

SHARING

Stocktaking and assessment of typologies of Urban Circular Collaborative Economy Initiatives

Case Study

Porto – Urban and circular lifestyles

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1 Executive summary

Urban and circular lifestyles



Overview

Porto is Portugal's second biggest city. It is geographically part of the Great Porto – responsible for 12% of national wealth – and the Metropolitan Area of Porto. Circular economy initiatives in Porto have been developed as a response to the crisis of the capitalistic model of societal progress, challenged by the recent economic downturn. The transition towards a more sustainable society has then been encouraged by public institutions through a national Action Plan (2017-2020) and a local Roadmap towards circularity for 2030. Local initiatives looking beyond the current take-make-waste model are intrinsically collaborative: case in point are the initiatives developed within the realm of urban agriculture

Recommendations

- 1 **Better knowledge:** the more actors involved in the process towards circularity, the quicker the city can promote circular lifestyles across all economic sectors
- 2 **Better regulation:** A more detailed governance structure would help relieve some of the implementation burdens from the shoulders of the Municipality
- 3 **Better funding:** When promoting circular lifestyles, financial support of public authorities should also be directed towards less mainstream (hence more risk-averse) initiatives/sectors



Impacts

ENVIRONMENTAL

- 1 Reduction of private car's carbon emissions
- 2 Reduction of food miles
- 3 Improved groundwater quality, biodiversity, and air quality
- 4 Environmental awareness

SOCIAL

- 5 Strengthening of solidarity spirit/communities
- 6 Generation of healthier lifestyles
- 7 Higher capacity of attracting people with diverse backgrounds

ECONOMIC

- 8 Reduction of transport-related costs
- 9 Reduction of grocery expenses for families
- 10 Increased entrepreneurial attractiveness

INITIATIVES SCREENED:

-  Via Verde Boleias
Ride sharing
-  Repositório de Materiais
Reselling goods
-  Horta à Porta
Community garden
-  OPO'Lab
Coworking space

<https://www.collaborativexcircular.com/>

2 Overview of the territorial context

This Chapter gives an overview of the characteristics of the area considered, and links them with the territorial needs and objectives as regards the Urban Circular Collaborative Economy. It provides insights on the existing policies and regulatory framework affecting the development of Urban Circular Collaborative Economy initiatives. Finally, it identifies the main actors operating in the Urban Circular Collaborative Economy arena.

2.1 Profile of the area

Porto is Portugal's second biggest city and one of Iberian Peninsula major urban areas. The city counts 215,284 inhabitants (2018)¹ and it is geographically part of the Metropolitan Area of Porto – responsible with more than 1,7 million inhabitants for 12% of national wealth². Located along the Douro River estuary in northern Portugal, Porto is one of the oldest European centres, and its historical core was proclaimed a World Heritage Site by UNESCO in 1996. Additionally, Porto is a gateway to further World Heritage Sites in both Portugal and Spain. However, Porto is also a forward-looking city. Its tourism industry is continuously developing; the airport has been recently modernised and expanded, and a new cruise liner terminal has been developed in the nearby seaport. Porto is now the third most visited tourism destination in Portugal and won the award for Best European Destination in 2012, 2014 and 2017. The city is also becoming an important hub for innovation, mainly due to the presence of six universities, several higher education institutes and a series of R&D centres. Specific industry clusters have been formed in the IT and creative sector, biotechnology and health, and mechanical engineering. Overall, the number of enterprises establishing their activities in the area of Porto is growing: from 186,669 in 2011 to 200,898 in 2017 (although a low peak of 179,986 in 2012). Similarly, the enterprises birth rate reached 15% in 2017, against 12,6% in 2011³.

Despite such cultural and economic riches, Porto only recently became the city described above. At the beginning of the twentieth century, Portugal was predominantly a rural society and the primary sector employed 60% of the work force (Ferraz 1975)⁴. The country was marked by a late industrialisation process, mainly concentrated around Lisbon and Porto (Teixeira 1993)⁵. In addition, Portugal's dictatorial period from 1933 until 1974 explains the slow process of urbanisation that only began to accelerate in the 1980s, driven by Portugal's entry to the European Union in 1986. Besides the national economic lateness, Porto's economic troubles began in the 1990s when Portugal's manufacturing industry lost significant ground to its Asian competition. Clothes, shoes, furniture and other production lines were significantly undermined. Following years of internal economic problems that started around

¹ Available at: https://www.ine.pt/documentos/municipios/1312_2018.pdf

² Cavaleiro de Ferreira, Fuso-Nerini (2019). A Framework for Implementing and Tracking Circular Economy in Cities: The Case of Porto. Available at: <https://www.mdpi.com/2071-1050/11/6/1813/pdf>

³ Available at: https://ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&contecto=pi&indOcorrCod=0008466&seITab=tab0

⁴ Ferraz (1975). O desenvolvimento socioeconómico durante a Primeira República (1910–26). *Análise Social*, XI: 42–43.

⁵ Teixeira (1993). A história urbana em Portugal. *Desenvolvimentos recentes*. *Análise Social*, XXVIII: 371–390.

the turn of the century, Portugal was hit hard by the global financial crisis, leaving it unable to repay its government debt in 2010. The country received a EUR 78bn bail-out package from the European Financial Stabilisation Mechanism, the European Financial Stability Facility and the IMF, which it successfully exited in mid-2014.

In addition to the economic crisis that struck Portugal in 2008, the country is facing some severe demographic challenges. On 31st December 2017, the resident population in Portugal was estimated to be of 10,291,027 persons, marking a negative population growth rate (-0.18%). Adding to this growth rate are a negative natural growth rate (-0.23%) and a very low migration growth rate (0.05%). Additionally, between 2012 and 2017, the proportion of young people (0 to 14 years of age) decreased from 14.8% to 13.8%; the working age population (15 to 64 years of age) was reduced from 65.8% to 64.7%; and the percentage of elderly population (65 years of age and older) increased from 19.4% to 21.5%. As a consequence, the ageing index changed from 131.1 to 155.4 elderly people per 100 young people⁶.

Porto's demographic trend does not deviate much from the national one. As can be seen from the below table, compared to 2011, the number of residents living in 2018 in the metropolitan area is consistently lower (although on the rise since 2017).

Table 1: Resident population in the metropolitan area of Porto (2011-2018)

	Population by year							
	2011	2012	2013	2014	2015	2016	2017	2018
Residents	1,758,991	1,750,297	1,740,983	1,731,354	1,723,618	1,719,021	1,719,702	1,722,374
Growth/year	/	-0.49%	-0.53%	-0.55%	-0.46%	-0.27%	+0.04%	+0.15%

Source: Statistics Portugal (2019)

Additionally, the old age dependency equalled 30.8 in 2018, growing by 7 points since 2011. This means that currently 100 persons of working age are to provide for more than 30 retired individuals.

The two phenomena (the economic and demographic crises) spurred a huge campaign launched by the Portuguese State emphasising the potential of social entrepreneurs (Casaqui, 2015)⁷, which ended up with the publication of the "Social Economy Law" (Law no. 30/2013). It divided the organizations into five different groups within the Portuguese social economy and it excluded market-oriented organizations from being considered part of the Social Economy Sector, regardless of their social goal and mission. According to the National Statistics Institute in 2010 the number of social organisations for all sectors amounted to 55,000 and increased to 61,000 in 2013 and 71,885 in 2016, which illustrates the development of the Portuguese social economy. In the same year, they generated 3.0% of GVA,

⁶

Available

at:

https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_publicacoes&PUBLICACOESpub_boui=348256186&PUBLICACOESmodo=2

⁷ Casaqui (2015). Ideias Portuguesas para mudar o mundo: Projetos de empreendimentos sociais, cultura e espírito do tempo. O empreendedorismo Social e a Economia Solidária. Portugal: ACEESA – Associação Centro de Estudos de Economia Solidária do Atlântico, Portugal

5.3% of total employment and 6.1% of employees (expressed in both cases in units of full-time equivalents)⁸.

Simultaneously, the rise of the social economy came along with a significant increase in the set of initiatives linked to the circular economy, as an alternative to the traditional linear economy (make, use, dispose). As a matter of fact, the circular economy and the social economy meet at numerous major points. Both models place individuals and sustainable development at the centre of their concerns. In the circular economy, as in the social economy, a key factor of its success consists in strengthening creative and innovative capacity at local level, where relations of proximity constitute a decisive component. In other words, values and principles of the cooperative movement and the social economy, such as links with the local area, inter-cooperation, or solidarity, are decisive pillars for guaranteeing sustainable development processes in their triple dimension: environmental, economic and social. It is no accident that in Europe, the social economy was a pioneer of the circular economy in reusing and recycling waste, in energy and in agriculture. More recently, cooperative platforms in the collaborative economy sphere are well-known examples of initiatives that help to preserve and improve natural capital, optimise the use of resources and foster system efficiency. The European Commission itself, in its EU action plan for the circular economy, recognised that social economy enterprises will make “a key contribution to the circular economy”.

Porto has nowadays a very strong innovative profile: the city was voted the top European start-up friendly city in 2018. The Porto start-up scene grew from the trenches with dozens of newcomers meeting in cafes and creating coworking and shared spaces in collaboration with local universities. In 2015, the City of Porto started an initiative called ScaleUp⁹ Porto to bring together innovation and entrepreneurial efforts, providing an umbrella for the scattered efforts around the city, and publishing a city start-up guide. Aiming at creating a sustainable entrepreneurial ecosystem where cities can work as true scale-up catalysts, the ScaleUp Porto Manifesto comes together to: 1) Foster local development by focusing on cities' role as aggregators in a complex and heterogeneous European network; 2) Support companies ready to scale to achieve sustainable development and growth in a global economy; 3) Involve citizens and empower them to take advantage of the growing innovation environment that provides new highly qualified job opportunities. The ScaleUp Porto's Manifesto was launched as the first step of a coordinated programme that's included in a broader municipal strategy for innovation and competitiveness, to foster employment, the economic development, internationalisation and the well-being of citizens. In addition, the city hosts 14 coworking spaces.

The innovative profile is also given by the flourishing platform economy. As the touristic attractiveness of the city grew, so did the number of the collaborative platforms in the transport and accommodation sectors (Porto was elected the European Best Destination for three times, in 2012, 2014, 2017). In conclusion, based on the broad range of Urban Circular and Collaborative Economy initiatives, this

⁸ https://www.cases.pt/wp-content/uploads/2019/07/19ContaSatEconSocial_2016ENG.pdf

⁹ <https://scaleupporto.pt/>

case study will describe how they could generate positive impacts towards the establishment of citizens' urban and circular lifestyles.

2.2 Status quo, needs and objectives of Urban Circular Collaborative Economy Initiatives in the region

Since the early 2000s, and especially after the recent economic crisis, Portugal has witnessed a great increase of allotment gardens¹⁰. According to the Portuguese national report to Habitat III, in 2013 16 out of 18 districts had allotment garden initiatives, which together constituted 27 hectares of urban gardens. The first formal Portuguese allotment garden opened in 2003 in Porto before the crisis, led by LIPOR, a municipal waste management enterprise nowadays active in eight municipalities. From 2003 on, several urban gardens have been established in the country. This national process culminated in the first and only national and international conference on UA organised by Seixal Municipality in 2011.

Although being a dense and vibrant area, the Ellen MacArthur Foundation argues that in Porto space was found to develop 13 vegetable gardens covering a combined cultivable area of 4 ha, which have been producing food on a small scale since 2003. These gardens are jointly monitored by the Municipality and Lipor – the organisation in charge of Municipal waste management of the Greater Porto's area – and they not only serve household vegetable needs, but also have been supplied with 400 composters, which combined return 120 tonnes of organic material to the soil every year¹¹. However, it must be noted that they represent only a fraction of the 62.5 ha of agricultural 31 land in the Municipality of Porto, highlighting the potential for urban production to take in organic material and supply local needs¹².

For what concern the collaborative economy, given the importance of Porto as a touristic destination, several are the initiatives in the city related to the growing attractiveness, namely in the accommodation and transportation sector: Airbnb, Flat in Porto, Bmyggest, Go2Oporto, FeelPorto, Uber, BlaBlaCar, Via Verde Boleias, Bolt, Cabify and so on. However, in the aftermath of the 2008 economic crisis, sharing economy initiatives have started becoming devoted to values such as collaboration and aiming at the bringing people together to boost the community development. In fact, the international economic and financial crisis of 2008 triggered a set of diversified responses in order to survive in the current capitalist model¹³. In Porto, it took the shape of co-working spaces, collaborative economic practices that have been gaining increasing visibility in the last decade in European cities. In Porto, these practices are currently quite popular. Co-working spaces can take different configurations and differ in terms of ambiances, amenities, location and types of customers. Some are directed to all occupational groups and economic sectors, others are specialized in certain types of activity, technologies, business models or social objectives. The fact that these places have been proliferating in European cities for more than

¹⁰

https://pdfs.semanticscholar.org/9e24/0bd55ef75c4d8495f82fe612648c5e5b113b.pdf?_ga=2.172657443.1647702211.1566295332-1825159257.1565871269

¹¹ This numbers refer to 5 vegetable gardens managed by the Municipality of Porto;

¹² <https://www.ellenmacarthurfoundation.org/assets/downloads/Focus-City-Porto-Portugal.pdf>

¹³ Kostakis and Bauwens (2014). Network Society and Future Scenarios for a Collaborative Economy.

a decade is due to the growing number of self-employed people and to the fact that entrepreneurs are increasingly recognizing the value of this type of work space, which offers shared resources, flexible access and support from other entrepreneurs.

In January 2017, the city of Porto officially had 10 co-working spaces, presenting a relative concentration, since they were distributed only by 3 parishes of the city: Union of the Parishes of Cedofeita, Santo Ildefonso, Sé, Miragaia, São Nicolau and Vitória (6 spaces), Bonfim (2 spaces) and Paranhos (2 spaces). Of the 10 spaces, 6 were located in the central area¹⁴. As of 2019, the co-working spaces in Porto's central area have become 14¹⁵.

2.3 Policies and regulatory framework affecting the Urban Circular Collaborative Economy

Given the increasing importance of Urban Circular and Collaborative initiatives, Porto Municipality recently developed a circular economy roadmap with the ambition of becoming a circular city by 2030, following the national action plan and the momentum building across Europe. The strategy for Porto, drafted with the civil society organisations involvement, aims primarily to create incentives to move the municipality and other concerned actors towards a circular economy model. It does so through the implementation of "hard policy tools" such as the creation of circularity obligations in urban interventions of the municipality, as well as fiscal incentives and penalties¹⁶. The strategy develops along four main axes: 1) promote sustainable production and consumption, 2) ensure the availability of natural resources and environmental balance, 3) create and maintain shared infrastructures that approximate and rehabilitate buildings and create circularity guidelines for new constructions, 4) promote innovative solutions to transform waste in resources.

At national level, the Action Plan for the Circular Economy in Portugal 2017-2020 was approved and published in a Resolution of the Council of Ministers on December 2017¹⁷. As advocated by the 21st cabinet of the Portuguese Government, the circular economy is a necessary change in the current (linear) economic paradigm, whose inefficient and productive use of resources extracted leads to significant economic and environmental damages (about 63% of the costs of environmental damage, accounting for 13% of world GDP). For example, in Portugal, it is estimated that damage caused exclusively by air pollution cost about 3.6% of GDP in 2013.

The Action Plan for the Circular Economy is the result of nearly one year of inter-ministerial work between representatives of the Ministries of Science, Technology and Higher Education, the Ministry of Economy, the Ministry of Environment, and the Ministry of Agriculture, Forestry and Rural

¹⁴ Diogo, Ferreira, Guerra (2018). Co-working spaces in Porto, Portugal: collaborative economy within capitalism reforms or anti-capitalist experiences? Available at: <https://pdfs.semanticscholar.org/513e/b5a6b4c8011920020991f98c0c3f6442f38a.pdf>

¹⁵

https://map.scaleupporto.pt/companies.workspaces/f/all_hq_regions/anyof_Porto%20Metropolitan%20Area/geo/anyof_PORTO?showMap=true

¹⁶ <https://circulareconomy.europa.eu/platform/sites/default/files/qe-01-19-425-en-n.pdf>

¹⁷ Available at: https://circulareconomy.europa.eu/platform/sites/default/files/strategy_-_portuguese_action_plan_paec_en_version_3.pdf

Development. In this context, 7 actions were defined that consolidate ongoing initiatives by the Government (e.g. the Ministry of Agriculture's National Strategy for Combating Food Waste), but also introduce complementary initiatives (e.g. expediting methodologies for classification of by-products, reducing consumption disposable plastic from fossil sources, extraction and regeneration of materials with added value from waste streams). The actions are the following:

- Draw, repair and reuse;
- Encourage a circular market;
- Educate for a circular economy;
- Food without excess;
- New life to waste;
- Regenerate resources: water and nutrients;
- Investigate and innovate.

The action plan assumes three levels of operation: the national level, with dedicated policy instruments (e.g. green taxation, circular agreements, environmental network of Portugal 2020), the sectoral level, with a focus on particularly resource-intensive sectors (e.g. construction, tourism, textiles and footwear) and regional (e.g. industrial symbiosis networks, circular cities, circular companies), which should be implemented through specific support for the development of solutions (such as Environmental Fund, Fund for Innovation, Technology and Circular Economy, Portugal 2020)¹⁸.

Within the framework set by the national plan, and in light of the policy focus on urban and circular lifestyles, Porto Municipality recently developed its own circular economy roadmap. The roadmap aims to identify opportunities and guidelines, build a long-term vision and subsequently support a program of concrete actions by the Municipality – in order to transform Porto into a circular city in 2030. The strategy develops along four axis: 1) promote sustainable production and consumption, 2) ensure the availability of natural resources and environmental balance, 3) create and maintain shared infrastructures that approximate and rehabilitate buildings and create circularity guidelines for new constructions, 4) promote innovative solutions to transform waste in resources.

¹⁸ https://www.web.fibrenamics.com/en/fibrenamics-en/newsletter/newsletter_n12/intelligence/

3 Presence and usage of Urban Circular Collaborative Economy initiatives

This Chapter summarises the result of the stocktaking of Urban Circular Collaborative Economy initiatives in the area. It gives an overview of the initiatives present in the territory according to their type and category. The full stocktaking of the initiatives identified in the territory is available in Annex.

3.1 Main stakeholders in the Urban Circular Collaborative Economy arena

Porto Municipality is the promoter of the local strategy towards the circular economy, thus the main actor engaged in the implementation of measures aiming at creating awareness among people. Urban and circular lifestyles are also pursued by a wide range of local stakeholders engaged in the implementation of urban agriculture initiatives. Lipor – the organisation in charge of Municipal waste management of the Greater Porto's area – is in charge of the Horta à Porta project, which aims to bring sustainable green spaces closer to the urban environment, developing biological production systems and promoting biodiversity and community spirit. Furthermore, consumer cooperatives such as Fruta Feia, ADREPES, and RE-Food are examples of the wide network of short food chains that either produce food with low or zero impact on the environment or collect leftovers from restaurants.

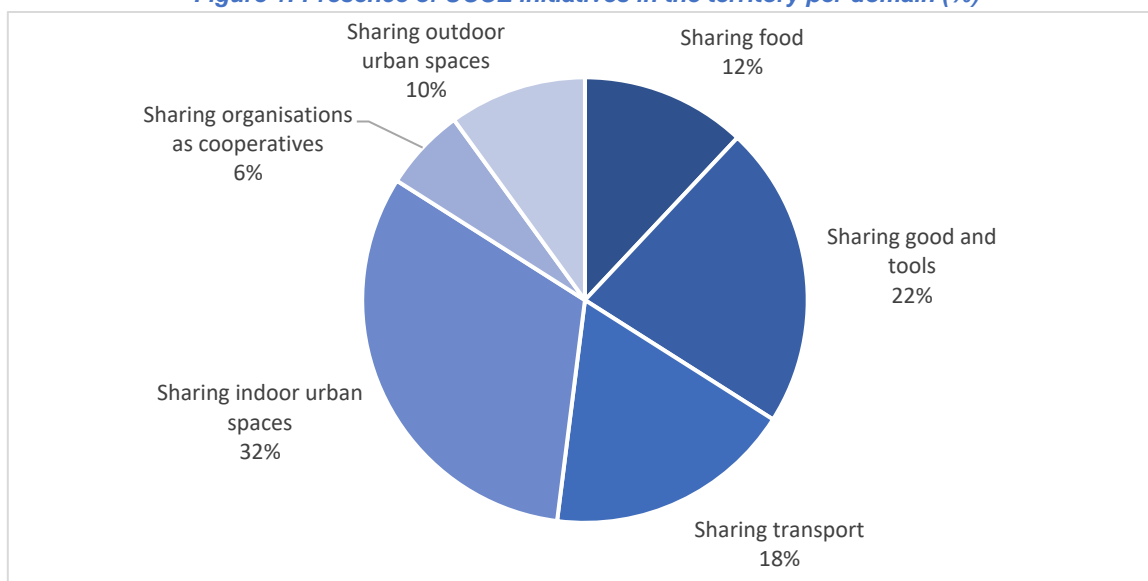
Strongly related to the rise of an “alternative” economic model in Portugal, where human interactions are put at the heart of it, the city of Porto is home to several coworking spaces: among them, it is worth mentioning OPO'Lab, Porto I/O, and CRU – Cowork.

Porto is also characterised by the presence of dominant players in the following collaborative economy initiatives: Ride sharing (BlaBlaCar), Rides on demand (Uber), Short-term rentals (AirBnB, HomeAway), Home exchange (HomeExchange). However, some important initiatives within the realm of Urban Circular Collaborative Economy are carried out on the territory by national-level players: for instance, Via Verde Boleias (initiative promoted by Brisa) and Boleia.net are two ride sharing services operating only in Portugal. Similarly, CarAmigo is a ride-on-demand service only available in the country, while P55 is a platform that allows the interaction of peers willing to sell/buy antiquities.

3.2 Presence of Urban Circular Collaborative Economy initiatives

Overall, the initiatives falling within the realm of Urban Circular Collaborative Economy in Porto are 50. Out of the total, only six are not based in Porto or Portugal. Therefore, 88% of the initiatives screened are either locally or nationally rooted. The initiatives in Porto cover all six domains of Urban Circular Collaborative Economy described in Annex 1: Typologies/domains of Urban Circular Collaborative Economy initiatives. The greatest majority are “Sharing indoor urban spaces” (32%), followed by “Sharing good and tools” (22%) and “Sharing transport” (18%) (see Figure 1: [Presence of UCCE initiatives in the territory per domain \(%\)](#)).

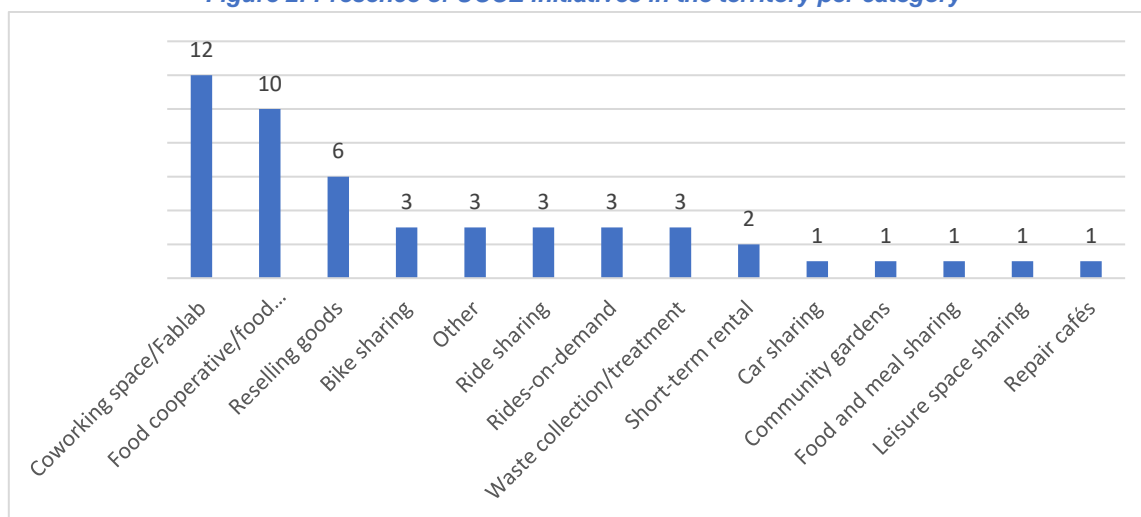
Figure 1: Presence of UCCE initiatives in the territory per domain (%)



Source: VVA

12 of the 16 sharing indoor urban spaces screened in Porto belong to the category of co-working spaces. 6 of the 11 sharing good and tools initiatives instead deal with reselling second-hand goods (from books to childcare articles). Moreover, as can be detected from Figure 2: **Presence of UCCE initiatives in the territory per category**, 10 initiatives are organisations whose objective is the redistribution of food, hence the reduction of poverty and the improved sustainability of today’s society.

Figure 2: Presence of UCCE initiatives in the territory per category



Source: VVA

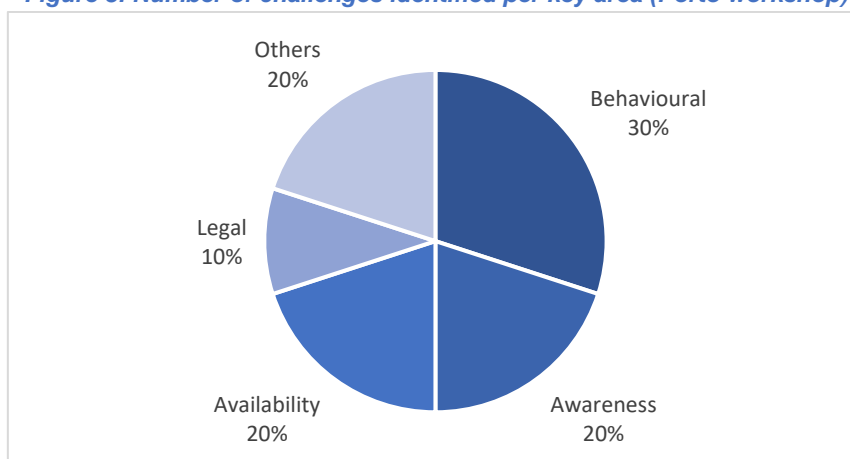
The presence of a qualitatively wide range of initiative in the territory of Porto has also been confirmed by the results of the online survey. Despite a low number of answers (4), when asked what described their activity best, respondents highlighted the following categories: short-term rental, coworking space/FabLab, leisure space sharing, renting goods, food and meal sharing, and food cooperative/food redistribution network.

3.3 Usage of the initiatives

The desk analysis on the usage patterns of the Urban Circular Collaborative Economy initiatives present in Porto did not provide sufficient data to conclude with certainty the main usage trends of the Urban Circular Collaborative Economy initiatives. Based on the information collected by interviews, a hypothetical conclusion can be made that Urban Circular Collaborative Economy initiatives in Porto are predominantly used by younger population (between 20 and 40 years old) as well as proportionally more by highly educated people. Co-working initiatives, for instance, offer a space of interaction for young and international individuals, often self-employed. On the other side, urban agriculture initiatives address primarily families, hence individuals aged 25 and above. According to Lipor's data, 1800 families are taking advantage of the Horta a Porta initiative, but many are still waiting to be assigned a plot. The sustainable car-sharing service promoted by Via Verde Boleias addresses instead groups of people whose age is on average 25-26. They are either young employees, or students.

As highlighted during the workshop held in Porto on October 18th (see Textbox 1 for more details), usage patterns can also be impacted by specific territorial challenges identified by participants. These challenges (or shortcomings) have been grouped in five key areas: behavioural, awareness (lack of), availability (lack of), legal, and others. More in detail, behavioural challenges relate to: 1) the difficulty of societies, and individuals, to move from consumerist habits (e.g. ownership of goods) to more sustainable life-styles (reuse, repair, refurbish, etc.); 2) the lack of trust and security when sharing goods and services and the lack of community feelings; 3) the lack of citizens' willingness to proactively implement local solutions to the problem(s) they face. Secondly, awareness barriers are due to: 1) the lack of a marketing promotion strategy of initiatives and dissemination of potential positive outcomes (to overcome doubts and distrust); 2) the lack of targeted educational paths for citizens able to teach them the added value of collaborative and circular practices. Thirdly, availability of collaborative/circular goods and services is hindered by: 1) the lack of a structure of integration of goods/materials that allows their timely use (especially for perishable products) but also to take advantage of temporal and spatial opportunities; 2) the lack of technology and innovation developed and shared by communities (e.g. open source files, etc.). Fourthly, legal barriers relate mainly to the lack of a proficient legislation for "green" public procurement. Finally, other challenges were identified with: 1) the difficulty of converting initiatives into business solutions; 2) the likelihood of the socio-economic divide to impact the access to collaborative initiatives.

Figure 3: Number of challenges identified per key area (Porto workshop)



Source: VVA

3.4 Compliance with SDG indicators

Portugal has made commitments to which the measures of the Action Plan for the Circulating Economy compete, such as the Paris Agreement and the United Nations 2030 Sustainable Development Goals. It is also in line with European policies, such as the EU Circular Economy Action Plan and the EU Industrial Policy Strategy.

According to European Cities SDG Index, Porto has an over score of 53.5, putting the city among those cities catching up in terms of sustainable development across Europe. Major challenges remain along the following indicators: zero hunger; industry, innovation and infrastructure; responsible consumption and production; climate action; life on land.

4 Assessment of impacts

This Chapter provides an overview of the impacts of the Urban Circular Collaborative Economy in the main impact assessment areas: economic, environmental, social and political/governance. It uses the example of a couple of initiatives selected in the territory in order to draw correlations between the development of initiatives, territorial characteristics and the policy framework in place.

4.1 General trends

In the territory of Porto, initiatives from the six domains have been identified, with the majority of them falling under the “Sharing indoor urban space” and “Sharing good and tools” domains. The initiatives from these two domains are carried out by both public and private entities, sometimes under strict collaboration. For the purpose of this study, four initiatives from the following domains have been selected: 1) “Sharing transport”, 2) “Sharing goods and tools”, 3) “Sharing outdoor space”, and 4) “Sharing indoor space”.

Given the broad scope of this case study – whose policy focus is on urban circular lifestyles – we believe that the best way to measure the influence of urban circular and collaborative initiatives on people’s lives is to use a qualitatively wide selection of them, as to capture the effect on lifestyles from different perspectives, such as: consumption of food, use of materials, mobility, and collaboration.

Considering the selection of the initiative’s, the expected impacts to arise from these types of UCCE categories are:

- **Environmental:** suburbanisation (people for whom the inner city has become more or less attractive due to the activity) environmental awareness (activities which foster environmental awareness); impact on biodiversity from new green spaces; urban regeneration (number of unused building brought into use with initiatives/number of saved new buildings), waste creation (amount and type of waste saved by the initiative, amount of food made or kept useable by the initiative, number of cars or bikes in use in the initiatives, number of private cars or bikes replaced due to car sharing/ride sharing) change in air quality and CO2 emissions (car km of initiatives, car km alternative transport mode).
- **Economic:** Impact on local revenues (earning generated through the activity, earning lost in competing activity); impact on local job opportunities (number and type of jobs in the initiatives compared to number and type of jobs in competing services), Impact on prices (average price per square meter of collaborative space, market value of food distributed).
- **Social:** Impact on poverty (number or proportion of people without access to the traditional service using the collaborative service), social cohesion (neighbours who got to know each other better due to initiative, profile of members/users of initiatives), quality of life (people considering that the initiative increased the quality of life in the city), impact on health poverty (health effects of consuming better food).

Assumptions on potential impacts are not only drawn from the literature, but also from the online survey results. In terms of environmental impacts, all respondents believe that their Urban Circular Collaborative Economy initiatives contribute to raising awareness of environmental matters among their users. Economic impacts are instead likely to be less straightforward. Almost two thirds (75%) of the initiatives in Porto employ less than 10 people; similarly, initiatives in Porto are reported to earn between EUR 10,000 and EUR 100,000 in the year of 2018.

Figure 4: Revenues of UCCE initiatives, 2018

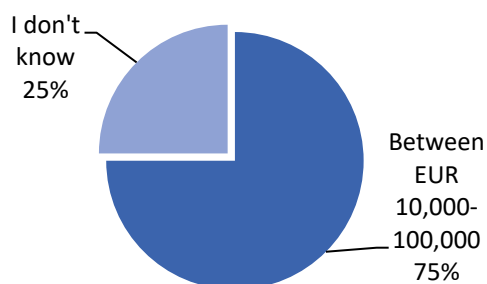
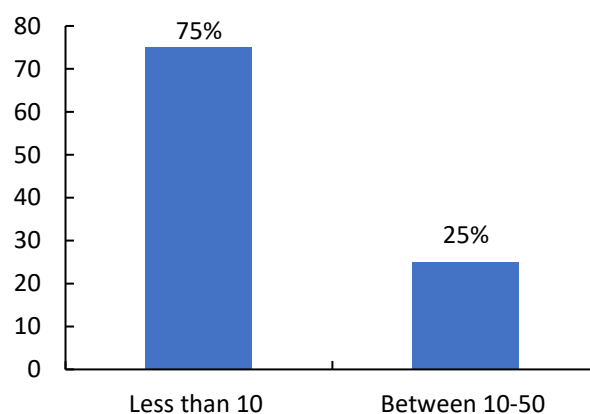
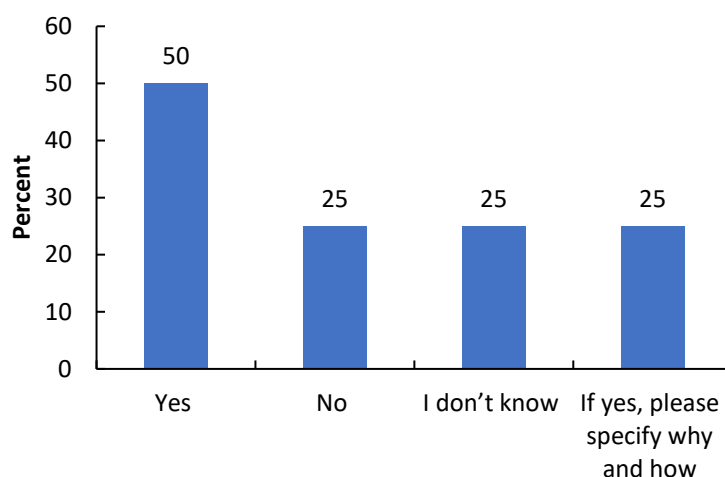


Figure 5: People employed by UCCE initiatives, 2018



As for environmental impacts, social ones are likely to affect stronger urban and circular life-styles in Porto. 50% of survey respondents believe that collaborative and circular initiatives in Porto increase social ties among the users, by creating a sense of community and belonging. Similarly, 50% of respondents believe that the same initiatives contribute to a higher quality of life.

Figure 6: Impact on social cohesion



The textbox below summarises the conclusions adopted during the workshop organised in Porto as part of the study. The workshop served as an important data collection tool, since it helped to identify initiatives and impacts of the Urban Circular Collaborative Economy in the territory.

Textbox 1: Summary of the workshop and main added value¹⁹

The workshop took place on October 18 at the Porto Innovation Hub and was attended by 38 participants from different entities – national, regional and local authorities, private companies, universities, and private individuals. The first part of the workshop was devoted to the presentation of the project financed by the ESPON program by the consortium whereas the second part was focused on the discussion of topics of relevance to the collaborative and circular economy in the city of Porto, such as challenges and opportunities. Contrarily to the first part, the second one managed to actively involve all the actors who showed up for the initiative.

Several challenges and opportunities associated with the collaborative economy were identified. The vast majority of challenges relate to lack of trust and the need to raise awareness and inform about behavioural change, especially in exchange for a social paradigm that is more conducive to sharing and using goods and services over strongly rooted ownership, in the collective consciousness. The opportunities identified highlighted instead the great potential of the collaborative economy to promote circularity in the city, region and country. As it has been pointed out during the second phase of the workshop, opportunities do not arise spontaneously. In order to harvest the seeds of collaborative economy, they have to be accompanied by concrete measures able to inform and educate individuals and companies about responsible and sustainable consumption.

In the end, participants were invited to identify collaborative economy initiatives that they would be happy to see implemented or scaled up in Porto. This exercise resulted in a coordinated support from the participants to several local sharing economy projects as well as in the suggestion of circular actions that could find fertile ground in Porto.

4.2 Selection of initiatives

4.2.1 Selected initiatives

¹⁹ Workshop conducted as part of the study in Porto on 18/10/2019.

Table 2: Initiatives selected for the case study

Name of initiative	Domain	Category	Business, organisational or value creation model												
			Economic potential						Social potential						Env. potential
			Sector	Underlying asset	Transaction relationship	Transaction mode	Type of market player	Data	Hiring of workers involved	Origin	Ownership of the initiative	Financing – source	Financing – destination	Contribution to the circular economy	
Via Verde Boleias	Sharing transport	Ride sharing	Transport	Good	C2C	Sharing	Multiple	Personal data use	N/A	National	Private	N/A	N/A	Collaborative practice leading to less consumption	
Repositorio de materiais	Sharing goods and tools	Reselling goods	Other	Good	B2B	Selling	N/A	N/A	N/A	Local	Private	Public/Private	N/A	Type of circular economy business model	
Horta a Porta	Sharing outdoor space	Community garden	Food	Space, good	B2C	Renting	Multiple	Personal data use	For service and coordination	Local	Public-private	Public/Private	N/A	Type of circular economy business model	
OPO'Lab	Sharing indoor space	Coworking space	Service	Space	B2C, C2C	Renting	Multiple	Personal data use	For service and coordination	Local	Private	Private	N/A	Collaborative initiative fostering circular practices	

4.2.2 Assessment of impacts per initiative

4.2.2.1 Via Verde Boleias

4.2.2.1.1 Description

Via Verde Boleias is an online platform to share rides and travel costs. The entity responsible for the service is Brisa, the largest private operator of transport infrastructures in Portugal. Via Verde Boleias then marks Brisa's entry into the sharing economy. Through a website (or mobile application), drivers publish routes, available seats, and price per seat (0,05€/km, but a minimum price of 1€) and passengers make the search for the journeys by filling in the date and starting/destination points. From the list of search results, the most convenient alternative is chosen according to the time, price and preferences indicated in the profile. The Via Verde Boleias can be used to make sporadic trips or for daily use, for short trips or long trips.

This service has a group option available, which allows the creation of communities. More specifically it allows to create public groups (e.g. to organise trips to major events such as concerts or sport events) or private groups (e.g. to organise the ridesharing between employees of the same entity).

Whereas most of the available car sharing services have their business model relying on commission fees, Via Verde Boleias offer its service for free to individuals, as well as to non-profit associations. The initiative is held profitable through the "private group" option, which companies can pursue by paying a fee. Depending on the number of employees, the fee varies from a minimum of EUR 2,500 to a maximum of EUR 5,000 per year.

In terms of impacts, the car sharing service facilitated by Via Verde Boleias allows users (aged on average 26-27) to reduce the cost and time associated with their daily commutes by lowering the carbon footprint (each user can reduce by up to 75% the carbon emissions from their journeys), to reduce parking needs and associated expenses, Additionally, it strengthens a spirit and culture of sharing and promotes environmentally friendly behaviours, thus improving road safety.

Via Verde Boleias is still in its launching phase, but according to the data retrieved from a private group who has been monitored in 2018/2019, out of 2,911 shared rides, the emission saved amounted to 16 tons of CO₂.

4.2.2.1.2 Impacts

Via Verde Boleias, according to the monitored rides so far offered on its platform, could produce the following impacts:

- **Environmental:** car sharing allows each car-owner to reduce carbon emissions by 75%. According to a sample of a private group of 740 members, 2,911 rides have been shared for a total travelled distance of 66,012km, which in turn allowed the saving of 16 tons of CO₂ emissions.
- **Economic:** the price of each ride depends on its length. Each km travelled costs 0,05€. The minimum price passengers can pay is however 1€. The platform offers its services to individuals

without any extra charge. However, private companies that want to activate the “private group” option have to pay a yearly fee of EUR 200,500.

- **Social:** Via Verde Boleias strengthens a spirit and culture of sharing and promotes environmentally friendly behaviours.

4.2.2.1.3 Correlations

Initiatives such as Via Verde Boleias belong to those sharing and collaborative practices that fit in with the circular economy. Via Verde Boleias, a digitally enabled technology solution that connects individuals in search of a ride through an online platform, allows not just the reduction of cost per service, but also the maximisation of the use of existing goods (in this case, cars). The presence of Via Verde Boleias in turn gives the opportunity to its users to embrace the values behind circularity and circular lifestyles.

4.2.2.2 Repositório de Materiais de construçao

4.2.2.2.1 Description

Repositório de Materiais, born in Porto in 2012, is an initiative created and developed by Cláudia Cardoso, and initially promoted by APRUPP – the Portuguese Association for Urban Rehabilitation and Heritage Protection. Repositorio de materiais is a non-for-profit organisation aiming at promoting and spread the concept of urban rehabilitation. It consists of a platform (launched in 2017) for the online cataloguing of materials left over from construction or demolition sites, with potential for reuse. Repositorio de Materiais, a pilot project in the field of construction, intends to streamline sustainable urban rehabilitation and the protection and use of materials. Having launched the pilot phase in February 2017, the project aims to promote good urban rehabilitation practices and to safeguard / reuse old, noble, unique and heritage-value building materials. At the same time, it aims to make society aware of a resource saving by reducing waste.

The challenges that Repositório de Materiais wants to overcome are the following:

- The logic of total/partial demolition of building interiors
- Lack of awareness of the quality of second-hand materials
- Existing mindset that “old is not worth”
- Lack of a national strategy for storage of materials coming from construction site
- Lack of specialised labour in construction companies for the dismantling of materials.

However, due to some constraints, the initiative is today on hold. Among them: the lack of human resources and storage locations for the logistics of materials or components rescued from demolition, and, most importantly, the lack of funding. As this is an innovative project, still in its pilot phase, there is a 'fear of risk' from potential partners such as the Municipality of Porto.

4.2.2.2.2 Impacts

Being the initiative on hold, impacts are negligible for now. However, the potential impacts are more widespread, especially along the environmental and economic axes.

Current impacts:

- **Environmental and economic:** the platform of Repositório de Materiais has about 50 items on sale, for whom prices range from 25 to 100€.

4.2.2.2.3 Correlations

Repositório de Materiais is an example of collaborative platform primarily aiming at the reuse and the life extension of goods coming from demolition sites. Fighting against the logic of total (or partial) demolition of the interior of buildings, Repositório de Materiais is an innovative tool that seeks to gather and centralize the relationships between the entities that own these materials/goods and those who – in a logic of zero-waste – are willing to buy them. The initiative in turn promotes circular lifestyles by trying to tackle the creation of waste in the construction sector.

4.2.2.3 Horta à Porta

Horta à Porta is a project promoted by Lipor (the Intermunicipal Waste Management of Greater Porto) emerged in July 2003 due to the need to articulate the availability of various local entities in a network that would enable a strategy for the Greater Porto Region in the field of home composting, vegetable gardens and the promotion of organic farming. Horta à Porta is a project that aims to bring sustainable green spaces closer to the urban environment, developing biological production systems and promoting biodiversity and community spirit.

This initiative involves the creation of dynamic and useful green spaces, which promote biodiversity and good agricultural practices as well as home composting and organic farming. Indirectly, they also promote contact with nature, quality of life, livelihoods and social responsibility.

In practice, this project intends to make available plots of at least 25 square meters to individuals interested in practicing organic farming and composting. Upon receiving the field plot, future farmers also receive training in organic farming. The products are for their own consumption.

The project has been growing over the years as a result of the establishment of partnerships with the municipalities and other partners that made land available for cultivation. Although today 54 gardens are available for cultivation (for a total of 1800 plots of 25 square meters each), the demand is currently higher than the offer: according to interviews, currently the waiting list reaches almost 2000 people.

4.2.2.3.1 Impacts

Horta à Porta has so far produced the following impacts:

- **Environmental:** 54 Urban Organic Community Gardens (total area of 12,38 ha) are at disposal of families, i.e. more than 1800 plots are being cultivated by “urban families”. Bringing food production systems closer to urban cities reduces the need for food travel, thus reducing CO2 emissions. Sustainable gardening has environmental benefits related to groundwater quality, soil, biodiversity and air quality.

Economic: Self-production of vegetables implies a reduction of grocery expenses. Hence, establishing a community garden containing private plots will involve economic benefits for

gardeners. The average vegetable production on a 25 m² plot has been calculated and translated into monetary terms. These can be significant; it was found with a Lipor's study that each plot of 25m² could help saving around 200€/year in vegetable expenses per household. There are also savings involved for LIPOR, as the costs of waste processing are reduced. It seems that a significant amount of LIPOR's costs with constructing and maintaining community gardens could be covered with the organic waste reduction savings.

- **Social:** Sustainable gardening also has health benefits related to physical and mental health. According to a questionnaire results, citizens are more concerned about environmental quality and public health. Other study carried out in partnership with Lipor suggests that the practice of horticulture is associated with multiple benefits, ranging from improved healthy behaviours, improvement in the perception of health status and general quality of life.

4.2.2.3.2 Correlations

By sharing outdoor urban spaces in Porto (gardens in this case), Lipor has managed to: bringing people closer to the urban environment, increasing social participation and cohesion among citizens, promoting biodiversity, organic farming practices and food and mental health. It is then a vivid example of how sharing and participative economic models have an impact of circular lifestyles.

4.2.2.4 OPO'Lab

Co-working spaces are collaborative economic practices that have been gaining increasing visibility in the last decade in European cities. In Porto, these practices are currently quite popular, as mirrored by the number of coworking spaces that took place in the city (14 only in the most central neighbourhood of Porto).

OPO'Lab is a multidisciplinary center and the first FabLab in Portugal dedicated to think and explore the creative use of new technologies in architecture, engineering, design and other artistic fields, by promoting research, education and cultural activities. This project assumes therefore a key strategic role in the context in which it operates, to establish important partnerships with other social actors such as public authorities, schools and associations, cultural and scientific advancement.

The coworking studio, within the premises of OPO'Lab, has capacity for 40 simultaneous users, and has infrastructures able to give support to the development of any activity. OPO'lab also offers the possibility to rent a space for workshops, presentations, venues, exhibitions, and other events. The auditorium with up to 200 seats. The booking of a desk costs 10€ for a full day, up to 80€ for the full month.

Since 2016, OPO'Lab has become part of the Precious Plastic²⁰, a global community of hundreds of people working towards a solution to plastic pollution. In this regard, OPO'Lab has fostered the Precious Plastic's project by developing and fabricating various machines to reuse plastic.

OPO'Lab is also the promoter of an urban farm and a repair café.

²⁰ <https://preciousplastic.com/en/mission.html>

4.2.2.4.1 Impacts

OPO'Lab has so far produced the following impacts:

- **Environmental:** OPO'Lab contributes to the fostering of environmental awareness with three main initiatives. OPO'Lab has joined the Precious Plastic community and has produced several machines for the reuse of plastic. Further, OPO'Lab has its own repair café and has activated a small urban farm.
- **Economic:** the economic impact of OPO'Lab lies within its being a space where workers and entrepreneurs can meet and cooperate. Monthly users of the coworking space are about 100 (and growing). The price for booking a desk goes from 10€ (full day) to 80€ (full month).
- **Social:** all the projects and initiatives promoted by OPO'Lab assume the gathering of people with different backgrounds.

4.2.2.4.2 Correlations

Coworking spaces are collaborative economic practices that have been gaining increasing visibility in the last decade in European cities. In Porto, these practices are currently quite popular. OPO'Lab, however, is not simply a space that allows interaction and collaboration among individuals. It also actively contributes to the implementation of circular economy principles thus providing its users with the know-how required to change some habits that negatively affect the sustainability of people's lifestyles.

4.3 SWOT analysis

Table 3: SWOT of the Urban Circular Collaborative Economy in the territory

Strengths	Weaknesses
<ul style="list-style-type: none"> • Strong economic growth in the aftermath of economic crisis • Development of national and local-level strategies towards circular economy • Strong tourist industry • Well-developed social economy • Municipal waste management enterprise well integrated within the local circular economy landscape • Coworking culture and start-up friendly city 	<ul style="list-style-type: none"> • Late industrialisation process • Poverty rate? • Risk-averse mentality of Municipality of Porto • Lack of a proper governance structure • Lack of green public procurement culture
Opportunities	Threats
<ul style="list-style-type: none"> • High demand of urban gardens • High solidarity rate and inclination towards collaboration²¹ • Plethora of actors on the territory focused on the implementation of certain initiatives on food sharing and urban agriculture 	<ul style="list-style-type: none"> • Lack of awareness of the quality of second-hand materials • Under development of circular economy in less mainstream sectors such as construction

²¹ <https://www.hofstede-insights.com/>

5 Conclusions and recommendations

This Chapter summarises the conclusions of the case study by performing a SWOT analysis of the initiatives from each typology in the territory. It also gives recommendations for local policy makers in order to develop initiatives with highest positive impacts.

5.1 Conclusions

After years of austerity, Portugal's economic troubles seem to belong to the past as its economy continues growing. The collaborative economy, taking advantage of the economic performance, established itself mostly within the realm of tourism-related services, namely accommodation and transport. International platforms such as Bolt, Cabify, Uber, Airbnb, Home Exchange, as well as national ones like Go2Oporto and FeelPorto. Furthermore, in Porto coworking spaces – meant as collaborative economic practices - have been gaining increasing visibility in the last decade. Considered as alternative economic practices, these spaces represent the initiative of entrepreneurs, self-employed professionals and micro companies, and: promote solidarity; generate alternatives to the capitalist system; value collaborative networks; promote social innovation; form spatial concentration of similar activities. Certainly, coworking spaces as well as more “traditional” collaborative platforms (Airbnb, Uber) as well as the tourism sector as a whole, have benefited from the economic recovery experienced by Portugal and from the advantages brought by globalisation.

Circular economy in Portugal instead developed primarily as a response to the crisis of the capitalistic model of societal progress. That was challenged by not only the recurrent economic crises, but also by the constant rise of inequality, income gap, and, finally, the environmental issue. The transition towards a more sustainable society has been accompanied by national and local level's legislation and action plans: the “Social Economy Law” (Law no. 30/2013), the Action Plan for the Circular Economy in Portugal 2017-2020, and the Roadmap for a circular city of Porto in 2030. As a matter of fact, Portugal witnessed an increase in initiatives that focused on the use of green spaces, such as the allotment gardens promoted by Lipor in several Portuguese cities. Green spaces are usually located within urban spaces, hence an integral part of the urban economy.

Overall, the study identified 50 urban collaborative and circular initiatives in Porto. Initiatives were identified in all six domains according to the UCCE typology followed in this study. The majority of initiatives come from “Sharing indoor urban space”, with 33% of the presentation share. This helped identifying the importance of coworking spaces in Porto. Furthermore, 88% of the identified initiatives originate from Porto and its surrounding area. The “ride sharing” category in the transport sector is the only category where foreign origin of initiatives is prevailing.

Due to a longer presence in the territory of Porto, and a straight connection with the developing social economy, initiatives within the realm of urban agriculture are those whose impacts have the most relevance. These initiatives, as the ones promoted by Lipor, are contributing to the creation of circular lifestyles to a great extent, as they take place within the urban space of Porto and are involving a copious number of users (1800 families up to today), and contribute to the rise of awareness towards the environmental issue.

While none of the above analysed initiatives seem to have concrete impacts on the economic side, all of them have shown either concrete or potential environmental impacts. Furthermore, the local population is increasingly being aware of the presence of the initiatives, especially of those who are established in the city centre of Porto, such as OPO'Lab and other coworking spaces.

Although societal and market shortcomings affect the implementation of all collaborative and circular initiatives in the territory, the privately-run initiative Repositório de Materiais stands out for the difficulties it is facing. Besides not receiving funds from public authorities who seem to be sceptical about the project and risk-averse, the lack of human resources and storage locations for the logistics of materials or components rescued from demolition is keeping the initiative on hold. However, the construction sector is supposed to be a field likely to be conquered by the sustainability trend in the near future. The environmental impact of the reuse of demolition and construction waste is indeed related to impacts associated with the transport of materials, and with the manufacture of new materials.

In conclusion, the case of Porto shows that, in order to pursue the objective of urban and circular lifestyles, local level policies need to address a broad range of sectors, i.e. the initiatives need to affect people's lifestyles from a variety of perspectives: transport, use of materials, consumption of food, collaboration among individuals.

5.2 Recommendations

To address the challenges identified in the SWOT analysis, as well as those stemming from the workshop held in October, it is recommended for the city of Porto to do the following:

Better knowledge

- In general, a better knowledge of circular initiatives' benefits (led by collaborative actions) underlies their effective implementation. If better knowledge is to be understood as a better understanding of sustainable issues as well as a rise of society's awareness towards impelling challenges, then the municipality of Porto should focus on: **educating** the population towards a more sustainable life-style; helping the **promotion** (and scaling-up) of existing initiatives.
- The development of the national and local circular strategies – and the achievement of urban and circular lifestyles – passes by the **realisation that circularity can and should also be achieved in less traditional sectors** (i.e. construction). The comprehensive policy goal of circular lifestyle can be reached through the implementation of initiatives that influence the whole range of activities involving citizens.

Better regulation

- The local strategy towards a circular economy consider a combination of many sectors and aligned horizontal topics, hence is able to speak to different sectors of society and to address the policy goal of circular lifestyles. Furthermore, it focuses on enterprises and entrepreneurs as the driving force for a circular economy and still mentions universities as education providers sharing more knowledge on the concept and encouraging more people to contribute to the transition. However, **the governance structure is not specified**, thus the lead seem to fall

upon the shoulders of the only Municipality of Porto. It lacks an inclusive approach. Civil society engagement has proven to be a valuable asset for policy makers in order to implement circular economy initiatives.

- Additionally, **green public procurement** should be more widely used to ensuring the achievement of the circular economy's positive outcomes for the whole community. However, as some workshop participants suggested, some barriers need be overcome. For instance, the Portuguese public procurement sector should initially follow the guidelines set out in the Green Public Procurement (GPP) Product Sheet and the European Commission GPP Training Toolkit which both work in tandem to provide recommendations for the procurement of greener construction works and services. Furthermore, as the public procurement officers may lack the awareness and the training/education, the government should become the initial driver of GPP. Therefore, awareness and training concerning this practice must be seen as the initial action to combat the resistance to change procurement procedures.

Better funding

- Some initiatives that aim at prolonging the life of materials and goods in less traditional sectors need the **financial support of public authorities to start to streamline sustainable urban rehabilitation**. Public authorities should then abandon their risk-averse attitude and lead the way towards circularity in less mainstream sectors. By not financing certain initiatives, public authorities could pass the message that some sectors are more important than others, hence preventing the achievement of urban and circular lifestyles. A better funding system would also help **converting some initiatives into (durable) business solutions**.

Annexes

Annex 1: Typologies/domains of Urban Circular Collaborative Economy initiatives

Domain	Category	Business, organisational or value creation model												Usage		
		Economic potential						Social potential								
		Sector	Underlying asset	Transaction relationship	Transaction mode	Type of market player	Data	Hiring of workers involved	Origin	Ownership of the initiative	Financing – source	Financing – destination	Contribution to the circular economy	Size of the activity	Alternative usage	Users' characteristics
Sharing outdoor urban space	Community gardens	Food and waste	Space	P2P	Sharing	Multiple	Personal/non-personal; data use	For service and coordination	Local	Private/public/partnership	Activity/private investment/public money	Re-investment in local assets/outside the country	Type of circular economy business model	Data to be collected	Agriculture	Data to be collected
	Parking space reuse	Transport	Space	P2P/B2C	Renting	Multiple	''	Only for coordination	Both	''	''	''	''	''	Rental parking space	''
Sharing indoor urban space	Short-term rental	Accommodation	Space	P2P (rarely B2C)	Renting	Some dominants	''	For service and coordination	Outside	''	''	''	''	''	Hotel	''
	Coworking space/Fablab	Accommodation	Space	P2P (rarely B2C)	Renting	Multiple	''	For service and coordination	Local	''	''	''	''	''	Office rental	''
	Leisure space sharing	Accommodation	Space	P2P/B2C/public sector	Sharing	Multiple	''	Only for coordination	Local	''	''	''	''	''	Cultural activities/recreative space rental	''
Sharing goods and tools	Renting goods	Retail	Goods	P2P	Renting	Multiple	''	Only for coordination	Outside	''	''	''	''	''	Rental companies	''
	Reselling goods	Retail	Goods	P2P	Selling	Some dominants	''	For service and coordination	Outside	''	''	''	''	''	Retailers	''
	Swapping goods	Retail	Goods	P2P	Swapping	Multiple	''	Only for coordination	Local	''	''	''	''	''	No	''
	Repair cafés	Retail	Goods	P2P	Sharing	Multiple	''	For service and coordination	Local	''	''	''	''	''	No	''
Sharing food	Food & meal sharing	Food and waste	Food	P2P/B2C	Sharing	Multiple	''	For service and	Both	''	''	''	''	''	Restaurants	''

								coordination									
	Food cooperative/food redistribution	Food and waste	Food	P2P	Sharing/Selling	Multiple	✓	For service and coordination	Local	✓	✓	✓	✓	✓	✓	Retailers	✓
Sharing organisations and decisions as cooperatives	Energy	Energy/utilities	Energy	P2P	Sharing	Multiple	✓	For maintenance of asset and coordination	Local	✓	✓	✓	✓	✓	✓	Energy providers	✓
	Waste collection/treatment	Food and waste	Waste	B2C	Sharing	Multiple	✓	For service and coordination	Local	✓	✓	✓	✓	✓	✓	Waste treatment/management organisations	✓
Sharing transport	Bike sharing	Transport	Bike	B2C/public sector	Renting	Some dominants	✓	For maintenance of asset and coordination	Outside		✓	✓	✓	✓	✓	Rental bike	✓
	Car sharing	Transport	Car	P2P/B2C	Renting	Some dominants	✓	Only for coordination (if P2P)/For maintenance of asset and coordination (if B2C)	Outside	✓	✓	✓	✓	✓	✓	Rental cars	✓
	Ride sharing	Transport	Car	P2P	Sharing	Some dominants	✓	For service and coordination	Outside	✓	✓	✓	✓	✓	✓	Public transport	✓
	Rides-on-demand	Transport	Car	B2C (rarely P2P)	Renting	Some dominants	✓	For service and coordination	Outside	✓	✓	✓	✓	✓	✓	Taxi	✓

Annex 2: List of local sources

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Annex 3: List of interviews

Name	Organisation	Organisation type	Date of the interview
Emanuel Monteiro	Lipor	UCCE initiative	31/08/2019
Cláudia Cardoso	Repositorio de Materiais	UCCE initiative	27/08/2019
João Feyo	OPO'Lab	UCCE initiative	25/09/2019
Martim Duarte Gama Bustorff	Via Verde Boleias	UCCE initiative	01/10/2019

Annex 4: The 2019 SDG Index for European Cities: ranking and scores

TABLE 1 THE 2019 SDG INDEX FOR EUROPEAN CITIES: RANKING AND SCORES						
RANK	CITY	SCORE		RANK	CITY	SCORE
1	Oslo	74.8		26	Bratislava	60.2
2	Stockholm	74.2		27	Prague	60.1
3	Helsinki	71.3		28	Madrid	59.7
4	Copenhagen	68.7		29	Tallinn	59.5
5	Zurich	67.5		30	Barcelona	59.1
6	Lyon	64.9		31	Warsaw	57.8
7	Paris	64.7		32	Zagreb	57.1
8	Munich	64.2		33	Vilnius	56.8
9	The Hague	63.7		34	Milan	56.8
10	Eindhoven	63.5		35	Turin	56.4
11	Amsterdam	63.5		36	Riga	56.3
12	Rotterdam	63.4		37	Budapest	55.4
13	Luxembourg	63.0		38	Sofia	55.2
14	Hamburg	63.0		39	Lisbon	55.1
15	Bordeaux	62.6		40	Rome	55.0
16	Vienna	62.5		41	Bucharest	54.4
17	Ljubljana	62.5		42	Valletta	53.8
18	Berlin	62.1		43	Nicosia	53.7
19	London	62.0		44	Porto	53.5
20	Nuremberg	61.9		45	Athens	48.6
21	Antwerp	61.7				
22	Dublin	61.6				
23	Marseille	61.4				
24	Frankfurt	61.2				
25	Brussels	60.4				

Annex 5: City Scores for each SDGs

CITY	COUNTRY	MISSING VALUES (%)	REGION
Amsterdam	Netherlands	16.07	Western Europe
Antwerp	Belgium	8.93	Western Europe
Athens	Greece	33.93	Southern Europe
Barcelona	Spain	14.29	Southern Europe
Berlin	Germany	8.93	Central and Eastern Europe
Bordeaux	France	12.50	Western Europe
Bratislava	Slovakia	17.86	Central and Eastern Europe
Brussels	Belgium	10.71	Western Europe
Bucharest	Romania	19.64	Central and Eastern Europe
Budapest	Hungary	12.50	Central and Eastern Europe
Copenhagen	Denmark	16.07	Northern Europe
Dublin	Ireland	33.93	Western Europe
Eindhoven	Netherlands	23.21	Western Europe
Frankfurt	Germany	14.29	Central and Eastern Europe
Hamburg	Germany	7.14	Central and Eastern Europe
Helsinki	Finland	12.50	Northern Europe
Lisbon	Portugal	17.86	Southern Europe
Ljubljana	Slovenia	19.64	Central and Eastern Europe
London	United Kingdom	25.00	Western Europe
Luxembourg	Luxembourg	28.57	Western Europe
Lyon	France	19.64	Western Europe
Madrid	Spain	10.71	Southern Europe
Marseille	France	12.50	Western Europe
Milan	Italy	26.79	Southern Europe
Munich	Germany	8.93	Central and Eastern Europe
Nicosia	Cyprus	32.14	Southern Europe
Nuremberg	Germany	17.86	Central and Eastern Europe
Oslo	Norway	30.36	Northern Europe
Paris	France	14.29	Western Europe
Porto	Portugal	28.57	Southern Europe
Prague	Czech Republic	12.50	Central and Eastern Europe
Riga	Latvia	23.21	Central and Eastern Europe
Rome	Italy	12.50	Southern Europe
Rotterdam	Netherlands	17.86	Western Europe
Sofia	Bulgaria	19.64	Central and Eastern Europe
Stockholm	Sweden	10.71	Northern Europe
Tallinn	Estonia	19.64	Central and Eastern Europe
The Hague	Netherlands	23.21	Western Europe
Turin	Italy	10.71	Southern Europe
Valletta	Malta	30.36	Southern Europe

CITY	COUNTRY	MISSING VALUES (%)	REGION
Vienna	Austria	10.71	Central and Eastern Europe
Vilnius	Lithuania	19.64	Central and Eastern Europe
Warsaw	Poland	16.07	Central and Eastern Europe
Zagreb	Croatia	26.79	Central and Eastern Europe
Zurich	Switzerland	30.36	Western Europe

Annex 6: Survey results

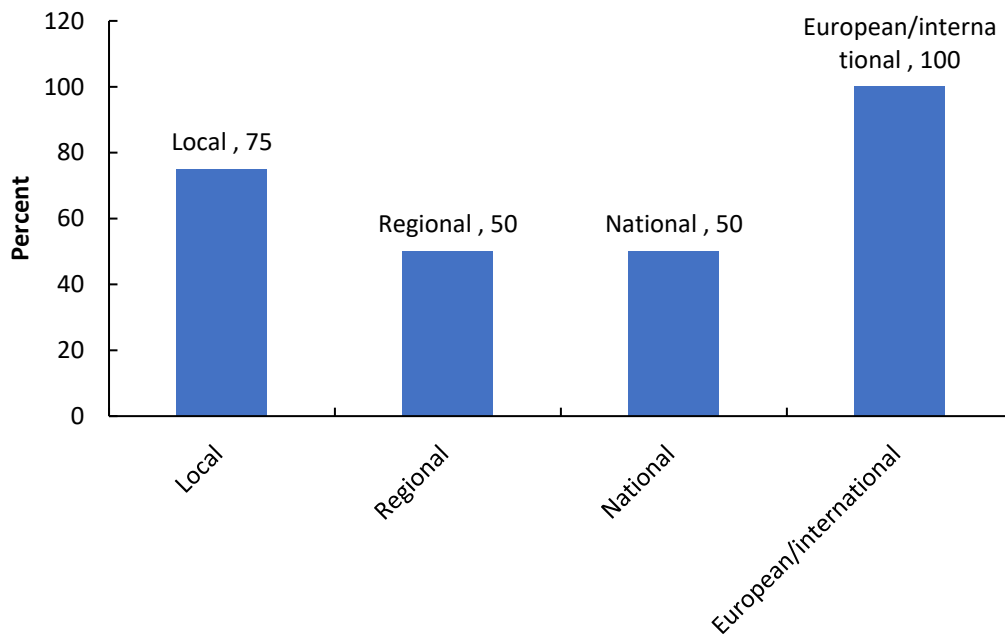
ESPONSHARING - survey of initiatives

The survey received in total 4 complete responses.

At which scope do you operate?

All Urban Circular Collaborative Economy initiatives present in Porto operate at the European/international level (100%).

Figure 7: Scope of operation, %

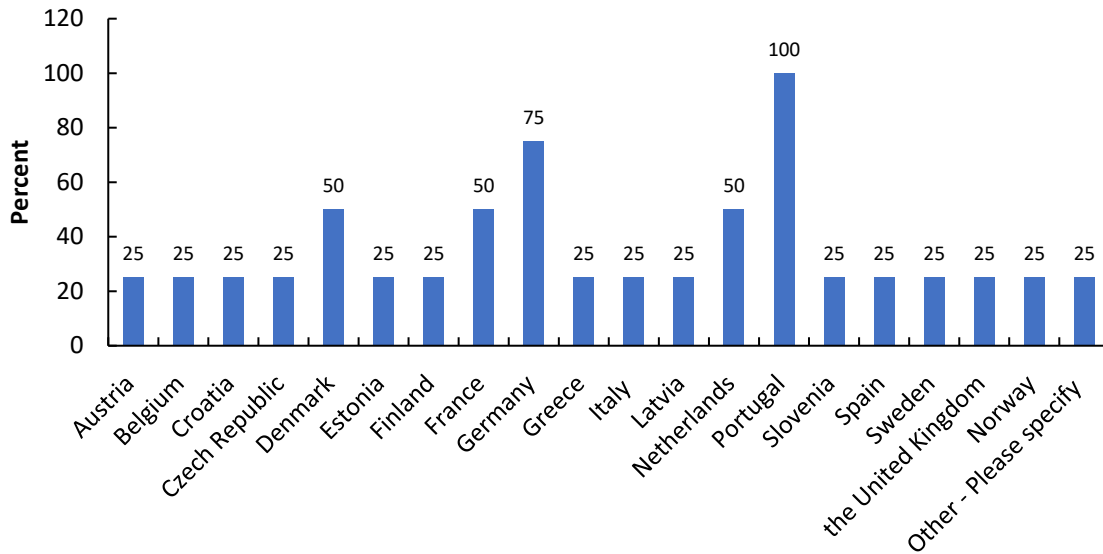


In which country(ies) do you operate?²²

Besides Portugal, Urban Circular Collaborative Economy initiatives in Porto operate also in other countries. See the figure below.

Figure 8: Countries of operation, %

²² Multiple answers possible.

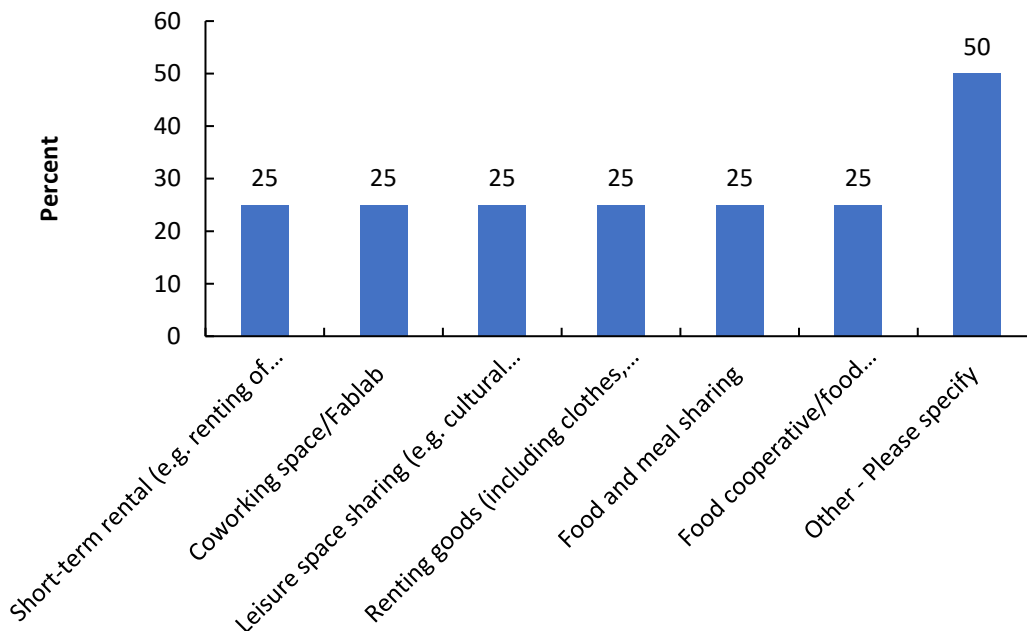


What does describe your activity best?²³

Majority of Urban Circular Collaborative Economy initiatives in Porto reported to belong to the category of “Other” (50%) under which mentioned categories were cultural education center and production and artistic residence.

All the rest of the categories of Urban Circular Collaborative Economy initiatives in Porto received the same share of responses (25%), indicating that in Porto all categories of Urban Circular Collaborative Economy initiatives are present. See figure below.

Figure 9: What does describe your activity, %

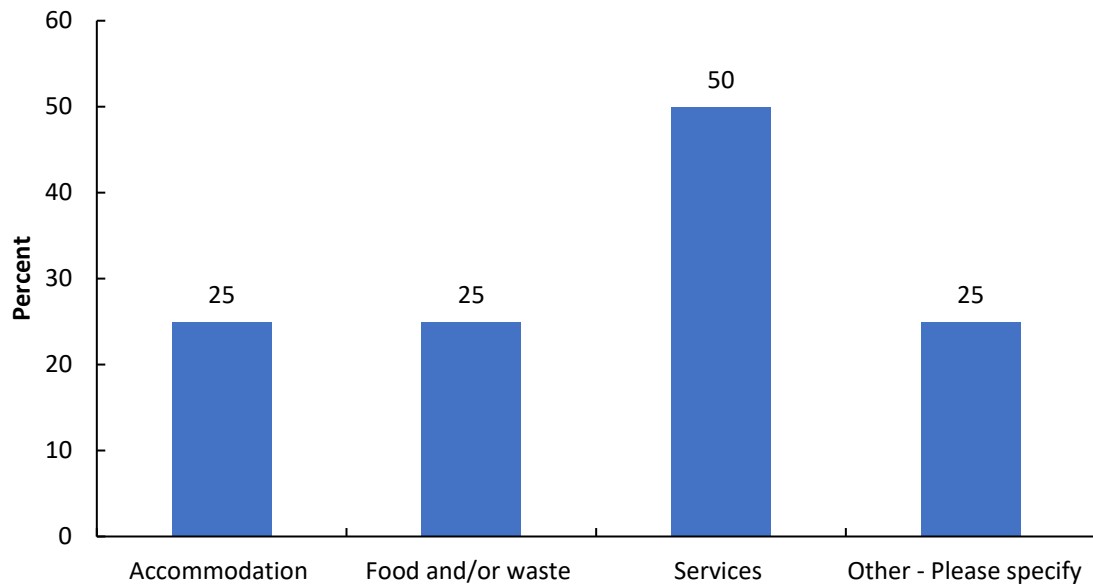


²³ Multiple answers possible.

In which sector does your organisation operate (multiple answers possible)?²⁴

Majority of Urban Circular Collaborative Economy initiatives in Porto reported to operate in the “Services” sector (50%). Food and waste sector, accommodation and “Other” received all 25% of the responses.

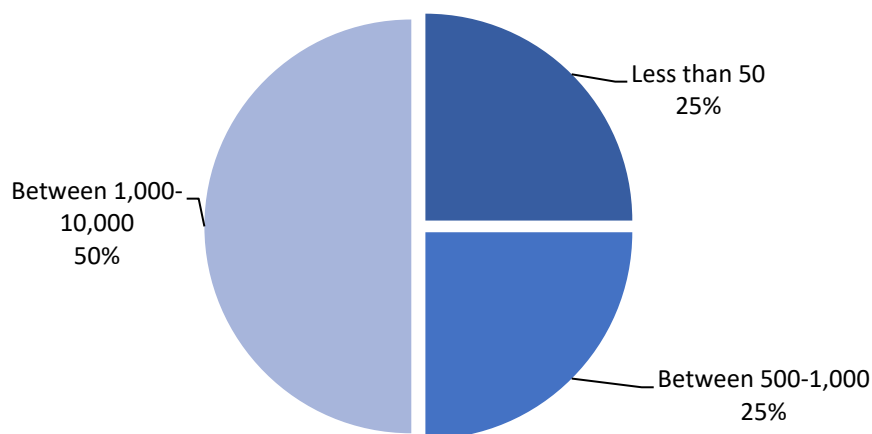
Figure 10: Sector of operation, %



Number of users

Half (50%) of Urban Circular Collaborative Economy initiatives in Porto report to have between 1,000 and 10,000 users. 25% of the initiatives have between 500 and 1,000 users and other 25% have less than 50 users.

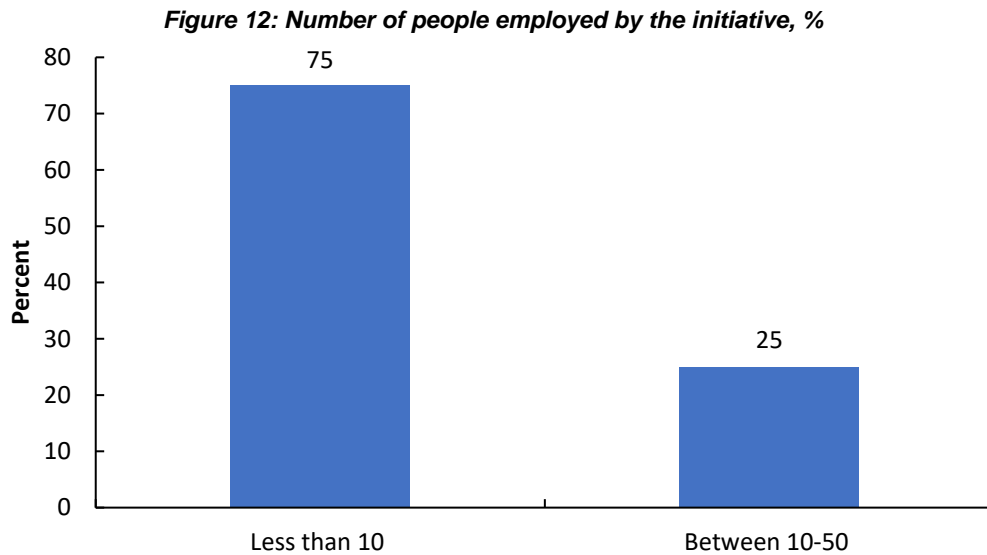
Figure 11: Number of users, %



²⁴ Multiple answers possible.

Number of people employed by your initiative (persons managing the initiative or contributing to it as a core team member)

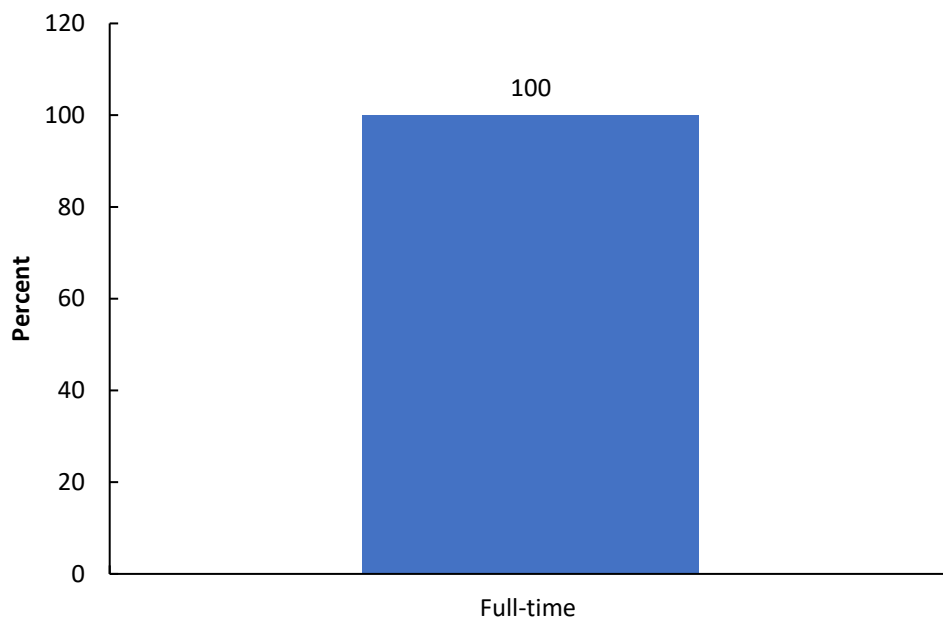
Almost two thirds (75%) of the Urban Circular Collaborative Economy initiatives in Porto employ less than 10 people. 25% of the Urban Circular Collaborative Economy initiatives that participated in the survey reported to employ between 10 and 50 people.



Level of involvement of employees

All initiatives present in Porto offer full-time job positions for their employees.

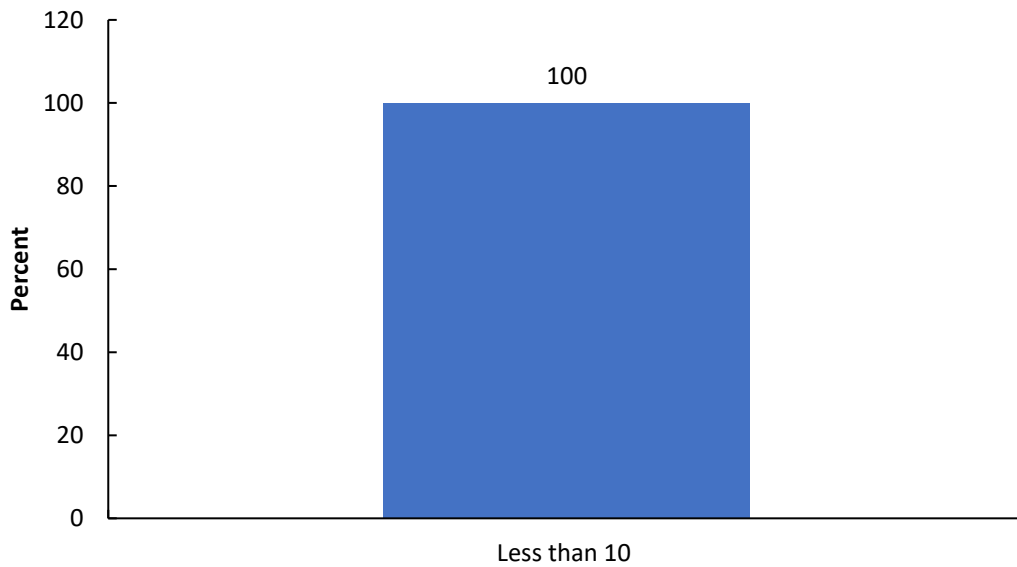
Figure 13: Level of involvement of employees, %



Number of people providing services through your initiative (volunteers)

All of the Urban Circular Collaborative Economy initiatives present in Porto that participated in the survey rely on less than 10 volunteers in the provision of their services (100%).

Figure 14: Number of volunteers, %



Average price of the goods created/sold?

Majority of Urban Circular Collaborative Economy initiatives in Porto reported to earn between EUR 10,000 and EUR 100,000 in the year of 2018. The pattern did not change since 2016. Majority of initiatives reported to earn between EUR 10,000 and EUR 100,000 in the operating years of 2016 and 2017. However, in the years before, 2016 and 2017, the share of Urban Circular Collaborative Economy initiative that reported to earn between EUR 10,000 and EUR 100,000 was smaller than in 2018 (67%).

Figure 15: Revenues of UCCE initiatives, year 2018, %

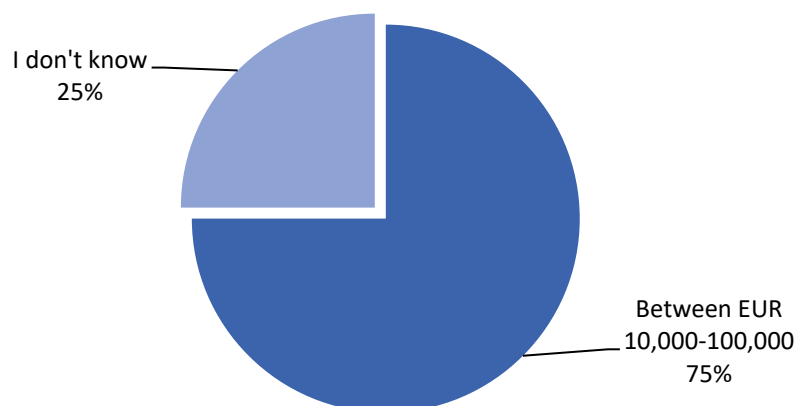


Figure 16: Revenues of UCCE initiatives, year 2017, %

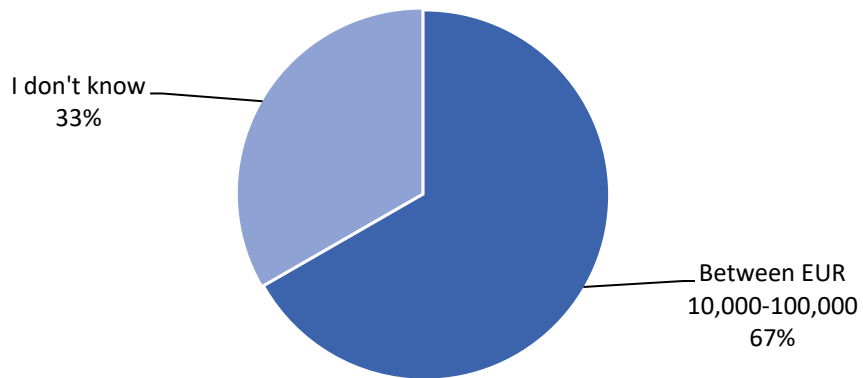
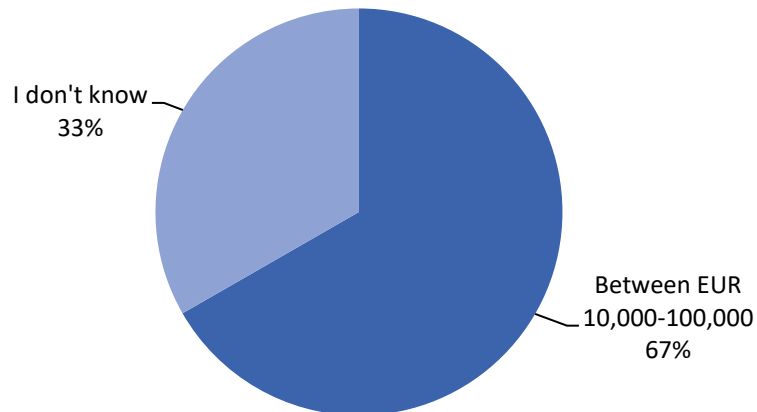


Figure 17: Revenues of UCCE initiatives, year 2016, %



Impact on consumption/production of raw materials: Does your initiative has an effect the consumption/ production of raw materials? Please explain.

No answers have been reported.

Impact on resource use: Does your initiative has an effect on the use of material resources? Please explain.

No answers have been reported.

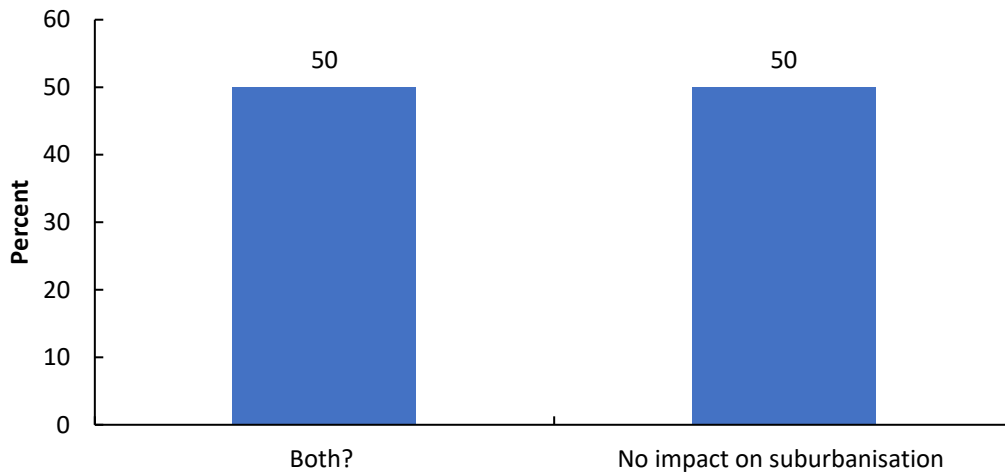
Impact on waste management/creation: Does your initiative has an effect on the creation/management of waste? Please explain.

No answers have been reported.

Impact on suburbanisation: does your initiative contribute to attracting people from the outskirts to the city centre?

Majority of the Urban Circular Collaborative Economy initiatives (50%) believe that their initiatives have no impact on suburbanisation. On the other hand, other 50% of survey respondents claimed that Urban Circular Collaborative Economy initiatives have an impact on suburbanisation while at the same time attracting people from the outskirts to live in the city centre.

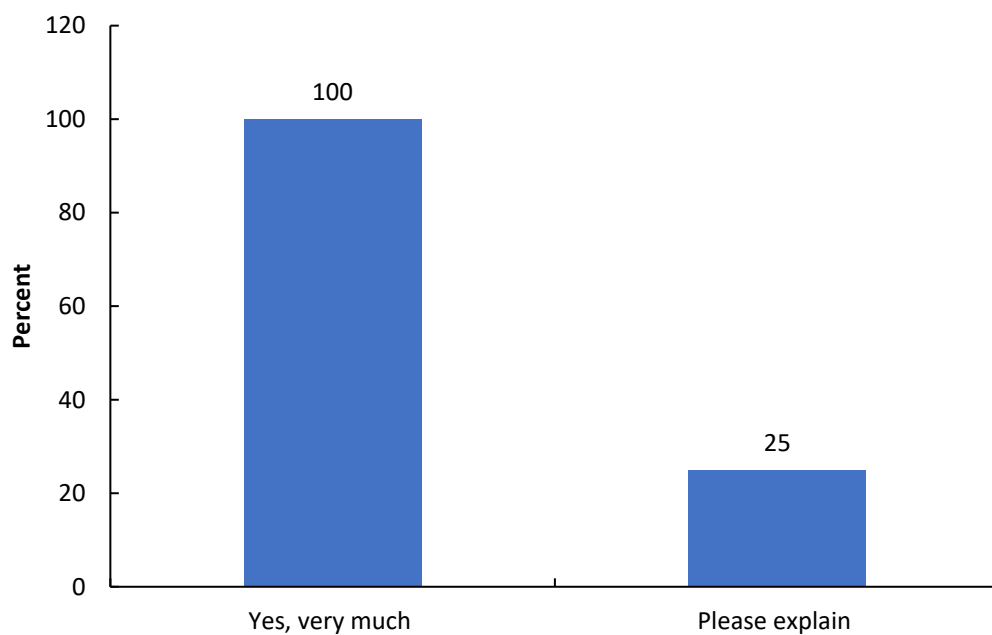
Figure 18: Impact on suburbanisation, %



Impact on awareness of environmental matters: Do you think your users are more aware of environmental matters after participating in your initiative?

All initiatives present in Porto that participated in the survey believe that their Urban Circular Collaborative Economy initiatives contribute to raising awareness of environmental matters among the users.

Figure 19: Impact on awareness of environmental matters, %

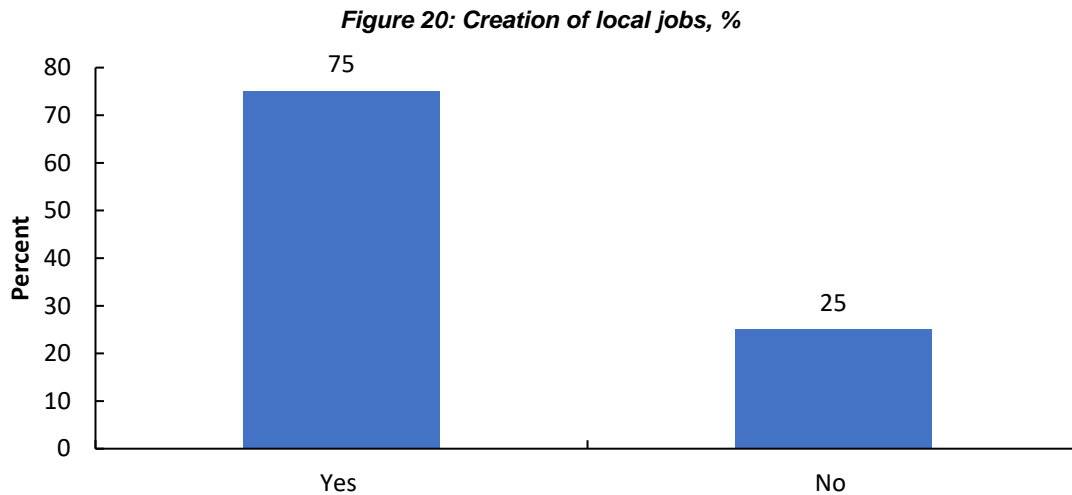


Impact on local revenues: Does your initiative contribute to generating revenues in local market?

No answers have been reported.

Does your initiative contribute to the creation of local jobs?

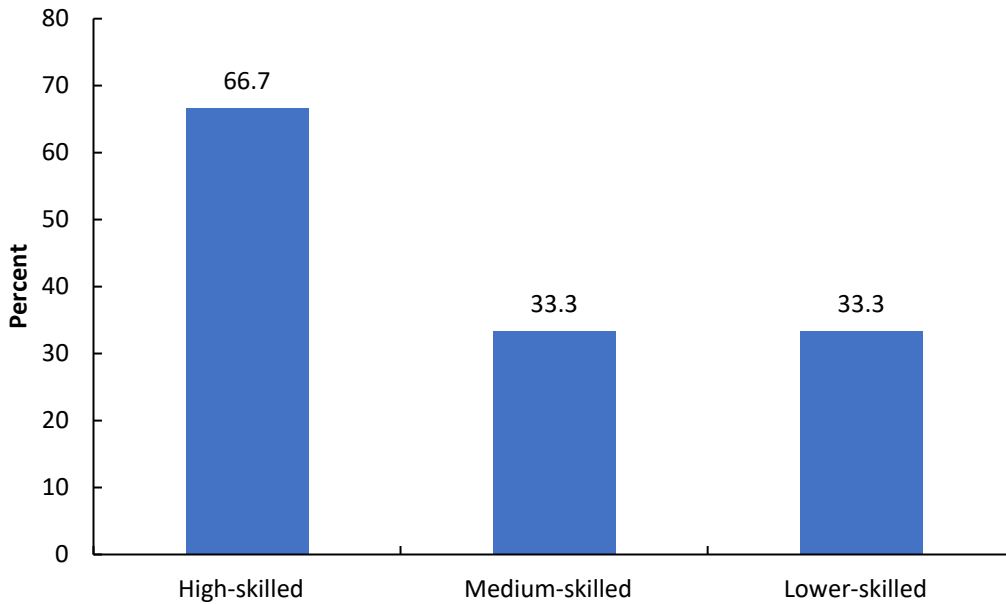
Majority (75%) of Urban Circular Collaborative Economy initiatives present in Porto contribute to the creation of local jobs. On the other hand, 25% of the survey respondents claimed that their initiatives do not contribute to the creation of local jobs.



What types of jobs are created by your initiative?

66.7% of the Urban Circular Collaborative Economy initiatives in Porto believe that Urban Circular Collaborative Economy initiatives create high-skilled jobs, 33.3% of respondents claim Urban Circular Collaborative Economy initiatives contribute creating middle-skilled jobs and 33.3% of survey participants claim that Urban Circular Collaborative Economy initiatives create low-skilled jobs.

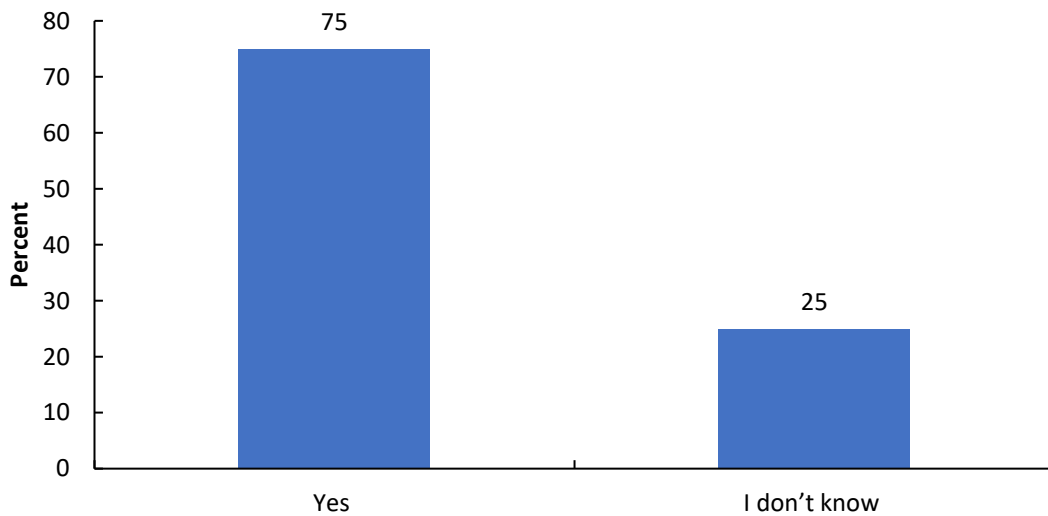
Figure 21: Types of jobs created by UCCE initiatives, %



Does your initiative allow users/providers to learn new skills?

Majority of survey respondents (75%) believe that Urban Circular Collaborative Economy initiatives in Porto help users learning new skills.

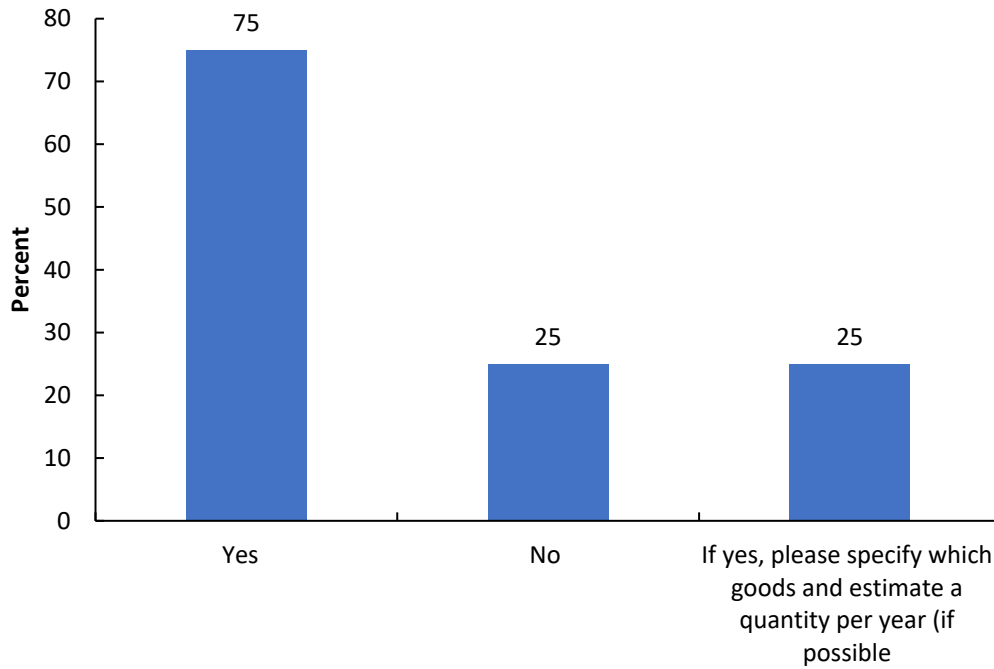
Figure 22: Impact on learning new skills, %



Does your initiative allow people to have access to goods/services they would not have access to otherwise?

Majority of survey respondents believes that Urban Circular Collaborative Economy initiatives allow access to goods/services that users would not have otherwise (75%).

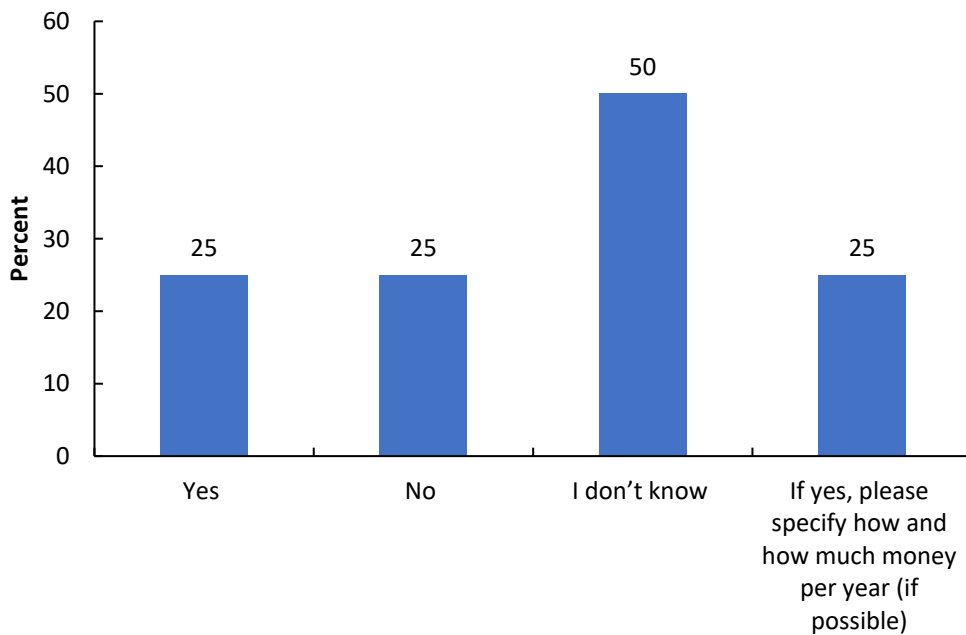
Figure 23: Access to new goods/services %



Does your initiative allow users to save money compared with what they would have bought in traditional markets?

Majority of respondents that took part in the survey could not tell whether the initiatives present in Porto allow users to save money (50%). The rest of the respondents responded in equal share of 25% saying that the initiatives present in Porto help saving money as well as they do not.

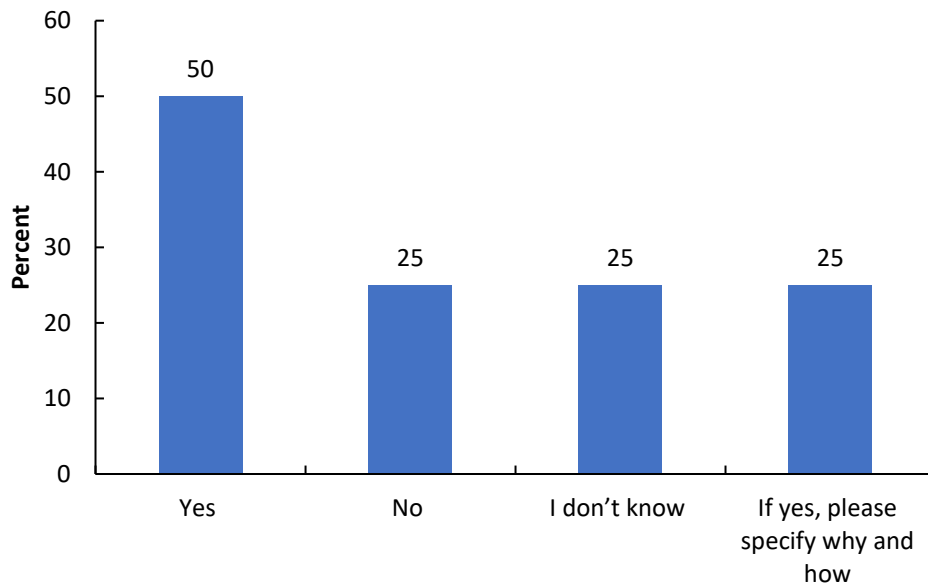
Figure 24: Impact on savings, %



Impact on social cohesion: Does your initiative allow neighbours/citizens to get to know each other better?

Majority of survey respondents (50%) believe that Urban Circular Collaborative Economy initiatives in Porto increase social ties among the users.

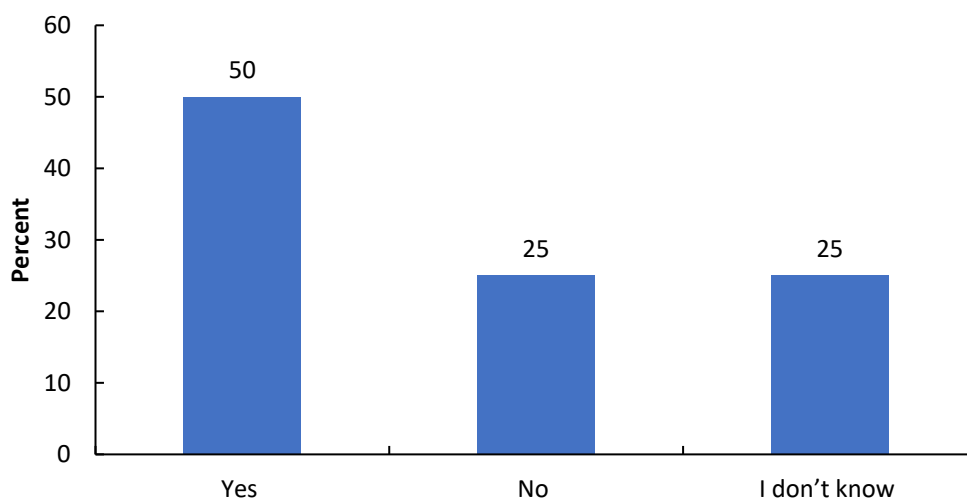
Figure 25: Impact on social cohesion, %



Impact on quality of life of citizens: Do you consider that your initiative increased the quality of life in your area?

Half (50%) of the survey respondents believe that Urban Circular Collaborative Economy initiatives in Porto contribute to the quality of life by increasing it. 25% of the respondents said that Urban Circular Collaborative Economy initiatives present in Porto are not increasing the quality of life of the citizens and 25% of the respondents did not have opinion on the question.

Figure 26: Impact on quality of life of citizens, %

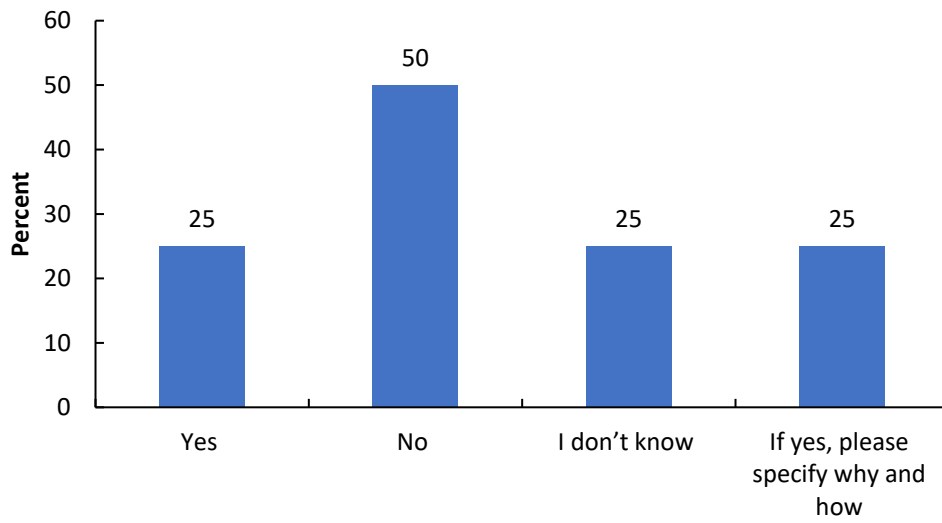


Impact on health: Does your initiative has an impact on the health of citizens?

Majority of survey respondents (50%) believe that Urban Circular Collaborative Economy initiatives in Porto do not have a positive impact on the health of the citizens. 25% of the respondents on the other

hand believe that Urban Circular Collaborative Economy initiatives do have a positive impact on the health of citizens.

Figure 27: Impact on health, %



Impact on safety: Does your initiative has an impact on the safety of its users?

Majority of the survey respondents (75%) believe that Urban Circular Collaborative Economy initiatives in Porto do not have an impact on safety. 25% of respondents on the other hand did not have an opinion on the question.

Figure 28: Impact on safety, %

