the former pioneer in this type of initiative in Latin America (Gutierrez, 2016). Specifically, the
193 Master Plan for Food Supply and Security in Bogotá (MPFSSB), established in 2006 as a public
194 policy instrument to regulate food supply in the city. The MPFSSB is part of the Land Use Plan
195 (POT - by its acronym in Spanish), which incorporates actions to physically organize the
196 territory and the logistical equipment (physical connections) have been privileged. Moreover,
197 this Plan has been carried out actions at the supply (agroredes) and demand (nutriredes), as well
198 as boosting of the peasant economy through farmer markets. However, to date, the Plan has not

199 been completely carried out and there are failures in the components that have been
200 implemented (Bayona Romero, 2013; Parrado Barbosa et al., 2011; Ramírez, 2010). Despite
201 this, the Mercados Campesinos program (which began in 2004 and became part of the MPFSSB
202 in 2007), based on TSFSCs that support the peasant economy, has become a form of alternative
203 food supply in Bogotá. At the same time, other TSFSC initiatives linked to agro-ecological
204 issues have emerged, driven mainly by NGOs and universities (Reina-Usuga., et al 2020).
205 Subsequently, in 2014, the Special Administrative and Planning Region (RAPE - by its
206 acronym in Spanish) was created with the purpose of promoting and articulating regional plans
207 for social, economic, and environmental development in its territories. Its scope and
208 competencies in the food sector are not entirely definitive, but this entity coordinates the current
209 Mercados Campesinos program. Finally, there is the Colombian Peace Agreement signed in
210 2016, where food security is a cornerstone, and the promotion of local and territorial markets
211 is an important pillar of the proposed comprehensive rural reform. Although the agreement has
212 not been fully implemented either.

213

214 3.1.2 Córdoba (Spain)

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216 The city of Córdoba has 328,718 inhabitants (Ayuntamiento de Córdoba, 2019) and is
217 the third largest and most populated city of Andalusia. It belongs to the province of the same
218 name, in which an eminently agricultural vocation stands out, with special importance given to
219 the cultivation of olive groves and livestock linked to the dehesa, a multifunctional,
220 agrosilvopastoral system and cultural landscape of southern and central Spain and southern
221 Portugal. Mercacordoba is the central supply market of the city and provides 88% of the supply
222 of perishable produce to local shops (Gallar and Vara, 2017). The province has seen an increase
223 in organic production in recent years (Junta de Andalucía, 2012; MAPAMA, 2015), and
224 throughout Andalusia there has been an increase in the number of wholesalers and small
225 retailers specialising of organic product (MAPAMA, 2015).

226 As for AFNs, in 1994 the first cooperative of consumers of ecological products was
227 registered in Córdoba, but it is not until the decade of 2000 when these types of initiatives
228 become increasingly important (Sanabria, 2012) and the city experienced a proliferation of
229 different forms of self-supply and TSFSCs.

230 Regarding UFPs, as a European Union country, Spain is subject at the macro level to
231 the policies and programmes authorised by the European Commission. In the agricultural and
232 food sphere, the CAP and the regulations and directives on food issued by the Council and the

233 European Parliament stand out, the latter known as the health and hygiene package. Within the
234 framework of the hygiene package, Member States may apply flexibility criteria according to
235 the country's own characteristics. In this framework, Spain has promoted a few decrees to
236 promote TSFSCs. Nevertheless, cities can carry out their own UFP, as long as they are aligned
237 with the EU food safety standards. Thus, Córdoba joined the MUFPP in 2016. This policy
238 agenda focuses on the promotion of sustainable, inclusive, and resilient FS, with the TSFSCs
239 as a priority line. This policy has led to the creation of a space for deliberation and decision-
240 making by civil society organisations and the local public administration, known as the
241 Coordinating Board Milan Pact in Córdoba (CBMPC). It is worth noting that this policy is not
242 institutionalised as a normative framework, nor is it embedded in a land use or food security
243 plan, as is the case in Bogotá.

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245 **3.2. Methodological framework**

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247 To achieve the objective of this study, this paper develops a two-phase sequential model
248 to improve the effectiveness of UFP analysis in boosting TSFSCs by integrating the Analytic
249 Network Process (ANP), a multi-criteria decision-making methodology, and Social Network
250 Analysis (SNA). This model, differently from previous research conducted in UFP with ANP
251 or SNA, integrates the two methods to provide a more comprehensive analysis of the
252 importance of the territory in the design and implementation of UFPs. Thus, ANP is employed
253 to determine the prioritisation of territorial factors that influence the development of TSFSCs.
254 SNA is implemented to identify the changes implied by the UFPs within the TSFSC network
255 (Figure 1), since UFP was the first sub-factor prioritised with ANP. This methodological model
256 is based on the knowledge and assessment of experts (actors in TSFSCs). In the rest of this
257 section, a brief review of the ANP will be presented first, followed by the SNA.

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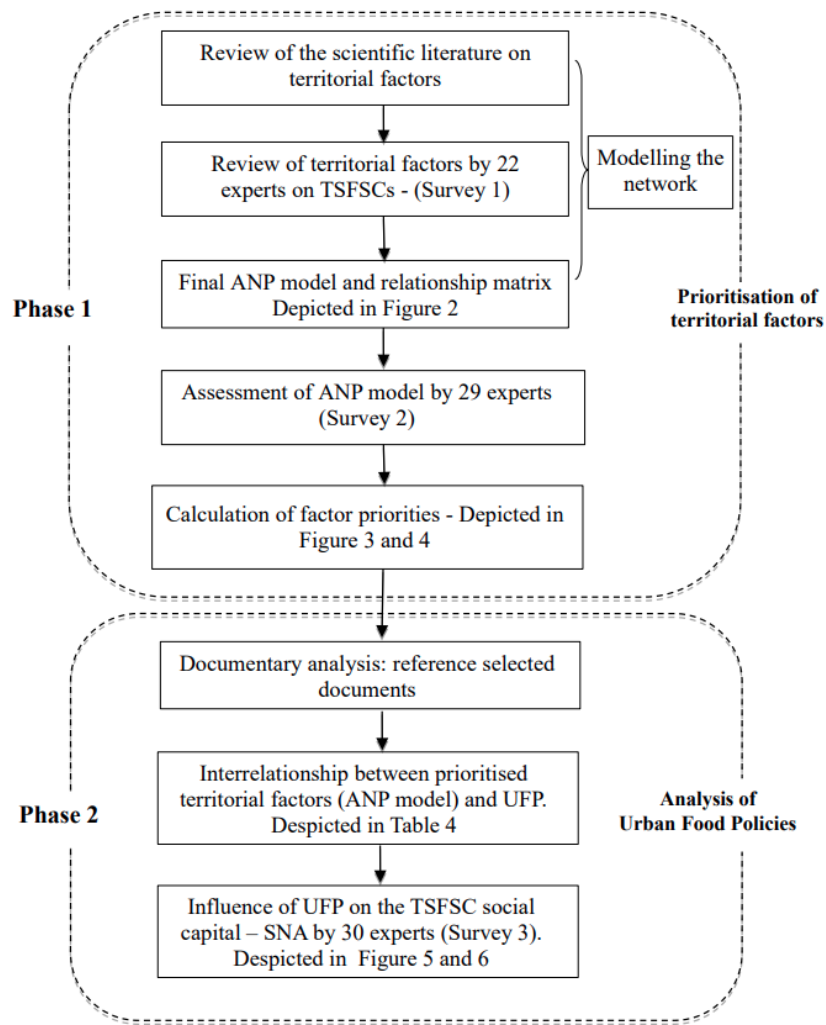
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Figure 1. Propose methodological model



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271 3.2.1 Phase 1: Prioritisation of territorial factors through Analytic Network Process

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273 Analytic Network Process (ANP) is a multi-criteria decision making methodology,
 274 which represents a decision problem as a network model composed by decision elements and
 275 clusters of elements, where every element can have an influence on itself or some, or on all the
 276 other elements of the system (Niemira and Saaty, 2004). It allows a better modelling of reality
 277 than simpler and linear models (Sánchez-Zamora et al., 2017). The use of ANP in scientific
 278 research has been increasing in recent years (Carmona-Torres et al., 2014; Niemira and Saaty,
 279 2004; Rajesh, 2020; Saaty and Vargas, 2013). However, its application in agrifood networks
 280 has not been widespread. In particular, there is no research that focuses on the identification
 281 and prioritisation of territorial factors to boost AFN in cities based on ANP.

282 The full description of the theoretical and operational basis of the ANP method can be
283 found in Saaty (2001), but the following summarises the basic steps involved in applying the
284 method, while explaining its application for this research:

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286 1. Modelling the problem as a network: The design of the network model is one of the key
287 points for the right problem solution (Saaty, 2001). The network basic units are the elements
288 of the system under analysis, which are grouped into components or clusters. Subsequently,
289 the relationships between these elements that compose the network are identified. In this
290 research the clusters are 7 territorial factors, and the elements are the territorial sub-factors
291 that compose each cluster (Figure 2). The ANP model in this research has been defined
292 from 1) review of the scientific literature and 2) 22 personal interviews with a structured
293 questionnaire to different stakeholders of the agrifood sector and the TSFSCs in each city.

294 The final model (Figure 2) consists of 3 levels:

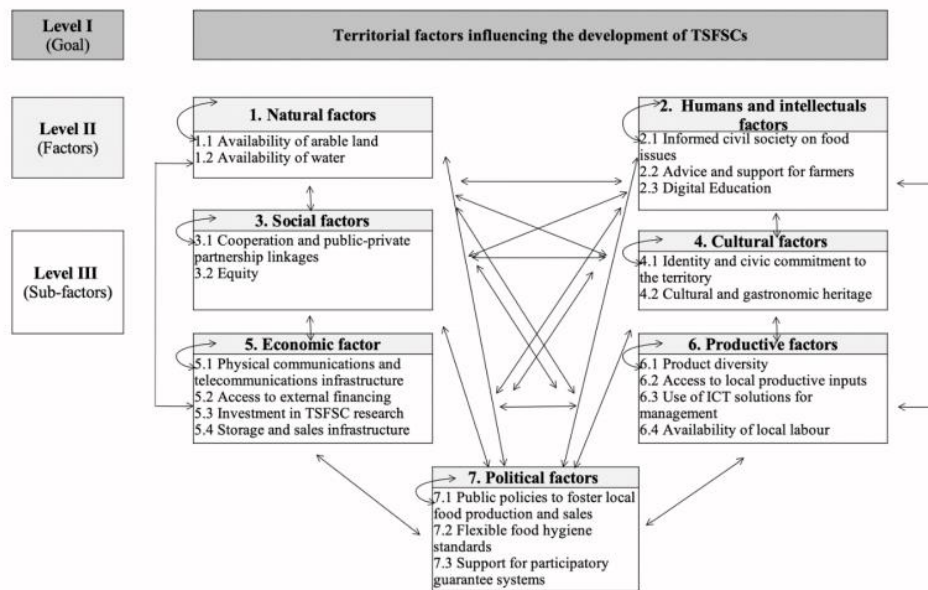
- 295 • Level I: It corresponds to the main objective, or goal, to be achieved in solving the
296 problem. In this case, to prioritise the territorial factors influencing the
297 development of TSFSCs.
- 298 • Level II: It consists of seven territorial factors: natural, human and intellectual,
299 social, cultural, economic, productive, and political. These categories were selected
300 based on Campagne and Pecqueur (2014); and Ramos and Garrido (2011).
- 301 • Level III: It corresponds to the sub-factors, which are the most specific items within
302 each factor. They are defined in detail in Annex I.

303

304 After defining the elements and the clusters of the network, the possible relationships
305 between these elements need to be established. For this purpose, a relationship matrix has been
306 defined, based on a deliberative process in conjunction with three experts (one from Colombia
307 and two from Spain), selected directly for their authority in the field. In this matrix, the rows
308 and columns consist of all network elements grouped in clusters, so that in the pairwise
309 comparison they take the value 1 when the row element influences the column criterion, and 0
310 when there is no influence. Relationships can be internal, when both elements belong to the
311 same cluster; or external, when the elements belong to different clusters. These relationships
312 are shown in Figure 2. Arrows relating the factor to its own sub-factors, and between its sub-
313 factors, are internal; and arrows relating a factor to other factors, and their sub-factors, are
314 external.

315

316 **Figure 2. ANP model for prioritisation of territorial factors influencing the development**
 317 **of TSFSCs**



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319 2. Assessment of ANP model: Once the network has been defined and the possible

320 relationships between its elements established, the next step is to assess these relationships

321 quantitatively. That is, to determine the relative priorities (or contributions) of the different

322 elements (factors and sub-factors in our study) with respect to the element that dominates

323 them, that is, on which they depend (Saaty and Takizawa, 1986). Due to the high number

324 of elements to be compared in some cases (higher than 7 ± 2 , as recommended in ANP), the

325 evaluation of the priorities by the experts was based on the ‘direct rating’ method

326 (Bottomley and Doyle, 2001; Calabrese et al., 2019; Larichev et al., 1995; Oliveira et al.,

327 2018). Thus, the contribution of one element to another on which it depends has been

328 obtained using a scale ranging from 1 (very weak contribution) to 9 (very strong

329 contribution) (Carmona-Torres et al., 2014). This scale is linear, as indicated to the

330 interviewees, where 9 is 9/1 times greater than 1, 9/2 times greater than 2, and so on. It is

331 therefore to be expected that experts will think on this linear scale. This is a difference with

332 the Likert scale where problems of interpretation of the scale may arise (Carifio and Perla,

333 2008; Jamieson, 2004; Pell, 2005). In order to obtain this information, a questionnaire was

334 designed for TSFSC stakeholders in each city. Due to the requirement of in-depth technical

335 knowledge and availability to complete long questionnaires, the number of experts to be

336 consulted in the ANP methodology is reduced, and normally between 6 and 15 (Sánchez-

337 Zamora et al., 2017; Villanueva Rodríguez et al., 2014). For this research, 29 experts were

338 interviewed, 14 in Bogotá and 15 in Córdoba (some of them participated in the design model
 339 phase), categorised in different interest groups. The description of the experts can be seen
 340 in Table 1.

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Table 1. Experts consulted by interest group

| City | Civil society | Academy | Market | Public administration | Total interviews |
|----------------|---------------|---------|--------|-----------------------|------------------|
| Bogotá | 4 | 3 | 4 | 3 | 14 |
| Córdoba | 4 | 4 | 4 | 3 | 15 |

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- Civil society: Representatives of civil society organizations, such as NGOs, social groups and funding institutions, among others.
- Academy: Persons belonging to higher education institutions and/or research centres.
- Market: TSFSC actors in the production, distribution or marketing stages.
- Public administration: Representatives of public administration agencies at the local and/or regional level.

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3. Calculation of factor priorities: The first result of the completed questionnaires was an unweighted matrix for each expert interviewed (their columns do not add up to 1), with a total of 29 matrices. Each one of these unweighted matrices was multiplied by the cluster weighting or priority matrix to obtain the corresponding weighted supermatrix for each person (Saaty and Vargas, 2013). Once the individual weighted supermatrices were obtained, the local priorities were aggregated and an aggregated supermatrix was obtained. For this, the aggregation of individual priorities (AIP) was used, following the criteria of Forman and Peniwati (1998), who recommend its use when stakeholders express their opinions individually. Subsequently, the aggregate supermatrix was then multiplied in parts, as proposed by Carmona-Torres et al. (2014), to obtain the priorities of each factor and sub-factor of the model. The results presented here refer, in general, to the global priorities, obtained as an average of the averages of the different groups of experts.

369 3.2.2 Phase 2: Analysis of Urban Food Policies

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371 3.2.2.1 Documentary analysis and interrelationship between prioritised territorial factors and
372 UFPs

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374 Firstly, a critical analysis of UFPs and their relationship with territorial factors has been
375 developed. Thus, the main documents that refer to UFPs in each city have been identified. The
376 reference documents selected, because they were the most relevant to the research aims, are:

- 377 • Plenary agreement 292 of 2016 of the Córdoba City Council (Spain): Institutional
378 declaration on the signing of the Milan Pact (MUFPP).
- 379 • Regulatory Decree 315 of 2006 of the Mayor's Office of Bogotá (Colombia): Master
380 Plan for Food Supply and Security for the city of Bogotá (MPFSSB).

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382 The period 2016-2020 has been selected as the framework for analysis, given that in
383 2016 the reference UFP is effective in Córdoba, although, in Bogotá, the reference UFP is
384 effective since 2006. For the critical analysis of the UFPs, the policy cycle in each city has been
385 identified. Although the phases of the policy cycle are agenda-setting, design, implementation
386 and evaluation (Galli et al., 2020), this analysis focuses only on the design phase (normative
387 documents: policy and programmes) and the implementation phase (execution of projects and
388 concrete actions). Finally, the two selected phases of the UFP have been related to the territorial
389 sub-factors they foster. Accordingly, the policy documents (regulations) and implementation
390 documents (e.g., lists of projects and/or actions implemented) have been reviewed, and in each
391 case the driven territorial sub-factors have been identified.

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393 3.2.2.2 Influence of UFP on the TSFSC social capital

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395 In order to identify the changes that the UFPs implied in TSFSCs, the social capital
396 formed among TSFSC actors in the period 2016-2020 was selected as one of the variables that
397 UFPs can influence. Social capital, according to Reina-Usuga et al. (2018 and 2020) is an
398 essential element for the emergence and growth of TSFSCs. Therefore, changes in some of the
399 components of social capital may imply changes in TSFSCs. Social Network Analysis (SNA)
400 techniques have been used for this analysis.

401 The SNA is a set of analysis techniques for investigating relationships between actors
402 and social structures. SNA allows the study of empirical questions about governance and social
403 capital in networks. Even relatively small groups of actors form complex network structures

404 that can be discovered with SNA methods, but are otherwise difficult to detect, as the social
405 structure is often a mixture of cohesive subgroups (Frank, 1996) linked by so-called weak or
406 strong ties (Granovetter, 1973). Putman (2001) states that social capital refers to the connections
407 between individuals expressed through social networks and the norms of reciprocity and trust
408 that emerge from them. Therefore, the SNA allows characterising and analysing such
409 interactions between system actors, i.e., the social capital generated. The SNA aims to identify
410 the type of network formed. This can be closed networks in which all nodes are connected or
411 bridging networks in which the relationships are not as strong, but there are connecting nodes
412 (Buciega and Esparcia, 2013). The academic literature refers to these two types of networks
413 that generate social capital as bonding social capital and bridging social capital, respectively
414 (Arnott et al., 2021; Cofré-Bravo et al., 2019; Dressel et al., 2020).

415 In the latter type of social capital, the bridge actors play an important role in the network,
416 because they act as connectors between actors who have no direct connection. Thus, relations
417 among diverse actors, and the betweenness centrality, indicate the configuration of a bridging
418 social capital. In SNA, the betweenness centrality indicator is used to identify bridge actors
419 (Borgatti et al., 1998; Putman, 2001). Thus, relations among diverse actors, and the
420 betweenness centrality, indicate the configuration of a bridging social capital (Borgatti et al.,
421 1998; Putman, 2001). SNA has been used to analyse social capital in different fields, such as
422 LEADER rural development groups (Buciega and Esparcia, 2013), forest biodiversity
423 conservation (Borg et al., 2015), reward-based crowdfunding (Eiteneyer et al., 2019),
424 bioeconomy (Giurca and Metz, 2018), rural innovations (Cofré-Bravo et al., 2019; Kratzer and
425 Ammering, 2019), adaptive capacity (Arnott et al., 2021; Dressel et al., 2020), among others.

426 In SNA, networks are formed by two basic elements: the actors (nodes) represented by
427 points in the network and the relationships that are established (edges) represented by lines. The
428 mathematical theory of graphs, matrixes and relational algebra is used in SNA (Scott, 2017). A
429 large number of concepts have been developed to characterise, measure, and compare network
430 structures and positions in networks. Table 2 shows some important indicators. Structure
431 (cohesion) indicators are measures of the whole network, as opposed to node indicators which
432 are individual measures.

433 In order to perform this analysis, an exploratory/descriptive research has been designed,
434 based on the relationships created among TSFSC actors in each city. Most of the information
435 used is primary, collected in two periods: 1) January-December 2016; and 2) January-March
436 2020 (Table 3). In the second period [January-March 2020], only the case of Cordoba has been
437 analysed, because during this period of analysis, Córdoba joined MUFPP and created the

438 Coordinating Board Milan Pact in Córdoba (CBMPC). The CBMPC led to significant changes
 439 in the relations between agri-food actors, which provided substantial elements for the
 440 comparison between the two periods. Nevertheless, during the second period in Bogotá, there
 441 were no changes in the UFPs, given that the ones that were created (RAPE and peace
 442 agreement) were not implemented, and consequently it is assumed that there were no changes
 443 in the relationships between food actors in Bogotá as a result of the implementation of UFPs.
 444 Although only the two periods in Córdoba are compared, this analysis is considered relevant,
 445 as it is the first time that changes in social relations and subsequent social capital as a
 446 consequence of the implementation of a UFP have been studied.

447 The nodes in this research are organisations linked to the TSFSCs of the two cities, these
 448 organisations can be both public and private. They are linked to production, distribution, sales
 449 or support organisations, such as public administration, NGOs or universities. The edges are
 450 the interactions between these organisations at the social level, i.e. with those who share
 451 information, organise events or participate in related activities on TSFSC issues (no monetary
 452 exchange).

453

454

Table 2. Main indicators in Social Network Analysis (SNA)

| Structure of the network | | Position of the nodes | |
|--------------------------|--|-------------------------------|---|
| Average degree | Average number of steps needed to go from one node to any other | Degree | Number of connections of a node. It can be input or output |
| Network diameter | Greatest number of steps between any pair of nodes | Proximity | The node that's closest to all the nodes |
| Graph Density | The extent to which nodes are interconnected – lower density networks have fewer links between nodes. A complete network has all possible edges (relationships) and a density equal to 1 | Betweenness Centrality | How central (on average) nodes in the network are. Average number of unique paths that pass through the nodes |

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Table 3. Time periods for the SNA in Bogotá and Córdoba

| Geographical framework | 2016 | 2020 |
|------------------------|--|---------------------|
| Bogotá | Primary Information | Not applicable |
| Córdoba | Secondary information from the research by Reina-Usuga, <i>et al.</i> (2018) | Primary Information |

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In particular, the following techniques have been used to obtain primary information:

1. Personal interviews: 30 personal interviews have been conducted (20 in Bogotá and 10 in Córdoba) with TSFSC legal representatives or delegates of the initiatives. The snowball sampling technique was used, and sampling continued until data saturation (Bârsan-Pipu, et al., 2002). Given that in Córdoba there are fewer organisations (not interactions), compared to Bogotá, and some delegates are involved in different organisations, the number of interviews is lower, because the saturation point was reached earlier. A structured questionnaire was used to identify interactions in the social sphere. In each interaction the intensity was rated by each interviewee, between 1 and 10 (1 = very low intensity, 10 = very high intensity of relationship).
2. Participant observation: 20 TSFSC initiatives were directly observed in key activities, such as a farmer market day (logistics, sales development, price setting, etc.), assembly meetings or other deliberative spaces, among others. The information was collected in a field notebook, also used to complement the information gathered in the interviews.

The free open-source software Gephi 0.9 (<https://gephi.org/>) was used for the analysis of the information. Gephi allows the same network to be graphically represented in different ways using different layout algorithms. In this research, the Force Atlas layout was used, with a repulsive force of 200000, and a gravity of 30.0. This configuration allowed for: minimising crossings between edges, nodes not overlapping links that do not impinge on them and keeping a uniform edge length.

4. Results

4.1. Prioritisation of territorial factors and sub-factors

4.1.1 Priorities of factors















The seven territorial factors have different priorities (importance) with respect to the goal, on which they depend (Figure 2), according to the average of all expert groups. Figure 3 depicts the global priority of territorial factors in each city and indicates small differences in ranking. In descending order of importance are: 1) F5 Economic; 2) F2 Human and intellectual

495 in Bogotá, and F7 Political in Córdoba; 3) Political F7 in Bogotá, and F2 Human and intellectual
 496 in Córdoba; 4) F3 Social; 5) F1 Natural; 6) F6 Productive; and F4 Cultural. It is worth to
 497 highlight that those factors related to the built resources of the territory (F5: physical
 498 infrastructure and F2: qualified human resources), as well as those referring to institutional
 499 arrangements (F7), have the highest priority for the development of TSFCS, over the specific
 500 territorial resources (F4).

501 On the other hand, despite the fact that both cities share a large part of the prioritisation
 502 ranking, an analysis of the global priority value shows that each city attributes greater
 503 importance to some factors, which responds precisely to the territorial variable. The most
 504 notable differences are found in F7, which is more important in Córdoba (0.0165), and F6,
 505 which is more important in Bogotá (0.133). The other factors have a short distance between the
 506 values.

507

508 **Figure 3. Global priorities of territorial factor in Bogotá and Córdoba**

| Factors | Bogotá | Ranking | Córdoba | Ranking |
|-----------------------------------|---|------------|--|------------|
| F.1 Natural |  | 0,1240 (5) |  | 0,1305 (5) |
| F2. Human and intellectual |  | 0,1778 (2) |  | 0,1732 (3) |
| F3. Social |  | 0,1334 (4) |  | 0,1366 (4) |
| F4. Cultural |  | 0,0951 (7) |  | 0,0896 (7) |
| F5. Economic |  | 0,1898 (1) |  | 0,1871 (1) |
| F6. Productive |  | 0,1184 (6) |  | 0,1051 (6) |
| F7. Political |  | 0,1614 (3) |  | 0,1779 (2) |

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511 4.1.2 Priorities of sub-factors

512

513 Figure 4 depicts the global priority of territorial sub-factors in each city. The prioritisation of
 514 sub-factors shows that the two cities have similar general trends in the prioritisation when
 515 ranking them. However, the priorities in each city are different, which could be explained by
 516 territorial features. The most important sub-factor for the TSFSC, average for all expert groups,
 517 are: 1) SF7.1 Public policies to foster local food production and sales, SF3.1 Cooperation and
 518 public-private partnership linkages, SF5.3 Investment in TSFSC research, SF2.2 Advice and
 519 support for farmers. Finally, SF6.4 Availability of local labour, and SF5.4 Storage and sales
 520 infrastructure, have a low importance in both cities. On the other hand, in terms of the
 521 differences in priority values, the most notable were found in: SF7.1 which is more important
 522 in Córdoba (0.0197); SF1.2 which is more important in Córdoba (0.0093); and SF5.1 (0.0058)
 523 which is more important in Bogotá. The other sub-factors have a short distance between the
 524 values.

525

526

Figure 4. Global priorities of sub-factors in Bogotá and Córdoba

| Sub-factors | Bogotá | Ranking | Córdoba | Ranking |
|---|--------|-------------|---------|-------------|
| SF1.1 Availability of arable land | | 0,0657 (5) | | 0,0628 (7) |
| SF1.2 Availability of water | | 0,0584 (7) | | 0,0677 (5) |
| SF2.1 Informed civil society on food issues | | 0,0646 (6) | | 0,0663 (6) |
| SF2.2 Advice and support for farmers | | 0,0796 (3) | | 0,0741 (4) |
| SF2.3 Digital Education | | 0,0337 (15) | | 0,0328 (14) |
| SF3.1 Cooperation and public-private partnership linkages | | 0,0834 (2) | | 0,0862 (2) |
| SF3.2 Equity | | 0,0500 (10) | | 0,0504 (9) |
| SF4.1 Identity and civic commitment to the territory | | 0,0442 (11) | | 0,0396 (11) |
| SF4.2 Cultural and gastronomic heritage | | 0,0508 (9) | | 0,0500 (10) |
| SF5.1 Physical infrastructure for communications and telecommunications | | 0,0570 (8) | | 0,0512 (8) |
| SF5.2 Access to external financing | | 0,0366 (13) | | 0,0360 (13) |
| SF5.3 Investment in TSFSC research | | 0,0790 (4) | | 0,0845 (3) |
| SF5.4 Storage and sales infrastructure | | 0,0173 (20) | | 0,0153 (20) |
| SF6.1 Product diversity | | 0,0363 (14) | | 0,0313 (15) |
| SF6.2 Access to local productive inputs | | 0,0278 (17) | | 0,0239 (17) |
| SF6.3 Use of ICT solutions for management | | 0,0316 (16) | | 0,0305 (16) |
| SF6.4 Availability of local labour | | 0,0227 (19) | | 0,0195 (19) |
| SF7.1 Public policies to foster local food production and sales | | 0,0990 (1) | | 0,1187 (1) |
| SF7.2 Flexible food hygiene standards | | 0,0255 (18) | | 0,0232 (18) |
| SF7.3 Support for participatory guarantee systems | | 0,0369 (12) | | 0,0360 (12) |

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The similarities in the ranking of prioritisation of sub-factors in both cities have made it possible to define a typology of sub-factors. Each type of sub-factors has been conceptualised as having some common characteristic, as will be seen below. The types of sub-factors have been sorted according to their order of priorities and the range of priorities is recorded (based on Figure 4). It is highlighted that the facilitating and driving sub-factors could be classified as means to achieve the other sub-factors, as they influence all other types of sub-factors. Hence, the other sub-factors (endogenous, access and operative results) could be classified as ends.

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Thus, the typology of sub-factors is:

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- Facilitating and driving sub-factors (priority range: 0.1187 – 0.0512): In this type, sub-factors have the highest priorities, and can be conceptualised as the means or vehicles to achieve other sub-factors, indicating that despite their importance they are not an aim in themselves. These are: SF7.1 Public policies to foster local food production and sales, SF3.1 Cooperation and public-private partnership linkages, SF5.3 Investment in TSFSC research, SF2.2 Advice and support for farmers, SF2.1 Informed civil society on food issues, and SF5.1 Physical infrastructure for communications and telecommunications. It is important to highlight the relevance of SF7.1 Public policies to foster local food production and sales, for both cities.

- 547 • Specific endogenous sub-factors (priority range: 0.0677 – 0.0395): Although the
548 majority of sub-factors analysed are of a specific type, in this group they are included
549 the own territorial resources, which can be socio-cultural or environmental. These are:
550 SF1.1 Availability of arable land, SF1.2 Availability of water, SF4.2 Cultural and
551 gastronomic heritage, SF3.2 Equity, and SF4.1 Identity and civic commitment to the
552 territory.
- 553 • Access result sub-factors (priority range: 0.0359 – 0.0304): These are sub-factors that
554 can be the consequence of the interaction or action of the two previous types of sub-
555 factors, which favour access to specific resources required for the development of
556 TSFSCs. These are: SF5.2 Access to external financing, SF7.3 Support for
557 participatory guarantee systems, SF6.1 Product diversity, SF2.3 Digital education, and
558 SF6.3 Use of ICT solutions for management.
- 559 • Operative result sub-factors (priority range: 0.0238 – 0.0152): This type of sub-
560 factors can be catalogued as the purposes or outcomes pursued through the previous
561 types, which directly affect the operation of TSFSCs. These are: SF6.2 Access to
562 local productive inputs, SF7.2 Flexible food hygiene standards, SF6.4 Availability
563 of local labour, and SF5.4 Storage and sales infrastructure.

564
565 Finally, based on the results of the prioritisation of territorial factors (described
566 above), the first two prioritised sub-factors have been studied in depth, thus shaping the
567 following two sections of results: 4.2 Urban Food Policy (SF7.1 Public policies to foster
568 local food production and sales) and 4.3 Influence of UFP on the TSFSC social capital
569 (SF3.1 Cooperation and public-private partnership linkages).

570

571 **4.2. Urban Food Policies**

572

573 4.2.1 Interrelationship between UFPs and territorial factors

574

575 Table 4 is based on the prioritised categories of territorial sub-factors (explained in
576 4.1.2) and indicates which of these factors have been included in the current UFPs of Bogotá
577 and Córdoba. Thus, in the design phase, the inclusion of facilitating and driving factors is
578 highlighted in both cities, and in the case of the MPFSSB in Bogotá, some access and
579 operational outcome factors. However, planning through programmes is not always carried out,
580 as evidenced in the case of Córdoba. In the implementation phase, actions focused on the sub-

581 factor SF3.1 'Cooperation and public-private partnership linkages' are highlighted in Córdoba.
 582 The Coordination Board of the Milan Pact (CBMPC) was created in this context. The CBMPC
 583 has had a great impact on the articulation of different types of food actors in Córdoba, despite
 584 not appearing in the political regulations, nor being part of a specific agency.

585 In Córdoba, the vast majority of the actions (without project) shown in Table 4 have
 586 been implemented by the CBMPC members and have focused mainly on the enabling and
 587 driving factors, with some specific cases on the access and operational outcome factors. On the
 588 other hand, the Bogotá UFP were focused on projects, at less in specific actions; these projects
 589 were linked mainly on enabling and driving factors as in Córdoba. However, in Bogotá the
 590 actions of SF3.1 Cooperation and public-private partnership did not have a direct influence on
 591 participatory governance mechanisms, as will be seen in the next section.

592

593 **Table 4. Connection between public policies and prioritised territorial factors (2016-**
 594 **2020)**

595

| Sub-factor | Policy cycle ^a | Córdoba (Spain) | | | | Bogotá (Colombia) | | | |
|---|---|-----------------|---------|---------|---------------------|-------------------|---------|---------|---------------------|
| | | D | D | I | I | D | D | I | I |
| | | Policy | Program | Project | Action ^b | Policy | Program | Project | Action ^b |
| Facilitating and driving | SF7.1 Public policies to foster local food production and sales | | | | | | | | |
| | SF3.1 Cooperation and public-private partnership linkages | X | | | X | X | X | | X |
| | SF5.3 Investment in TSFSC research | | | X | | X | | + | |
| | SF2.2 Advice and support for farmers | X | | | | X | X | + | |
| | SF2.1 Informed civil society on food issues | X | | X | | X | X | X | |
| SF5.1 Physical infrastructure for communications and telecommunications | | | | | | X | | + | |
| Specific endogenous | SF1.1 Availability of arable land | | | | | | | | |
| | SF1.2 Availability of water | | | | | | | | |
| | SF4.2 Cultural and gastronomic heritage | | | X | | | X | X | |
| | SF3.2 Equity | X | | | | | | | |
| SF4.1 Identity and civic engagement with the territory. | | | X | | | | | | |
| Access result | SF5.2 Access to external finance | | | | X | | | | |
| | SF7.3 Support for participatory guarantee systems | | | | | | | | |
| | SF6.1 Product diversity | X | | | X | X | X | + | |
| SF2.3 Digital education | | | | | | | | | |

| | | | | | | |
|-------------------------|---|----|---|---|---|----|
| | SF6.3 Use of ICT solutions for management | | X | | | |
| Operative result | SF6.2 Access to local productive inputs | X | X | | X | |
| | SF7.2 Flexible food hygiene standards | | | | | |
| | SF6.4 Availability of local labour | | | | | |
| | SF5.4 Storage and sales infrastructure | X* | X | X | + | X* |

The first line (in grey), which corresponds to sub-factor SF7.1 Public policies to foster local food production and sales, is not filled in, as the table aims precisely to indicate which of the other sub-factors are included in the UFPs, and it would be redundant for it to be marked as such.

^a *The table includes the classification according to the first two phases of the policy cycle. Design (D), Implementation (I).*

^b *Refers to actions implemented not linked to a specific project or programme, but in line with the UFPs*

X Relationship between public policies and territorial factors

+ Refers to projects implemented before 2016

**Refers to licences to farmer markets in public spaces*

596

597 4.2.2 Influence of UFP on the TSFSC social capital

598

599 The SNA of stakeholders in the TSFSC is closely related to the second prioritised sub-
600 factor SF3.1 Cooperation and public-private partnership linkages; and highlights the interaction
601 of different types of actors, including public institutions, political or knowledge management
602 institutions and private sector institutions, with a diversity of civil society organisations.

603 Figure 5 represents the Bogotá network and Figures 6a and 6b represent the Córdoba
604 networks in the two time periods analysed. These figures points to that civil society institutions
605 assume the greatest participation in the two cities. The involvement of production stands out,
606 especially processed food, and to a lesser extent fresh food. In Bogotá, the participation of
607 producers' associations, social collectives, and farmers' markets stands out. The participation of
608 organisations linked to international cooperation (NGOs, foundations and cooperation
609 agencies) also stands out, which together account for 27.28% of the organisations participating
610 in this network. However, in Córdoba, the participation of small retailers and sales points, social
611 collectives, NGOs, and public agencies predominates.

612 Table 5 shows some key indicators of the networks configured in the social sphere of
613 both cities, and it shows the participation of a greater number of actors (nodes) in the social
614 network in Córdoba compared to Bogotá. In terms of relationships (edges), Córdoba has more
615 than twice as many relationships as Bogotá; this is reflected in the value of the diameter and
616 density of the network, which is also twice as large in Córdoba. However, the density of the
617 network is low in both cities (the ideal value is 1), indicating that not all actors are connected
618 to each other. Finally, it is noteworthy to point out the variation in the value of the average
619 degree in the Córdoba networks in both periods. Since between 2016 and 2020 it has decreased
620 by almost half due to the number of actors has increased, but the average number of

621 relationships of each actor has decreased, even though the overall number of relationships in
 622 the network has increased. The variation in the average degree can be explained by the creation
 623 of the CBMPC, as it facilitates the connection between nodes, shortening the path and
 624 decreasing the number of interactions between them.

625

626

Table 5. Indicators of the configuration of the social network

| | Nodes | Edges | Average degree | Network diameter | Graph density |
|---------------------|-------|-------|----------------|------------------|---------------|
| Bogotá 2016 | 121 | 143 | 2.36 | 4 | 0.01 |
| Córdoba 2016 | 130 | 290 | 4.46 | 8 | 0.02 |
| Córdoba 2020 | 142 | 320 | 2.25 | 8 | 0.02 |

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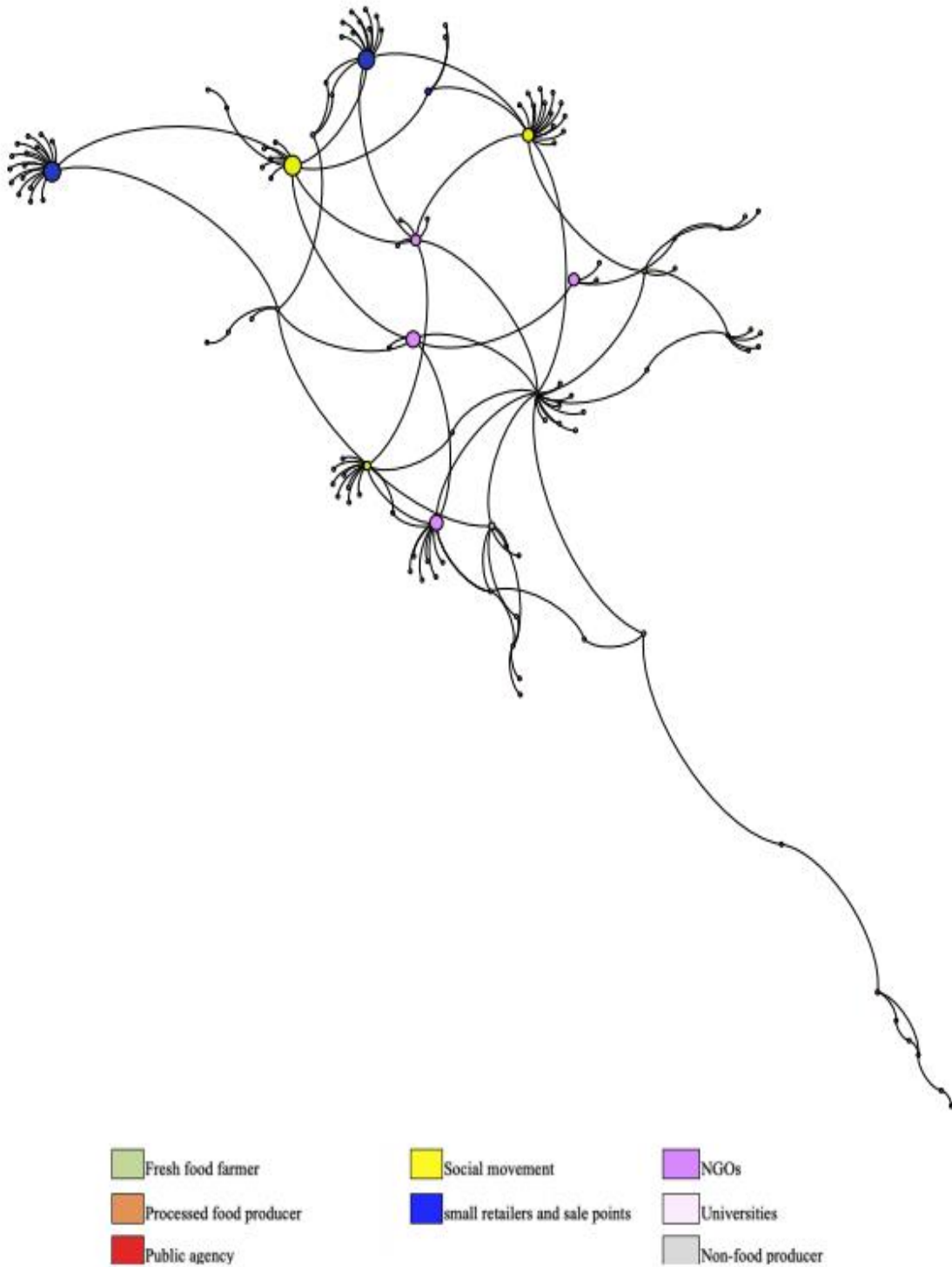
628 The main aim of the SNA in the two time periods is to identify whether there are
 629 significant changes in the network configurations because of the UFPs implementation. For this
 630 purpose, the number of actors, the density of the network and the bridge actors (identified by
 631 betweenness centrality and represented in the figures by the nodes with the largest size) are
 632 considered as a reference. In 2016, in Bogotá (Figure 5) the bridge actors are NGOs, followed
 633 by a social movement (Red de Mercados Agroecológicos de Bogotá Región) and some agro-
 634 ecological farmer markets. In Córdoba (Figure 6a), the bridge actors are of different types, with
 635 a predominance of social movement (an organic market stands out), small retailers, NGOs,
 636 universities, and a producer of processed foods.

637 In 2020, changes in the Bogotá network are not analysed because the UFP did not have
 638 variations with respect to 2016. However, the social network configuration does change in
 639 Córdoba (Figure 6b). The main transformation is the emergence of the CBMPC in the social
 640 sphere. It is evident that the CBMPC has assumed a central intermediary position in the
 641 network, which in a way is positive, because this feature endows the node with a key position
 642 in the network structure, as it tends to influence communications between the other nodes.
 643 Central betweenness nodes, such as the CBMPC, are also called gatekeepers, because they seek
 644 to control the flow of information between communities. Thus, in a first step, the CBMPC has
 645 achieved the purpose of coordinating a diversity of food actors in the city.

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Figure 5. Social network of the TSFSCs in Bogotá 2016



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Figure 6a. Social network of the TSFSC in Córdoba 2016

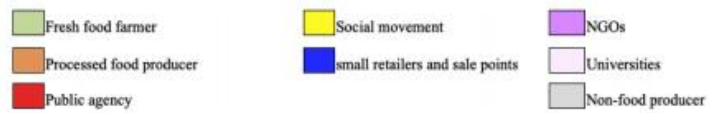
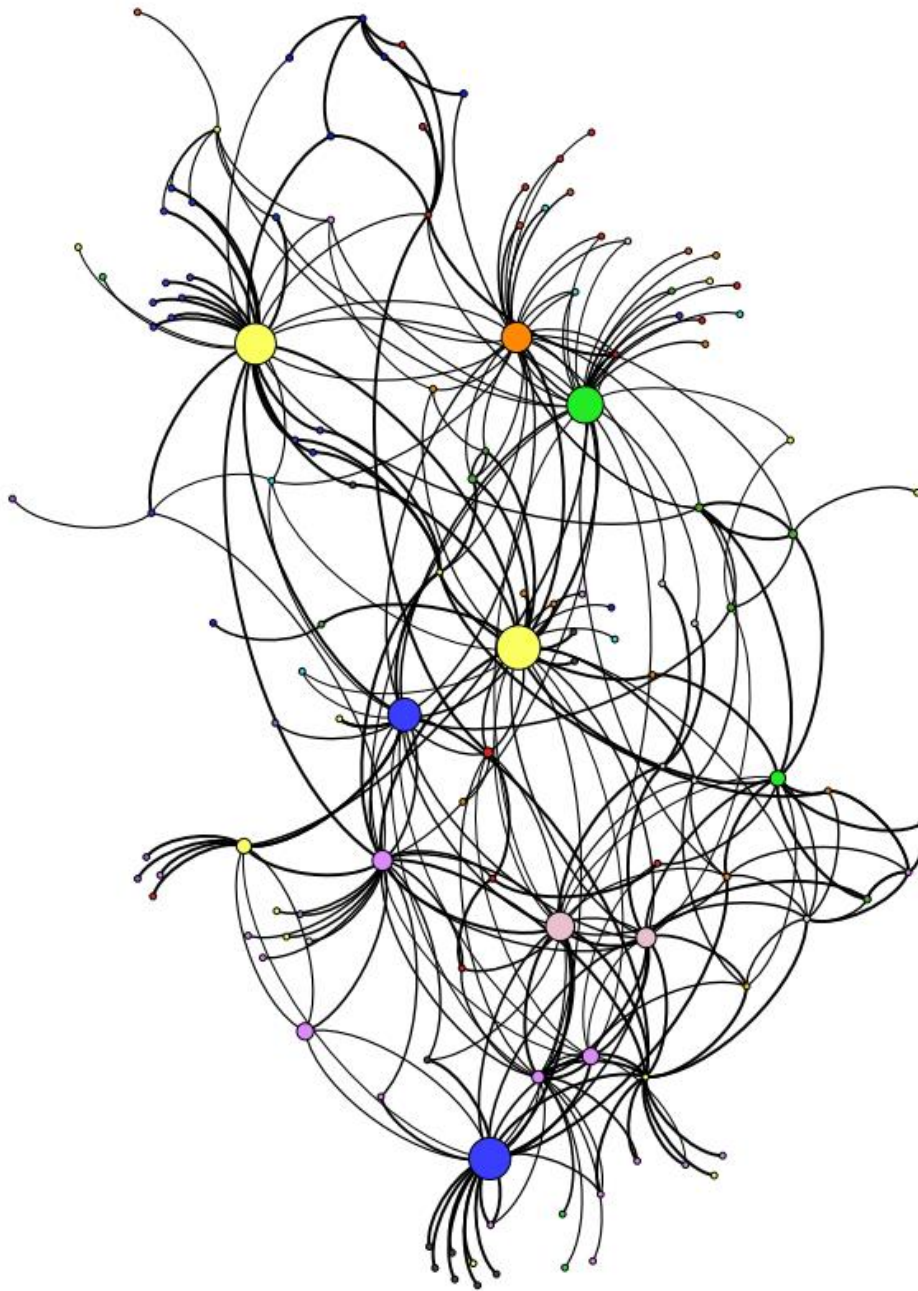
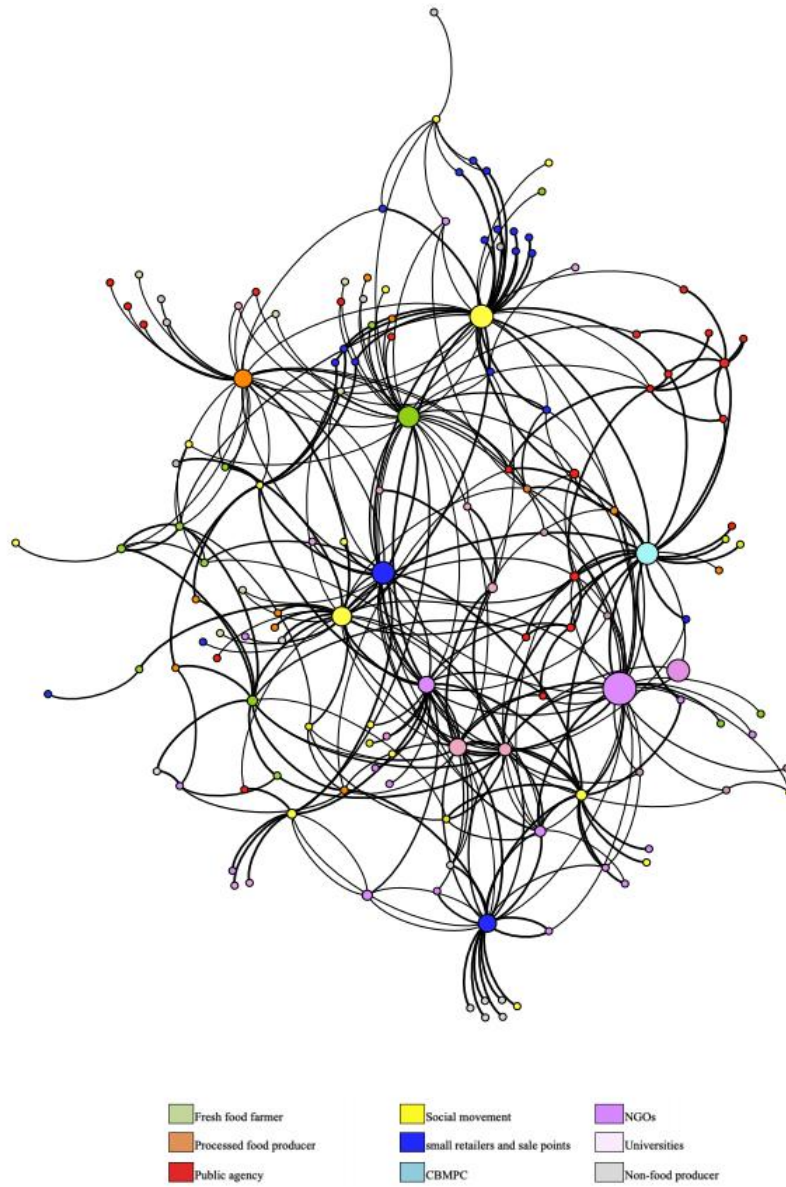


Figure 6b. TSFSC social network in Córdoba 2020



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668 Furthermore, the total number of actors has increased in Córdoba, although some have
669 disappeared compared to 2016. According to participant observation, some of the organisations
670 identified in 2016 mutated into other types of organisations in 2020, or some that aggregated
671 many actors disappeared, but actors retained their participation on an individual level. It is also
672 relevant that the average degree has decreased by almost half, which indicates that the intensity
673 of the connection between nodes is low, so the role of the bridge nodes is key to avoid
674 fragmentation in the network. Despite the decrease in this indicator, the variation in network
675 density is minimal. Another point to note is that the size of bridge nodes has decreased, showing
676 more of them, which could indicate a decrease in the concentration of power. However, these
677 latter changes cannot be explained solely by the emergence of the CBMPC.

678 An approach to network structure is provided by two measures that provide information
679 on the network as a whole, density and centralisation. Table 5 indicates that the density of
680 relationships recorded in the network of the two cities is low. However, these are complete
681 networks, as there are no disconnected actors. In terms of centralisation, it should be noted that
682 there is no single central actor (centralised network), but that there is a set of actors at the centre
683 of the network, structuring a decentralised network, indicating that power is substantially
684 distributed throughout the structure.

685 On the other hand, according to participant observation, it was found that the creation
686 of the CBMPC, through regular meetings, enabled the food stakeholders to dialogue among
687 themselves and with the local public administration, in order to develop a food diagnosis of the
688 city, and to design and implement joint actions to raise public awareness about food. In addition,
689 two of the food actors, one a cooperative of fresh food and the other an association of small
690 retailers, were granted a funding from the Andalusia Trade Integration Office, which allowed
691 them to hire a person in charge of managing cohesion within them, and they also played an
692 important role in the consolidation of the CBMPC.

693 Finally, according to the SNA and participant observation results, the interaction of
694 different types of actors is stand out, between public and private institutions, with a diversity of
695 civil society organisations. It also highlights the existence of bridge-actors that facilitate
696 communication between unconnected actors. These two characteristics, the existence of
697 relationships between actors with different characteristics and the existence of intermediation,
698 indicate the configuration of bridging social capital. However, it is evident that the social capital
699 that is formed in Bogotá is weak, and the departure of a bridge actor could imply the
700 fragmentation of the network and the dissociation of peripheral actors. The opposite situation
701 is evident in Córdoba, where, despite a low density, the actors show greater cohesion. This

702 social capital created from the TSFSCs can be understood as a ‘resource’ which provides
703 individuals and linked organisations with access to other types of capital. Here emerges the idea
704 that behind the creation or support of these networks there is intentionality from the actors
705 involved. However, it can also be interpreted as an ‘instrument’, and not as an aim in itself.
706 Social capital has the potential to generate collective action and boost processes such as
707 TSFSCs, without forgetting the influence of the institutional framework, which can either
708 strengthen or weaken it (Buciega and Esparcia, 2013). In this way, the social capital described
709 should not be understood as a static and fixed element in Bogotá and Córdoba, but as a dynamic
710 and transforming attribute in time, and based on food actor interactions.

711

712 **5. Policy implications**

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714 ***5.1. Reflexions on current Urban Food Policies***

715

716 Even though the analysis conducted in this research only included two of the phases of
717 the policy cycle, the following reflections can be applied to the entire cycle. It is important to
718 approach these implications with an interdependent approach among phases, which implies that
719 the results of the previous phase affect the results of the following phases. Thus, starting in
720 agenda and design phases, the territorial scale should be taken as the starting point and include
721 a participatory coordination approach, which should be kept throughout the cycle. In the design
722 and implementation phases, regulatory aspects must be taken into account, as well as the
723 capacity for action and administrative and bureaucratic barriers. Finally, the evaluation phase
724 should be considered as a tandem to each of the previous phases, i.e. each phase should include
725 its own monitoring and evaluation mechanisms. Reflections for each of the phases are described
726 below.

727

728 **5.1.1 Agenda and design phases**

729

730 *Territorial scale*

731

732 Cities have been estimated as an ideal territorial scale for UFPs. However, this term can
733 be ambiguous if we compare the differences between Bogotá and Córdoba, not only in terms
734 of geographical area and population density, but also in perceptions of locality, proximity,
735 rurality, peasantry, and social demands such as food sovereignty (Sonnino et al., 2019). In

736 addition, the definition of scale should be considered to overcome the lack of coordination
737 between municipal, national (and European) food security aims and measures (Moragues-Faus
738 et al., 2017). Therefore, the UFPs fostering TSFSCs should consider these elements and
739 strengthen the deliberative spaces of reflexive governance, in order to identify problems and
740 solutions in a participatory process, which may imply going beyond the geographical scale of
741 cities and referring to food territories (FTs). Thus, UFP should focus on prioritised territorial
742 factors in each city. For instance, when observing the territorial differences in the prioritisation
743 of the sub-factors, it stands out that: SF7.1 Public policies to foster local food production and
744 sales was the priority sub-factor, despite the fact that the difference in the global weight is the
745 widest between the two cities. The global weight is higher in Córdoba (0.1187) than in Bogotá
746 (0.099). This can be explained by the positive deployment and impact of public policies in rural
747 Andalusia. As for Bogotá, the UFP has not had a major impact on the TSFSCs, although
748 farmers' markets are part of the MPFSSB. The second sub-factor with the largest difference is
749 SF1.2 Availability of water, which is more important in Córdoba (0.0677) than in Bogotá
750 (0.0583). This can be explained by the fact that in Andalusia all river basins are affected by
751 irregular rainfall, with marked seasonality, and the poor inter-annual distribution of rainfall,
752 characteristic of the region's predominant Mediterranean climate. As a result, there is an
753 unstable availability and recurrent shortage of water resources. The third sub-factor is SF5.1
754 Physical infrastructure for communications and telecommunications. In Bogotá, this sub-factor
755 is highly ranked (0.0795) compared to Córdoba (0.0740). This could be explained by the
756 potential benefit that this sub-factor represents for the development of the TSFSCs and also by
757 the fact that small advances in road infrastructure, as well as the expansion of ICT coverage in
758 rural areas, especially mobile coverage and internet access, have represented important
759 resources for connectivity between the different food actors and the operation of the TSFSCs.

760

761 *Participatory coordination mechanisms and food governance*

762

763 The driving territorial sub-factor SF3.1 Cooperation and public-private partnership
764 linkages, is one of the sub-factors that has been most boosted in the UFPs of Bogotá and
765 Córdoba, and is evidenced by the social capital formed. This social capital brings about the
766 design of new governance mechanisms based on spaces for deliberation, collective learning and
767 it highlights the importance of the participation of territorial stakeholders in the planning and
768 implementation of the UFPs. The CBMPC in Córdoba is a clear example of reflexive
769 governance, and strengthening of the social capital, as has been evidenced in other cities that

770 have established food policy councils (Brand et al., 2019; Filippini et al., 2019; Sonnino, 2016).
771 However, as forementioned, it is critical to endow this mechanism with normative legitimacy,
772 and to embody it in the UFP. On the other hand, in Bogotá the implementation of coordination
773 and cooperation mechanisms between different types of food actors has only been addressed
774 by civil society organisations, with the subsequent limitations to influence UFP and strengthen
775 their social capital. Despite the fact that TSFSCs emerge from a strong social base (Reina-
776 Usuga et al., 2020), the lack of legitimate coordination with local governments reduces the
777 scope of action and, in the long term, the viability of the TSFSCs. Furthermore, this context
778 could generate what the literature calls 'low hope scenarios' (Cohen-Chen and Van Zomeren,
779 2018) in which people do not believe that collective action can generate important changes in
780 their reality, because, without hope, there is no basis for agency. In this sense, Sen (1999)
781 revisits the classic distinction between 'patient' and 'agent', to conceive the person not as a
782 passive recipient of benefits or development aid but, on the contrary, as an active person who
783 configures his own reality when looking for his/her destiny. These scenarios have already been
784 evidenced in Colombian rural contexts, both civil society and local governments (Molina-
785 Ochoa et al., 2019).

786

787 5.1.2 Design and implementation phases

788

789 *Regulatory aspects*

790

791 The above analysis showed that while many of the factors have been included in the
792 planning phase, very few factors have been driven in the implementation phase. The main factor
793 prioritised in the two cities is SF7.1 Public policies to foster local food production and sales.
794 However, more than policies, projects and concrete actions have been implemented in this
795 direction. If the UFPs are to be integrated by programmes and projects (Fernández and
796 Schejtman, 2012), the UFP in Córdoba is a letter of intent, while the MPFSSB in Bogotá has a
797 greater degree of normative concreteness. However, in practice, the actions carried out by
798 CBMPC organisations, despite not being explicit in the normative policy, have had a significant
799 impact on the mechanisms of participatory governance (Reina-Usuga et al., 2020). In contrast,
800 the MPFSSB has failed to implement what it has proposed (Gutierrez, 2016).

801 To make progress in this area, cities need to move beyond the agenda-setting phase of
802 the policy cycle and focus on the design and implementation phase. In the UFPs analysed, the
803 design phase was not complete, as no programmes, projects, managers, timetables and budgets

804 were defined. In addition, monitoring and control systems were not considered in the
805 implementation phase.

806

807 *Capacity for action and administrative and bureaucratic barriers*

808

809 Historically, the process of policy integration in the agricultural and food sectors has
810 been slow and to some extent contradictory and the UFPs in Bogotá and Córdoba are no
811 exception. As indicated, TSFSCs emerge from collective actions. Therefore, they require time
812 for their processes to shape into concrete actions which are sometimes outside bureaucratic
813 regulatory frameworks. But this same situation also emerges in public management, i.e.
814 administrative times and processes do not respond in a timely manner to social demands. For
815 example, in both cities organising the farmers' markets in public spaces has been a great obstacle
816 for social groups, who have had to renovate their licences month by month, or even cancel
817 markets. These licences depend on different administrative authorities at the local level, which
818 has shown the low capability of coordinated reaction of the public administration, and the
819 obsolescence of local administrative structures to the shift in the UFP paradigm.

820

821 **5.2. Policy recommendations**

822

823 The results allow us to suggest some relevant recommendations for the UFPs both at a
824 general level and at a specific level. The general recommendations are described below, and
825 the city-specific recommendations are described in Table 6.

- 826 a. The UFPs should include instrumental proposals that allow boosting and activating the
827 factors that better tackle the problems in each city, thus contemplating the singularity of
828 each territory.
- 829 b. The UFPs should be endowed with a regulatory framework, inevitably leading to the
830 design phase. They should adopt an integrative and flexible approach, and include
831 progress findings and corrective measures.
- 832 c. There is a need to move from the fostering of the facilitating and driving sub-factors, to
833 the access and operative result sub-factors, which can resolve the impeding obstacles to
834 the development of TSFSCs.
- 835 d. The development of food systems depends on factors that are linked to the scope of
836 different public policies, which suggests the need for coordination and complementarity
837 in the actions of public administration and civil society.

838 e. Innovation in UFPs requires paradigm shifts in public administration, both in
 839 instrumental management and in the establishment of coherence measures in their
 840 implementation, such as the use of public procurement as a tool for the support and
 841 sustainability of TSFSCs from the public administration.

842

843 **Table 6. Recommendation of actions for the UFP in Bogotá and Córdoba**

| Lines | Actions | |
|---|---|--|
| | Bogotá | Córdoba |
| Governance and social participation | | |
| Food policy coordination structures, based on the participation of actors from different spheres and levels | Promote an Intersectoral Commission on Food and Nutrition Security, allowing the participation of civil society actors and social movements | Enhancing the CBMPC |
| Foster a city-region approach | Activate the RAPE and define specific functions to formulate and implement UFPs | Progress could be made on the basis of Rural Development Groups linking Córdoba as a city and a province |
| Promote the linking and/or creation of networks in different areas and levels, with an operational and practical vision | For example, adherence to the Milan Pact, as the city of Medellín (Colombia) has already done. | Strengthening community and commercial networks |
| Territorial factors | | |
| Facilitating and driving sub-factors | <ul style="list-style-type: none"> - Public food procurement - Spaces for farmers' markets - Paving of tertiary level roads (urban and rural) - Collective aqueducts | <ul style="list-style-type: none"> - Public food procurement - Spaces for farmers' markets - Regulations for direct sales |
| Access result sub-factors | <ul style="list-style-type: none"> - Specific credit lines for small productions adapted to crop cycles and supported with public funds. - Subsidies adapted to the characteristics of family farming and rural territories. - Participatory Guarantee Systems | <ul style="list-style-type: none"> - Participatory Guarantee Systems |
| Operative result sub-factors | <ul style="list-style-type: none"> - Collective management of resources: i) Collective means of transportation for inputs and/or final product; and ii) Collective purchasing of production inputs - Spaces for storage and logistical centres | <ul style="list-style-type: none"> - Spaces for storage and logistical centres |

844

845 **6. Conclusions**

846

847 The results indicate that factors such as public policies, cooperation links, advice and
 848 support for production, an informed civil society (on food issues), and the physical
 849 infrastructure of communications and telecommunications are key means to promote the
 850 emergence and development of TSFSCs. However, each city takes action according to its
 851 endogenous factors (type of production, population variables, armed conflict, natural resources,
 852 etc.). Results also highlight a key element for food policies to have an influence, and that is the
 853 instrumental design of such policies in a territorial approach. Policies for the food territory
 854 should consider the territorial singularities and particularities, which often transcend the local
 855 sphere. Thus, UFPs deserve a territorial approach, with various aims and measures (flexibility),

856 or at least different priorities. In addition, it should be noted that the factors that have driven the
857 emergence of TSFSCs are not necessarily the same as those that have enabled their stability
858 (development).

859 On the other hand, the second prioritised territorial sub-factor is strongly related to the
860 promotion of participatory coordination mechanisms (facilitating and driving sub-factors) that
861 involve civil society, and therefore represents an important element to include in UFPs, as it
862 favours the strengthening of collective action and social capital in cities. Achieving sustainable
863 food systems requires participatory and reflexive governance processes. This point is relevant
864 given that the results obtained show that the TSFSCs are supported by a strong social base,
865 measured in this research by social networks, in which organisations of various kinds
866 participate, with a predominance of civil society organisations that are connected, but with a
867 low density of relationships, which favours a lack of centrality of power. However, there are
868 bridge-actors that connect isolated groups of actors and highlight their role as network cohesors.
869 In Bogotá, the role of NGOs and international cooperation agencies as cohesive actors in the
870 network stands out, which could call into question the degree of empowerment of the local
871 community. In Córdoba, the cohesive role of social collectives and small retailers stands out,
872 which could question the role of consumers in the TSFSCs.

873 Thus, the UFP should be endowed with a regulatory framework that legitimises its
874 programmes and projects, as well as its deliberative processes and decision-making
875 mechanisms. These processes must be supported by a revitalisation of local public
876 administration, which improves responsiveness and enhances inter-administrative public
877 coordination. In this sense, the UFPs should also be equipped with mechanisms to overcome
878 the electoral situation in the municipalities where they are implemented. It also highlights the
879 promotion of different types of territorial sub-factors to respond to the operational needs of the
880 TSFSC. While the first steps of the analysed UFPs focus on enabler and driver sub-factors,
881 broadening their scope to access and operational outcome sub-factors could provide more
882 tangible and short-term results for the food territory.

883 Consequently, from the results obtained it can be concluded that the TSFSCs are related to the
884 dynamics of the territory and not only to the characteristics of the products that flow through
885 them, thus emerging as an endogenous territorial strategy, and becoming an element for
886 sustainability and food governance. Therefore, the existence of territorial factors that are
887 associated with the development of supply chains, such as UFPs and participatory coordination
888 mechanisms, indicate the potential transformative role of TSFSCs in food governance that
889 enables the achievement of sustainable food systems Although the results should not be

890 generalised beyond the cities analysed, the proposed methodological model can be extrapolated
891 to the analysis of other territories. The results achieved should not be understood as a fixed and
892 static priority in Bogotá and Córdoba, but as a dynamic attribute that changes over time and
893 depends on the interaction of the different actors involved in the territory's food system.

894 Finally, this study proposes a multi-criteria ANP model combined with SNA topological
895 measurements to analyse the drive of UFP to TSFSCs. Innovatively combining these two non-
896 traditional methodologies (ANP and SNA) allows for the design and deployment of
897 programmes and projects, within UFP frameworks, that are more successful than many of those
898 currently in place. Reducing the failure of UFPs in boosting TSFSCs will strengthen the
899 opportunities to achieve more sustainable food systems. As shown through the empirical study,
900 the proposed model can incorporate complex decision-making processes as a prioritisation of
901 territorial factors to foster TSFSCs with social network metrics in order to track actual changes
902 in food networks as a result of policies. This work only evaluated a social network at one point
903 in time (e.g. when the survey was taken), but if social networks were evaluated over time,
904 different conclusions relative to the importance of organizational relationships may unfold.
905 Within the field of food policy, identifying the possible interactions between the ANP results
906 and SNA criteria could contribute to the development of a more comprehensive model of ex
907 ante and ex post assessment of UFPs.

908

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1162 Annex I

1163 Territorial factors and sub-factors influencing the development of TSFSC

| Factor | Sub-factors | Definition | Unit of measure / Indicator | |
|-------------------------------------|-------------|---|--|---------------------------------------|
| F1. Nature | SF1.1 | Availability of arable land | Availability and access to arable land in or near the territory | Hectares |
| | SF1.2 | Availability of water | Availability and access to water for agricultural use | N° of water sources |
| F2. Human and intellectual | SF2.1 | Informed civil society on food issues | Social groups in the field of consumption and production with knowledge of food issues, health and food quality | % of population informed (over total) |
| | SF2.2 | Advice and support for farmers | Training of farmers in production processes (ecological, transition), post-harvest management, adding value to customer service, marketing and commercialization, negotiation. | % of farmers advised |
| | SF2.3 | Digital Education | Knowledge and use of new technologies and the Internet (the area of consumption and production) | % of population educated (over total) |
| F3. Social | SF3.1 | Cooperation and public-private partnership linkages | Creation and strengthening of support networks for lobbying, information and knowledge sharing, including public-private partnerships. | N° of support networks |
| | SF3.2 | Equity | Encourage the participation of women and young people in the AFN | % of women and young people |
| F4. Cultural | SF4.1 | Identity and civic commitment to the territory | Sense of belonging to the territory | Personal perception |
| | SF4.2 | Cultural and gastronomic heritage | Social and cultural value of food and places of purchase | Personal perception |
| F5. Economic | SF5.1 | Physical communications and telecommunications infrastructure | Public investment in land transport networks and telecommunication network infrastructure | |
| | SF5.2 | Access to external financing | Availability of credits and financing to productive projects | N° of credits available |
| | SF5.3 | Investment in TSFSC research | Support from academia in the fostering and strengthening of TSFSC | N° of research projects |
| | SF5.4 | Storage and sales infrastructure | Availability of places to sell and/or store food in the AFN | N° of infrastructure |
| F6. Productive | SF6.1 | Product diversity | Supply of diverse foods (vegetables, fruits, nuts, mushrooms, cheese, bread) | N° of product ranges |
| | SF6.2 | Access to local productive inputs | Availability of resources such as native seeds and other required inputs | |
| | SF6.3 | Use of ICT solutions for management | Software for order management and delivery | |
| | SF6.4 | Availability of local labour | Available and trained workers for agricultural work | N° of rural workers |
| F7. Political | SF7.1 | Public policies to foster local food production and sales | Public programmes and projects that foster the production and consumption of local food with environmental and fair practices, as well as local sales. | N° of policies |
| | SF7.2 | Flexible food hygiene standards | Food hygiene standards adapted for small-scale farms and new enterprises | N° food hygiene standards |
| | SF7.3 | Support for participatory guarantee systems | Support for participatory guarantee systems (PGS) proposed by civil society | N° PGS |