The public dimension of urban food infrastructures: advancing conceptualisation and unpacking public sector roles
Supplementary Material

This table presents additional empirical evidence underpinning the analysis developed in the main article. For each governance mode and public sector role, it documents concrete actions, interventions and key examples identified across three urban food infrastructure types in Barcelona: community gardens, agroecological food cooperatives, and food insecurity initiatives.

Governance mode	Public sector roles in UFIs	Public sector actions/interventions		
		Community gardens	**Agroecological Food Cooperatives**	**Food insecurity Initiatives**
Authority	**Public Sector as a regulator** Does the public sector use laws, regulations, taxes, bans, or other policy instruments to support, shape, or constrain UFIs?	– Regulates land use and spatial allocation through urban planning instruments, determining where community gardens can be located. – Applies food safety and public health frameworks. – Designs and implements municipal garden programmes that define access conditions, organisational models, and some operational rules. – Prohibits urban animal husbandry within community gardens. – Bans the sale and formal redistribution of produce, allowing only self-consumption. – Controls access and participation, defining eligibility criteria (e.g., age, organisational form) and conditions for entry. – Limits duration of use through time-bound access.	– Regulates taxation through VAT rates on food products, general accounting and reporting obligations for retail activities, economic activity classifications (e.g. IAE), and, where applicable, specific cooperative tax regimes. – Establishes food safety and hygiene requirements at the point of sale, including storage conditions, handling of unpackaged products, traceability obligations, and compliance with sanitary standards. – Regulates retail activity through business licensing, rules on opening hours, and mandatory labelling requirements. – Defines the legal frameworks through which initiatives operate, establishing requirements for governance structures, reporting obligations, and the conditions under which commercial activities can be carried out.	– Establishes normative standards for food infrastructure under public ownership and control through Catalan legislation on the right to food. – Regulates how food aid is channelled and distributed through European funding regulations. – Defines a comprehensive framework to prevent food waste across the entire supply chain through Law 3/2020 on Food Loss and Waste Prevention in Catalonia, prioritising redistribution for human consumption. – Controls access through the Municipal Institute of Social Services, defining eligibility criteria (i.e. social vulnerability status) and programme conditions, operating as the primary institutional channel for fulfilling municipal obligations on food access and social rights.
		Example: The Municipal Garden Network programme restricts participation to individuals aged 65 and over, granting access to allotments in municipal gardens for a maximum period of five years. As in other municipal garden programmes, produce is limited to self-consumption, since both the sale and donation of harvests are not permitted within the programme framework, reflecting broader urban planning and food safety regulations that do not recognise community gardens as commercial food-producing activities.	**Example:** Most food cooperatives are legally constituted as associations, which entails specific regulatory requirements that shape their operation. At the same time, some initiatives remain informal and operate without a legal status, thus remaining outside formal regulatory frameworks. In contrast, the cooperative supermarket—operating more similar to a retail space—faces more extensive regulatory requirements, particularly regarding commercial, sanitary, and labour compliance.	**Example:** Catalan Law 3/2020 on the Prevention of Food Loss and Waste indirectly shapes food security initiatives' provisioning by requiring all actors in the food chain to prioritise donation of surplus food to social entities and food banks before disposal. In parallel, the transition from FEAD to ESF+ constitutes a regulatory shift with direct operational consequences for initiatives that had built their provisioning models around centralised food distribution, leaving an estimated 200,000 people in Catalonia without equivalent coverage from 2024 (Càritas Catalunya, 2023)

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Provision	**Public Sector as a provider** Does the public sector provide, build, fund, maintain, support or withdraw services, materials, land, or other infrastructure (resources) to UFIs?	**Investor** funding, building, maintaining, or materially supporting infrastructure	– Funds and installs basic gardening infrastructure, including raised beds, irrigation systems, fencing, and other physical installations. – Provides utility connections and services, including water supply and, in some cases, electricity. – Maintains supporting infrastructure and basic services, such as tree pruning and upkeep of surrounding public spaces. – Offers financial support through competitive funding schemes, including green roof competitions and participatory budgeting programmes. – Provides more stable funding to selected gardens integrated within municipal facilities, such as environmental education centres. – Limits long-term operational investment, resulting in scarce and unstable funding for the everyday functioning of most gardens.	– Provides financial support through subsidies and funding programmes often linked to the Social and Solidarity Economy, particularly in the case of larger food cooperatives, including employment subsidises, the development and implementation of IT systems, and measures to improve accessibility for members, such as reduced membership fees.	– Funds operational infrastructure, programme delivery, and institutional sustainability through formal subsidy frameworks and bilateral partnership agreements between government bodies and food insecurity initiatives. – Subsidises or fully cover school canteen costs for children from low-income families enrolled in public or state-subsidised schools. – Provides public funds distributed as vouchers or cards that families on low incomes can use to buy food directly in shops or markets, rather than receiving food packages from a distribution point. – Covers personnel expenditure for front-line and coordination roles within some food insecurity initiatives.
		Host providing access to publicly controlled space/infrastructure	– Provides access to public land for community gardening through dedicated programmes. – Provides access to rooftops and municipal buildings for rooftop cultivation initiatives. – Hosts community gardens within broader municipal facilities, such as environmental education centres, integrating them into existing public infrastructures. – Allocates space selectively to specific groups through eligibility criteria and programme design (e.g., older people, persons with disabilities). – Grants access primarily on a temporary basis, often through conditional or time-limited arrangements rather than permanent tenure.	-Provides premises occasionally for food cooperatives, although in most cases these initiatives rely on rented or self-managed spaces, often shared with other collectives.	– Provides access to public buildings such as civic centres, schools, and social service spaces to host community kitchens, dining services, and urban gardens, typically through concession or temporary use arrangements.
			Example: As an *investor*, the City Council funds and installs basic infrastructure—such as raised beds, new soil if contaminated, irrigation systems, water points, and fencing—when gardens are established, and provides access to funding schemes. However, support is typically limited and project-based. Only a small number of gardens linked to environmental education centres—such as Aula Ambiental Bosc Turull—benefit from more stable funding and staff support. As a *host*, the municipality provides access to public land, vacant plots, or rooftops, equips them with basic infrastructure, ensures water access, and makes shared equipment available (e.g. leaf shredders).	**Example:** The cooperative supermarket has received financial support from different scales of the public sector: at the municipal level, for the renovation of premises and the development of IT systems, among other items; and at the regional level, for employment subsidies, rental of spaces, training, and measures to improve accessibility, such as reduced membership fees for vulnerable groups.	**Example:** As *investor,* the public sector channels funding through Social Services collaboration agreements with third-sector organisations, food vouchers and economic transfers managed by social services, and school meal grants —of which 35,150 were awarded at full coverage in Barcelona in 2024 (Generalitat de Catalunya, 2024). As *host,* municipal facilities are provided to food insecurity initiatives; Rebost Solidari, for instance, is a community-led solidarity pantry serving the Bon Pastor and Baró de Viver neighbourhoods that operates from a municipally provided space.

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Enabling	**Public Sector as an enabler** Does the public sector enable or constrain UFIs through supportive measures —such as providing information, training, networking opportunities, competitions, or voluntary certification schemes— and by fostering collaboration?	**Match-maker** facilitating connections, coordination, and collaboration among actors	– Organises meetings and workshops to connect community gardens and agroecological initiatives across the city. – Facilitates knowledge exchange between garden projects on shared challenges, such as drought management or cultivation techniques. – Supports alliance-building and networking among gardens, organisations, and other urban agriculture actors. – Creates spaces for collaborative project development, including the co-design of new initiatives and partnerships. – Acts as an intermediary between gardens and broader municipal or policy networks, helping to connect grassroots initiatives with institutional actors and strategies.	-Organises occasionally meetings and workshops, inviting members of food cooperatives to participate and present their initiatives.	– Coordinates surplus prevention programmes by linking supply and demand among public bodies, companies, and social entities. – Facilitates the redirection of food waste towards provisioning circuits.
		Communicator producing, translating and disseminating information, knowledge and narratives	– Provides technical support to some community gardens. – Disseminates technical and practical knowledge related to cultivation, infrastructure maintenance, and garden management. – Increases the visibility of community gardens within municipal policy strategies. - Frames community gardens discursively as valuable urban initiatives.	– Frames food cooperatives discursively as valuable food initiatives towards just and sustainable food systems.	– Disseminates information on available food insecurity initiatives through municipal channels. – Amplifies food poverty awareness campaigns led by third-sector organisations.
			Example: Through the Agropolis project—a programme created by Barcelona City Council to support agroecological initiatives, including community gardens—the municipality acts as a *matchmaker* by actively connecting diverse actors across the urban and periurban food system. It organises meetings, workshops, and thematic working groups that bring together community gardens, social organisations, researchers, and municipal departments. These spaces facilitate coordination, knowledge exchange, and alliance-building around shared challenges, such as drought management or the co-design of new projects. In doing so, the municipality does not directly manage the initiatives but enables collaboration, fosters networks, and supports the emergence of collective solutions across otherwise fragmented actors**.**	**Example:** The cooperative supermarket is recognised as an example of sustainable food practices within policy agendas such as Barcelona's Sustainable Food Strategy 2030, where it is framed as a relevant initiative contributing to sustainable food systems. In general, some actors perceive this support as primarily discursive and not consistently accompanied by concrete actions.	**Example:** As *match-maker* , surplus prevention programmes connect retail sector donations to food insecurity distribution networks, although tensions have been noted between surplus dependence and concerns around dignity and agency concerns (LaRota-Aguilera et al., 2025). As *communicator,* Barcelona City Council supports food drive campaigns, such as the *Gran Recapte* , led by the Food Bank.

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Self-governing	**Public sector as a consumer or user** Does the public sector incorporate UFIs (their products or services) into its own operations, services, or procurement activities?	– Does not incorporate community garden produce into public procurement systems or formal municipal supply chains. – Uses community gardens as pedagogical resources within public education. – Incorporates community gardens into engagement activities to promote environmental awareness, social inclusion, sustainable food literacy, and contact with urban nature.	- There is no evidence of the public sector acting as a consumer or user.	– Relies indirectly on food insecurity initiatives to provide food access to people experiencing food insecurity ,referring users through social services and effectively outsourcing part of its social protection mandate. – Uses food insecurity initiatives to deliver pedagogical resources on food waste reduction. – Does not integrate food insecurity initiatives more deeply into formal supply chains, as public procurement law structurally constrains such incorporation.
		Example: In *Hort de la Font de la Guatlla* , a community garden within the City Council's Hands on Green programme, a nearby public school uses the space as an extension of the classroom, with children regularly visiting and cultivating a collective plot. In this case, the public education system incorporates community gardens as learning environments.	Not applicable.	**Example:** Institutional referrals to community and third sector food insecurity initiatives through the Municipal Institute of Social Services position the public sector as operational dependent on these initiatives, without formally integrating them into a universalised public system. Municipal bodies also use the spaces of food insecurity initiatives (e.g. community kitchens) and their technical expertise to deliver food-related training and workshops (e.g. on food waste reduction, cooking, or nutrition) to the general public.
Partnership	**Public sector as a partner** Has the public sector developed partnerships with UFIs, through specific initiatives or actors?	– Establishes partnerships with community gardens through concession agreements, granting temporary access to public land under negotiated conditions. – Contracts NGOs, associations, and specialised organisations to manage or facilitate community garden projects within specific municipal programmes. – Partners with educational institutions, particularly public schools, to use community gardens for pedagogical and environmental education purposes.	– Collaborates with cooperatives on a project-based and temporary basis, without evidence of formal partnership or co-governance arrangements.	– Co-produces and co-coordinates responses to the right to food with third-sector organisations through formal partnerships agreements that structure the collaborative design and delivery of food insecurity responses.
		Example: In the Municipal Garden Network community garden program, the City Council acts as a partner through fixed-term leases (typically up to five years), allocating individual plots and defining rules, while gardeners manage cultivation. In contrast, in Vacant Plots/Hands on Green programmes, the City Council the municipality partners with organised groups through temporary agreements (typically around three years, renewable), granting greater collective autonomy in managing the gardens, albeit within a framework defined by the municipality.	Not applicable.	**Example:** The ALIMENTA project is a public-social collaboration bringing together Barcelona City Council, social entities, and food businesses to guarantee the right to food in a dignified and inclusive way. Its approach moves beyond emergency relief towards user autonomy, community integration, and sustainable eating. Complementarily, the Network for the Right to Adequate Food in Barcelona was created to promote collaboration and co-production among public institutions, social organisations, and civic actors working to guarantee the basic needs of families and individuals in the city.