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The role of partnerships in municipal sustainable development in Portugal

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ABSTRACT

Partnerships are crucial for municipal sustainable development, leveraging diverse expertise and resources. Collaborations between local governments, businesses, NGOs, and community groups drive innovation and shared goals, ensuring more comprehensive and resilient solutions. This study aims to characterise and understand the role of municipal partnerships as a vital tool for driving sustainable progress. A mixed-methods methodology was applied by collecting 874 projects from 308 municipalities in Portugal. The findings identify 506 partnerships and reveal significant asymmetries in the distribution of municipal sustainable development projects. The results also identify 9 motivational factors for the emergence of these initiatives, with the economic and community dimensions standing out. Additionally, 11 actors involved in these initiatives and 4 clusters of collaboration between these entities are mapped. Finally, this study is particularly relevant for establishing public policies that can reduce geographical asymmetries and maximise the impact and resilience of these municipal sustainable development projects.

1. Introduction

Smart cities have played a pivotal role in driving sustainable development, providing innovative solutions to urban challenges, and promoting economic, social, and environmental efficiency. This interconnection between smart cities and sustainable development is evident in several areas, reflecting an integrated approach to improving people's quality of life, preserving natural resources, and promoting equitable economic growth. Firstly, the implementation of advanced technologies in smart cities contributes to the efficient management of resources. Sensors and connected devices allow for the real-time collection of data related to energy consumption, waste management, and air quality (Zeng et al. 2024). Furthermore, smart cities prioritise sustainable mobility. Smart transportation systems, such as electric vehicles, bike sharing, and efficient public transport networks, not only reduce carbon emissions but also improve the

quality of life of inhabitants (Angelidou et al. 2022). Social inclusion is another crucial dimension of this relationship as pointed out in Fainstein (2014) and Wolff (2017). Smart city technologies strive to create more accessible and equal communities, guaranteeing access to information, public services, and opportunities for all citizens.

Smart cities have contributed to the transformation of municipalities, promoting efficiency, sustainability, and quality of life for their inhabitants. These urban environments use advanced information and communication technologies to optimise the management of resources and public services. The integration of advanced technologies, such as the Internet of Things (IoT), data analysis, and artificial intelligence, enables the collection and analysis of information in real-time to improve urban decision-making (Singh et al. 2020; Herath and Mittal 2022; Javed et al. 2023). Furthermore, smart cities

encourage citizen participation through digital platforms that enable active community involvement in public management. Chen (2023) point out that the implementation of innovative solutions, such as pollution sensors and health monitoring systems, contributes to the creation of healthier urban environments.

Sustainable development initiatives often require collaboration between different sectors of society to address environmental, social, and economic challenges. By joining forces, partnerships can optimise resources and knowledge, creating more effective and comprehensive solutions to complex issues such as climate change, poverty, and environmental degradation. Companies can bring innovation and investment, while non-governmental organisations offer local expertise and an understanding of community needs. Ashford and Hall (2011) and Glass and Newig (2019) point out that governments also play a regulatory role and provide frameworks for implementing sustainable policies. In addition, partnerships can facilitate the transfer of technology and knowledge, accelerating progress towards more sustainable practices. The results of the study by Stal et al. (2022) conclude that this collaborative approach based on commitments not only strengthens the implementation of sustainable development goals but also creates an enabling environment for innovation, inclusion and equity, contributing to a more sustainable and resilient future for present and future generations.

Current studies in the field such as Dragomir and Foris (2022), Murphy and Stott (2021), and Sultana and Turkina (2023) tend to highlight the role of partnerships in addressing the sustainable development goals (SDGs) of the 2030 agenda as proposed by the United Nations (UN). However, these studies do not look specifically at the role that local and regional actors can play in establishing these partnerships. At the municipal level, the studies carried out by Almeida (2022), Ferreira et al. (2023), and Masuda et al. (2022) highlight the contribution that sustainable development initiatives can make to achieving the SDGs. These studies highlight that this inclusive approach promotes shared responsibility and accelerates progress towards the SDGs. By integrating local perspectives and fostering collaborative efforts, a more sustainable and impactful transformation can be achieved, addressing global challenges at the grassroots level. However, these studies do not make it possible to determine and quantify the role of partnerships in municipal sustainable

development initiatives and do not make it possible to characterise the role of these collaborations considering the various forms that partnerships can take, such as collaborative innovation, collaborative financing, sustainable community development, multi-stakeholder dialogue, public-private partnerships, among others. In this sense, this study addresses this research gap by taking on the objective of exploring the specific role of partnerships enshrined in SDG 17, which covers various areas of cooperation and establishes the strengthening of the means of implementing and revitalising partnerships for sustainable development. The study adopts mixed methods to explore this phenomenon and considers the database of the Municipal Platform of the Sustainable Development Goals (ODSLocal). Three research questions are formulated to explore the relevance of these initiatives in Portuguese territory, the motivational factors that lead to their appearance, and the role that various entities assume in this process:

- RQ1. How predominant are partnerships in municipal sustainable development initiatives?
- RQ2. What are the motivating factors for the emergence of partnerships in sustainable development?
- RQ3. What is the role of the various entities in the implementation of partnerships in municipal sustainable development initiatives?

The first research question is answered by using quantitative methods to measure the number of these initiatives, considering their regional distribution. The last two research questions are covered using qualitative methods based on a thematic analysis of the projects registered on the ODSLocal portal.

This article is organised as follows: first, a review of the literature in the field of local sustainable development is carried out. Next, the data used in this study is characterised and the phases of the methodological process are described. Then the results of the study are presented and organised according to the previously formulated research questions. After this, the relevance of the results found is discussed, considering their contributions to the understanding of this phenomenon. Finally, the conclusions summarise the theoretical and practical contributions of the study and its implications for the establishment of public policies. It is also in this last section that the limitations of the study are exposed and suggestions for future work are provided.

2. Literature review

Sustainable development has risen to prominence on the global stage due to a confluence of interconnected factors. Primarily, Mensah and Ricart Casadevall (2019) highlights that an escalating awareness of environmental degradation and its far-reaching consequences has compelled nations, organisations, and individuals to prioritise sustainable practices. The recognition of climate change, deforestation, and pollution as critical threats to the planet has spurred a collective sense of responsibility and urgency. Furthermore, international collaborations have also played a pivotal role in elevating the significance of sustainable development. Agreements such as the United Nations Sustainable Development Goals (SDGs) and the Paris Agreement have provided a shared framework for nations to address environmental and social challenges collectively (Moreno et al. 2023). These global commitments underscore the interconnectedness of issues and the need for collaborative efforts. Simultaneously, social movements and advocacy have amplified the call for sustainable development. Grassroots movements, often fuelled by passionate individuals and communities, have created a groundswell of demand for responsible and ethical practices from governments and corporations (Moser and Bader 2022; Enarsson et al. 2024). This bottom-up pressure has significantly influenced the narrative around sustainable development.

The United Nations' Agenda 2030 is a pivotal framework that embodies the principles of sustainable development. Adopted in 2015 by all UN Member States, the Agenda 2030 consists of 17 SDGs with 169 targets, covering a wide spectrum of issues ranging from poverty and hunger to climate action and peace (Halkos and Gkampoura 2021). These goals provide a comprehensive roadmap for countries and stakeholders to navigate the complexities of sustainable development. Purvis et al. (2019) highlight that Agenda 2030 recognises the indivisibility of the three pillars of sustainable development (i.e. economic, social, and environmental) and emphasises a collaborative and integrated approach. The SDGs address key challenges such as poverty, inequality, climate change, and environmental degradation, promoting a collective commitment to transformative action. The goals serve as a shared blueprint for governments, businesses, civil society, and individuals to work together towards a more sustainable and inclusive future. Moreover, by aligning national policies, strategies, and investments with the SDGs, countries can contribute to the global effort to achieve sustainable development.

Agenda 2030 acknowledges the limitations of traditional approaches and recognises the need for innovative and inclusive solutions (Carpentier and Braun 2020; Moallemi et al. 2020). Instead, it encourages multi-stakeholder partnerships, and promotes a more holistic and integrated approach to development. This reflects an understanding that diverse perspectives, expertise, and resources are essential to addressing the multifaceted nature of global challenges. Moreno-Serna et al. (2020) note that the involvement of various stakeholders, including governments, businesses, NGOs, academia, and local communities, fosters a collaborative environment where different sectors can leverage their strengths and compensate for each other's weaknesses. Moreover, the SDGs themselves highlight the interconnectedness of various issues, emphasising that progress in one area is often contingent on advancements in others. Multi-stakeholder partnerships enable a coordinated and synergistic approach to tackle these interlinked challenges. For instance, Díaz-Perdomo et al. (2021) give the example of a partnership between a government, a technology company, and a non-profit organisation that might address both poverty and digital inclusion by combining financial support, technological innovation, and community engagement.

Implementing Agenda 2030 at the local government level involves a comprehensive and collaborative approach that integrates sustainable development goals (SDGs) into various aspects of governance, policy-making, and community engagement. Varga et al. (2023) advocate that local governments should prioritise inclusive governance and citizen engagement. Ensuring that all segments of the community have a voice in decision-making processes helps build a sense of ownership and shared responsibility for the SDGs. Literature exposes different forms of implementing it, such as through participatory budgeting, public consultations, and platforms for community input in policy formulation (Siqueira and Ramalho 2022; Reuter 2023). Moreover, Cai and Wolff (2023) state that investing in education and awareness campaigns is essential. Local governments can play a role in raising awareness about the SDGs among residents, businesses, and local institutions. By promoting a shared understanding of the goals and their significance, governments can inspire collective action and behaviour change. Furthermore, integrating

sustainable practices into municipal operations and service delivery is a key point. This involves adopting environmentally friendly policies, incorporating circular economy principles, and promoting energy efficiency in local infrastructure and services (Valverde and Avilés-Palacios 2021; Antunes et al. 2022).

3. Methodology

3.1. Framework for partnerships in sustainable development

Horan (2022) notes that the intricate interplay of diverse interests, the necessity for effective coordination, and the challenge of securing sustainable financing collectively pose key obstacles to the operationalisation of frameworks for sustainable development partnerships. Sustainable development partnerships involve collaboration among diverse stakeholders to address social, economic, and environmental challenges. To ensure the effectiveness and longevity of such partnerships, it's essential to consider various dimensions. Despite this, there is no framework for capturing the various dimensions that partnerships can take on. In this sense, this study aimed to explore the dimensions found in studies such as Greenland et al. (2023), Ho et al. (2023), and Stott and Murphy (2020). Figure 1 synthesise the dimensions found in these studies. A total of 9 dimensions are identified. Social dimension intends to ensure the participation of all relevant stakeholders, including marginalised and vulnerable groups, in decision-making processes. It also focuses on enhancing the well-being of local communities by addressing their specific needs and empowering them economically and socially. Economic dimension

intends to ensure financial sustainability, local economic development, and promote economic opportunities and job creation, particularly in underserved areas, to contribute to poverty reduction. Environmental dimension intends to promote the responsible use of natural resources and minimise negative environmental impacts. It also integrates climate-friendly practices and biodiversity conservation. Institutional dimension establishes a clear and effective governance structure that outlines roles, responsibilities, and decision-making processes. It also includes policy alignment and legal agreements and frameworks to govern the partnership and provide a basis for accountability. Community dimension emphasises the importance of engaging communities in the decision-making processes, and understanding their unique needs and aspirations. Technological dimension embraces and leverages technology to enhance the efficiency and impact of development projects. Educational dimension looks to the need of investing in education and training programmes to enhance the skills and knowledge of individuals and communities. Health dimension includes the implementation of initiatives that improve sanitation and hygiene practices, contributing to overall community health. Finally, human rights and social justice dimension highlights the need to adopt a rights-based approach to development, ensuring the protection and promotion of human rights.

3.2. Data sample

A municipal platform for monitoring sustainable development goals is an initiative that aims to integrate and promote the implementation of the 17
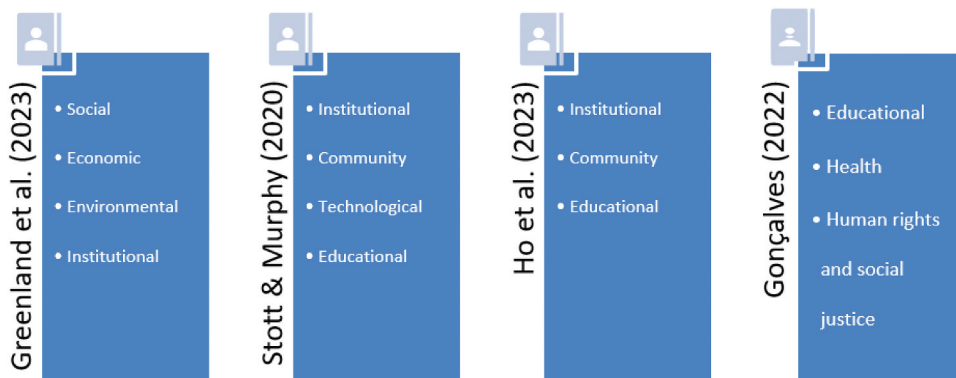

Figure 1. Dimensions of partnership for sustainable development (own source).

SDGs established by the UN within the municipal context. This approach recognises the importance of local authorities in promoting sustainable development, as they often have the closest proximity to the specific needs and challenges of their communities. A municipal platform in this area also serves as a mechanism for coordination and collaboration between the different sectors of local government, civil society organisations, the private sector, and citizens. It aims to align municipal strategies and actions with the principles and goals of the SDGs, addressing issues ranging from poverty eradication and health promotion to environmental protection and stimulating innovation.

This study adopts the ODSLocal platform, which aims to facilitate the implementation of the SDGs in the various municipalities on the continent and the autonomous regions, involving local authorities and civil society to support the integration of the SDGs at the municipal level. It is a mobilising and inclusive project that includes, among other components, a dynamic online portal, and databases, which makes it possible to view and monitor the progress of each municipality in relation to the 17 SDGs, establishes a training plan for municipal agents and a cycle of events to publicise the initiative among local agents and educational institutions. Since its launch in 2020, data collected by Carvalho (2023) indicates that 111 municipalities across the country have already been mobilised and more than 1,000 local projects and good practices have been mapped, developed by various types of local entities (e.g. municipalities, schools, NGOs).

3.3. Data design and analysis

This study has applied a mixed methods approach as suggested by Creswell (2021) to combine both qualitative and quantitative methods to gain a comprehensive understanding of the research problem. The application of a mixed methods design involves a systematic integration of qualitative and quantitative data collection and analysis. This approach enhances the study's validity, allowing researchers to triangulate findings, address limitations of individual methods, and provide a more robust interpretation (Regnault et al. 2018). Mixed methods studies are particularly valuable in areas such as sustainability as reported by Bhutta et al. (2021) and Dencer-Brown et al. (2022), where a holistic perspective is crucial, bridging the gap between the depth of qualitative insights and the breadth of quantitative data.

The data was collected and analysed between 8 November 2023 and 29 December 2023. Figure 2 schematically presents the two phases of the method, which includes both qualitative and quantitative components. The process begins with a descriptive statistical analysis which quantifies the number of projects in each region and determines their statistical proportion. To determine the geographical boundaries of each region, the Nomenclature of Territorial Units for Statistics (NUTS) structure was adopted. NUTS provides a harmonised structure for organising and presenting regional statistics, facilitating the comparison of data between different regions and countries. The NUTS classification is hierarchical and consists of three levels. In this study, NUTS 2 is adopted, which includes the base regions for the implementation of regional
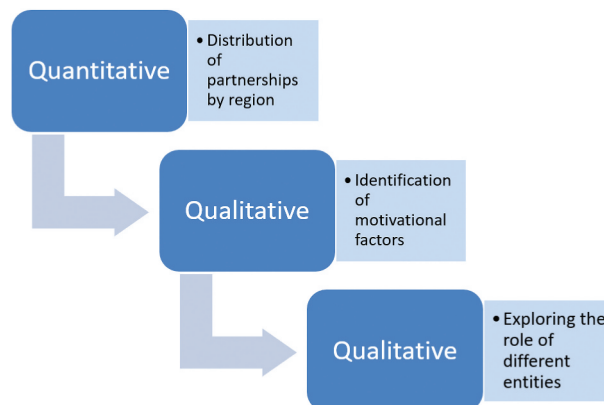

Figure 2. Sequence of the methodological process phases (own source).

policies. NUTS 2 in Portugal includes the following seven regions: North, Centre, Metropolitan Area (MA) of Lisbon, Alentejo, Algarve, Madeira, and Azores. In the second phase, the quantitative analysis initially carried out is complemented by a qualitative analysis, which begins by analysing the motivational factors according to the dimensions identified in Table 1. This is followed by a qualitative exploration of the role that the different entities participating in sustainable development initiatives can play. Thematic analysis is applied in the qualitative analysis phase using MAXQDA software v.24, which provides tools for coding, organising, and analysing qualitative data, facilitating the identification and exploration of themes. Thematic analysis is a research method that involves identifying, analysing, and reporting patterns or themes within a dataset. Xu and Zammit (2020) point out that thematic analysis is especially useful when researchers want to explore new topics or develop theories from the data. By identifying and analysing thematic patterns, thematic analysis has the potential to generate deep insights and meaningful understandings about participants' experiences and perspectives. Two specific techniques of thematic analysis were applied. Deductive thematic analysis is applied in the identification of motivational factors using a set of predefined themes captured in Figure 1; while inductive thematic analysis is applied in the identification of the roles that the different entities can assume. In inductive thematic analysis, themes emerge from the data without imposing pre-existing categories. It allows us to explore and understand the data without predefined categories or dimensions.

4. Results

Initially, the distribution of projects and the partnerships involved in their implementation is shown in Table 1. The following information was calculated and registered to answer RQ1: number of municipalities (NMU),

number of projects (NPR), number of partnerships (NPA), ratio between the number of projects and the number of municipalities (PR/MU), ratio between the number of partnerships and the number of municipalities (PA/MU), and the ratio between the number of partnerships and the number of projects (PA/PR). In total, information was collected from 308 municipalities, 874 projects, and 506 projects. The findings indicate that most of the projects are in MA Lisbon, despite it being the region with the fewest municipalities. This is also the region with the highest number of partnerships, which is approximately five times higher than the 2nd region (i.e. Algarve) with the highest number of partnerships. Despite this, the highest rate of partnerships per project is found in the Madeira region, even though only 21 municipal sustainable development projects were identified. The lowest number of projects is in the Azores region. Associated with this, it is also the region with the lowest number of partnerships, which indicates that the geographical and social conditions of this region make it difficult for sustainable development initiatives to emerge and for partnerships to be established between the various entities in the region.

Afterwards, we explored RQ2 and identified in Table 2 the themes associated with municipal sustainable development projects. The most prevalent themes are the economic and community dimensions. On the contrary, the technological dimension individually appears to be less important, despite the potential for ICT to be adopted and included in the various sustainable development initiatives, both in terms of its adoption by the final recipients and as a way of communicating and coordinating activities between its promoters.

Finally, Figure 3 schematically shows the various entities, their connections, and the roles they can play in sustainable development partnerships as requested in RQ3. A scale of three values was adopted (i.e. between 10%-25%, between 25%-50%, and more than 50%) represented by the thickness of the line. Connections that occur in less than 10% are not

Table 1. Distribution of projects by nomenclature of territorial units for statistics (NUTS) region.

NUTS 2	NMU	NPR	NPA	Ratio PR/MU	Ratio PA/MU	Ratio PA/PR
North	86	216	135	2.512	1.570	0.625
Center	100	125	68	1.250	0.680	0.544
MA Lisbon	18	306	192	17.000	10.667	0.627
Alentejo	58	87	46	1.500	0.793	0.529
Algarve	16	106	46	6.625	2.875	0.434
Azores	19	13	4	0.684	0.211	0.308
Madeira	11	21	15	1.909	1.364	0.714

Table 2. Identification of partnership themes in sustainable development projects.

Dimension	Themes	Description
Social	food banks homeless poverty social exclusion	Food banks and Refood movements stand out in the fight against hunger and food waste (ZERO DESPERDÍCIO 2015). These organizations act as intermediaries between companies, farmers, supermarkets, and the socially vulnerable population. Other projects also stand out, such as the Senior Academy (Academia MediaVeritas 2023), which aims to promote sporting habits in senior citizens as a way of combating sedentary lifestyles and social exclusion.
Economic	circular economy entrepreneurship internationalization internships support networks unemployment	Projects based on the circular economy have emerged in this field, aimed at reducing waste by promoting the reuse, recovery, repair, and recycling of products. The main mission of these projects is to reintroduce waste and end-of-life objects collected by municipalities. There are also some differentiating elements, such as the Infinity project, which added an artistic factor to the project (Infinity 2018).
Environmental	biodiversity cleanliness ecological footprint recycling	Initiatives to enhance the territory fall into this group. A good example of a project in this field is the Manuel Gomes Guerreiro Eco-Botanical Trail in Loulé (PEB-MGG 2022). It is the first in Portugal exclusively dedicated to Mediterranean flora.
Institutional	citizenship culture knowledge transfer	Recognizing territories and valuing communities, especially those in disadvantaged areas, are identified in this dimension. The Cova da Moura project aims to use the know-how of the local associations that make up the neighborhood committee and the consultation of residents to find solutions to improve the quality of life in the neighborhood (JBS 2020). Another good example is the Food4Sustainability CoLab which was set up as a non-profit association dedicated to innovation in sustainable food production (F4S 2024).
Community	creativity generational relations isolation neighborhood talent volunteering	Initiatives in this field show that volunteering often increases the capacity to implement sustainable development projects. In addition, it strengthens community engagement by involving community members directly in development efforts. For example, the Old Friends of Leiria project is a volunteer project which, since 2009, has mobilized civil society to support and accompany elderly people in circumstances of social isolation and economic vulnerability, by providing hot meals, affection, and companionship (Amigos 2009).
Technological	ICT serious games	Technology is not a fundamental pillar of the projects, but it acts as a facilitator in their implementation, in areas such as education and health. For example, Gaia educational transformation project aims to promote the development of various skills in children and young people, stimulating their creativity, and entrepreneurial capacity (DLBC 2024).
Educational	environmental education literacy long-life education soft skills	Environmental education is a fundamental pillar of various projects that aim to promote environmental education and publicize natural values. A good example is the Paul de Tornada Local Nature Reserve in Caldas da Rainha (RNLPT 2024). The center offers educational programs to the public and the educational community, and it includes a number of facilities that support public education, training, and awareness-raising initiatives.
Health	covid-19 mental health oral health sedentary lifestyle sport activities	The pandemic has highlighted the fundamental importance of public health as an integral part of sustainable development. Projects aimed at improving health systems, access to medical care, and response to pandemics have become even more of a priority.
Human rights and social justice	crisis response empowerment inclusivity self-esteem	This dimension identifies that social justice and human rights promote inclusivity, ensuring that all people have the same opportunities. Furthermore, sustainable development must respect and value cultural diversity. Therefore, this dimension includes projects that promote an inclusive approach that respects different forms of knowledge and ways of life. Inclusive Dance is a project that brings together the regions of Madeira and the municipality of Viseu, helping to prepare people with disabilities for active life (Dança Inclusiva 2024).

represented. A total of 11 entities are recognised and four regions of strong collaboration (i.e. more than 50%) are identified: (i) the relationship between citizens and local communities; (ii) the relationship between the municipality and the schools in its region; (iii) a three-dimensional relationship between municipalities, trade associations, and private companies; and (iv) another three-dimensional relationship between universities, R&D centres, and academic spinoffs.

5. Discussion

The geographical distribution of projects reveals a high concentration of municipal sustainable
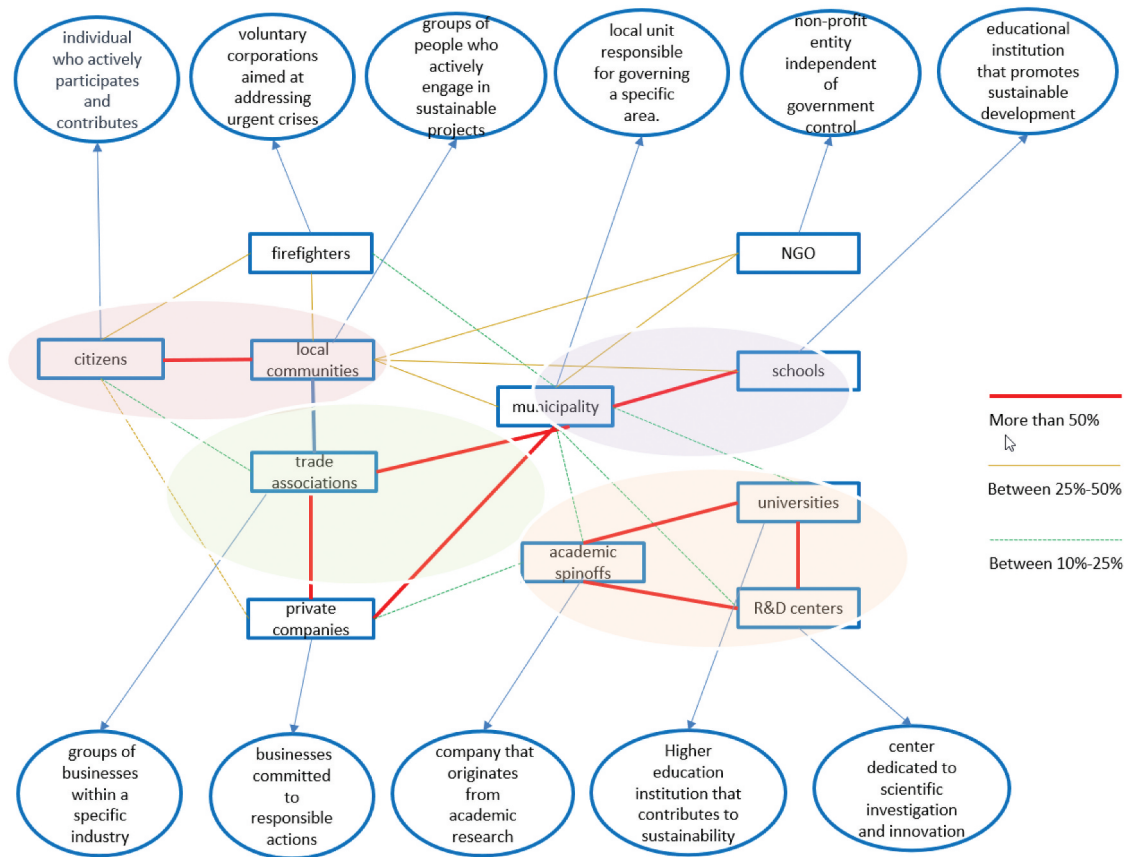
Figure 3. Entities and their roles in sustainable development projects (own source).

development projects in areas with a higher population density and more favourable economic conditions. MA Lisbon stands out as the geographical area with the highest number of initiatives. In its 2022 annual report, the Lisbon municipality concludes 'The Lisbon Metropolitan Area is where country's economic decision-making centres, which represents around 36% of the country's GDP and employs 1,417 thousand people (29% of the country's employment), showing an apparent country), with an apparent labour productivity 1.2 times higher than the country's' (Lisbon City Council 2022). Rosa (2023) adds that MA Lisbon is the only Portuguese region that exceeds the European Union value in the indicator measured in purchasing power parities, also highlighting that the Algarve and Madeira have recorded growth above the average of the other regions. This observation is confirmed in the Algarve's PR/UM ratio, which is

the second highest in Portugal, but not for Madeira, whose PR/MU ratio is lower than the northern region. On the other hand, the Azores has the lowest number of projects and partnerships. Indeed, poverty in the Azores is an unavoidable social problem, given the high number of individuals who share this social condition, representing the highest value of the various regions of the country, above the national result. Diogo (2019) gives several reasons to explain this phenomenon, such as the low quality of jobs available, gender inequalities in access to the labour market, and educational qualifications. This phenomenon in the Azores is confirmed by Leal Filho et al. (2021) when they point out that poverty is a major barrier to the implementation of the UN Sustainable Development Goals. Furthermore, as Wei et al. (2023) report, poverty inhibits many synergies and increases the trade-offs between the SDGs. In this

study, this conclusion is also visible in the difficulty of establishing partnerships in the Azores to implement municipal sustainable development projects.

Economic and community motivations are fundamental to the emergence of municipal sustainable development projects. By adopting the circular economy, organisations can reduce their ecological footprint and promote environmental sustainability. The circular economy emphasises the continuous use of resources, minimising waste through the principles of recycling, reusing, and remanufacturing (Kirchherr et al. 2023; Sardianou et al. 2023). This approach contrasts sharply with the traditional linear economy, which follows a 'take-make-dispose' pattern, leading to extensive resource depletion and environmental degradation. A good example of this practice can be found in Loulé through the Infinity project. The aim is to reintroduce the waste and end-of-life objects collected by Inframoura (a municipal company) into the economy or at the service of charities in the municipality. The Loulé Design Lab's visual artists and designers contributed an artistic element to this project that gave each product's aesthetics a touch of uniqueness and exclusivity. Moreover, through municipal sustainable development initiatives, entrepreneurs can contribute to the creation of more sustainable businesses. This approach is documented in the literature in studies such as Sulich et al. (2020) and Tanasie et al. (2022), highlighting its contribution to not only conserving finite resources but also boosting the development of new industries and jobs. Initiatives such as the Infinity project in Loulé and Digital Valley Portugal in Cascais seek to empower the business fabric of their regions for internationalisation. The hope is that by expanding their operations to different countries, companies can drive the adoption of sustainable standards in various regions, positively influencing local practices and promoting a wider impact. The findings also reveal that volunteering plays a crucial role in combating isolation and fostering sustainable development through grassroots actions. Initiatives in this area seek to create networks of support and solidarity, strengthening community ties and combating the social isolation that has become even more important in the context of the pandemic (Almeida and Wasim 2023). Furthermore, outreach actions, carried out through volunteering, prove to be fundamental in identifying and meeting the specific needs of people in situations of isolation, such as the elderly, people with disabilities, or those in remote communities. By dedicating their time and skills, volunteers contribute to building more resilient and interconnected communities (Mohan and Bennett 2019).

These initiatives create frequent and close relationships between various entities. The active involvement and participation of citizens are fundamental to the success of these initiatives, as local communities are the main beneficiaries and agents of change. The findings show that when citizens are actively involved, there is a greater understanding of the specific needs of the community, allowing for the creation of more effective and culturally relevant sustainable solutions. In the projects identified in this area, it can be concluded that citizen participation has contributed to strengthening collective responsibility, promoting sustainable management of local resources, and transparent decision-making. This is an important aspect in Portugal when there are several cases of corruption and mismanagement of public money (Silvares 2024). Furthermore, international literature in the area such as Chang et al. (2022) and Wani et al. (2024) highlight that the empowerment of communities creates a sense of belonging and responsibility, increasing the likelihood of successful implementation and maintenance of sustainable practices. A good example of this project can be found in the Inclusive Dance project. Through active inclusion, it helps equip individuals with disabilities for an active existence by developing their autonomy and ability for self-representation.

The findings also expose the relationship between municipalities and their schools. It is recognised that schools, as local educational institutions, are vital to the formation of future generations that are aware of and engaged in sustainable issues; while municipalities have a responsibility to establish policies and partnerships that integrate sustainability principles into the educational system. From a young age, students can be introduced to the principles of sustainability, learning about the interconnectedness of ecological, economic, and social systems. As recognised by Holst (2023), this foundational knowledge is critical, as it fosters a sense of responsibility and agency in students, empowering them to make informed decisions that contribute to a sustainable future. Moreover, schools serve as microcosms of society where sustainable practices can be implemented and observed firsthand (Zainal Abidin et al. 2024). Initiatives such as recycling programmes, energy

conservation measures, and the incorporation of green technologies provide practical, real-world examples of sustainability in action. These efforts not only reduce the environmental footprint of educational institutions but also serve as educational tools, demonstrating to students the tangible benefits of sustainable living. In this study, collaboration between municipalities and schools manifests itself in various ways in projects such as the Eco Card Schools Project in Funchal or the Creativity Labs in Ponte de Sor, in which various approaches are implemented such as building curricula that address environmental and social issues, promoting sustainable practices in school facilities and creating community awareness programmes. In addition, municipalities have supported projects that promote energy efficiency, waste management, and community involvement in schools. Holst (2023) states that the awareness generated in schools extends beyond educational boundaries, influencing behaviours and attitudes at the community level.

Relationships between three entities were also identified. The collaboration between private companies, trade associations, and municipalities stands out. Trade associations play a coordinating and advocacy role, bringing companies together to achieve common goals in terms of sustainability. Municipalities seek partnerships with trade associations to understand the specific needs and challenges of local sectors, integrating these perspectives into their sustainable development strategies. At the same time, trade associations work to align the sustainable practices and goals of their member companies with municipal policies, ensuring a more coordinated and effective approach. By aligning the objectives of member companies with municipal goals, these associations facilitate the adoption of responsible practices in local private sectors. According to Flaherty and Rappaport (2017), this not only boosts voluntary compliance but also promotes a corporate culture centred on sustainability. Another collaboration between three entities includes universities, R&D centres, and academic spinoffs. Empirical studies such as Caputo et al. (2022) and Civera et al. (2024) show that academic spinoffs play a crucial role in transforming academic ideas and discoveries into marketable products and services. In the context of sustainable development, these spinoffs can be effective vehicles for commercialising technologies and innovations aimed at environmental, social, and economic sustainability.

This kind of collaboration can be found in projects such as MediaVeritas Academy and Food4Sustainability CoLab. In the first project, the region's universities formed action groups to stimulate 50 intervention groups made up of seniors from the region, to train them to access, analyse, evaluate, produce and act on media messages; while in the second initiative, universities and research centres act as relevant national and international experts in the context of the EIT Digital, Climate KIC and EIT Food networks. In short, collaboration between universities, R&D centres, and academic spinoffs enables the transfer of knowledge and technology from the academic environment to the commercial sector. Universities provide the intellectual base and research, R&D centres adapt this research to practical applications, and academic spinoffs are catalysts for implementing these innovations in the market. This synergy promotes a virtuous cycle of innovation, where academic research translates into sustainable solutions, driving economic development with environmental and social awareness (Vega-Gomez et al. 2018; Toledano et al. 2022).

6. Conclusions

Final remarks

Partnerships play a key role in municipal sustainable development initiatives by allowing diverse resources, knowledge, and skills to be combined, maximising the positive impact on the environment, the local economy, and citizens' quality of life. Despite this, significant asymmetries have been identified in the distribution of partnerships between projects. RQ1 indicates that MA Lisbon and Algarve are the regions with the highest number of partnerships, and Madeira region has the highest rate of partnerships per project. On the contrary, Azores region has the lowest number of projects and partnerships. The partnerships identified in this study cover a variety of sectors, including infrastructure, waste management, transportation, health, environmental education, among others. Looking at RQ2, economic and community dimensions stand out as the main motivation factors for the emergence of partnerships in sustainable development. On the other hand, the technological dimension individually has shown to be less important. Furthermore, the various projects identified in this study allow us to conclude that partnerships have

contributed to the active inclusion of civil society in the decision-making process. RQ3 indicates that the participation of non-governmental organisations, local communities, and interest groups is essential to ensure that sustainable development initiatives meet the specific needs of the population and incorporate diverse perspectives. By establishing partnerships, municipalities can leverage financial, technological, and human resources that would otherwise be out of their reach. These collaborations enable the implementation of innovative projects and the adoption of best practices, contributing to the achievement of the SDGs established by the UN.

Implications

This study offers relevant theoretical contributions, especially in the context of Portugal. Firstly, the analysis of the geographical distribution of projects has made it possible to understand that there are significant territorial asymmetries in the number of projects and partnerships established. Economically and socially more favoured regions have the highest number of projects, while the opposite is true in other regions such as the Azores. The more precarious economic and social conditions of these populations make it difficult for people to get involved in their communities and restrict their ability to present sustainable development projects. Another important theoretical contribution is the identification of the motivational factors for the emergence of these municipal sustainable development initiatives. The actors participating in these initiatives and the relationships established between them were also identified, culminating in the identification of four clusters of collaboration involving two and three entities. From a practical angle, the results of this study are important for combating regional asymmetries in this area and strengthening the dynamics of collaboration between the entities that make up each cluster. Also relevant is the migration of these initiatives to other municipalities with less dynamic support for the promotion and development of these projects. From a public policy perspective, it is essential that municipalities create an environment conducive to sustainable development, promoting not only environmental preservation but also social equity and lasting economic growth. It is important to identify and engage key stakeholders, which may include the public sector, the private sector, and civil society to promote

innovation and invest in research and development of sustainable solutions. For example, in relation to social inclusion, sustainable urban development policies must be formulated to ensure that economic growth benefits all sections of society. Another example can be mentioned in education for sustainability, through the development of environmental awareness and education programmes to engage the local community. This can include awareness campaigns on the importance of waste separation, conservation of natural resources, and sustainable everyday practices. Also important is to define specific, measurable, achievable, relevant, and time-bound goals for the partnership. Moreover, ensure that goals align with broader municipal sustainability plans and national or international sustainability targets (e.g. UN SDGs). The creation of a governance structure is also crucial. This can be done by establishing committees or working groups focused on specific aspects of sustainable development (e.g. energy, waste management, transportation). Finally, open communication and collaboration are key. It is important to develop communication strategies to keep all stakeholders informed and engaged. This can be achieved through regular meetings and workshops to facilitate dialogue and knowledge sharing, and the use of digital platforms and tools for communication and collaboration (e.g. project management software, community forums).

Limitations and future prospects

Finally, it is important to list the main limitations of this study and indicate some proposals for future work. The data from the ODSLocal platform was collected statically between November and December 2023. Therefore, it was not possible to dynamically monitor the evolution of the projects and the factors that justify the faster growth of some projects. In fact, the implementation status of each project was not considered. Therefore, as future work, the analysis of the geographical distribution of projects should also explore the state of development of each initiative, allowing us to see whether partnerships have helped to overcome obstacles to the growth of these initiatives. It is also recommended that a future study in this area could have a more microanalysis of the territory to identify specific regional factors with greater rigour and depth. Such an approach could be taken by considering the distribution of projects by NUTS 3. This study has identified the motivations behind the

emergence of partnerships in these projects, but it does not allow us to understand how these factors are related. Therefore, in future work, a correlational exploration of motivations is suggested. It would also be relevant to explore the role that the municipality can play in intensifying collaborative work within each cluster. Finally, it is recommended that this work be expanded to other countries and, with that, understand whether the behaviour shown in Portugal is the result of a pattern at the European Union level, or whether there are specific Portuguese factors that are unique to understanding the role of partnerships in municipal sustainable development projects.

Disclosure statement

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