

HOW GARDENS AND PUBLIC PARKS ARE RESPONDING TO CITIES SOCIAL AND ENVIRONMENTAL CHALLENGES? A CASE STUDY OF PORTO, PORTUGAL



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INTRODUCTION

Cities must be pleasant and healthy spaces able to contribute to ecosystems regeneration and bring closer Humans and Nature. According to the 11 SDG of 2030 Agenda, by 2030 should be provided universal access to safe and inclusive public green spaces. Scientific evidences emphasize the multiple benefits of ecosystems services: regulation, provision, cultural and support [1,2].

OBJECTIVES

The main goal of this research aims to evaluate how the ecosystems services of gardens and public parks (GPP), in the city Porto, are responding to contemporary social and ecological challenges and, consequently, which differences are found within city socioeconomic and environmental vulnerability clusters.

METHODS

An evaluation grid [3,4] was elaborated and applied to 25 GPP representatives of the five socioeconomic and environmental vulnerability clusters (SEDI) within the city [5]. The grid is composed by 4 sections related to activities, environmental quality, facilities and safety. After data collection, the statistic treatment was performed by IBM® SPSS® Statistics vs. 24.0 through descriptive and inferential statistic analyses.

CONCLUSIONS

The main conclusions of this research reveal that the definition of public policies in the design and improvement of GPP must take into account the social and environmental specificities of the surrounding area. The grid may be useful to the municipal department of green spaces and infrastructure management of Porto to diagnose, monitor and evaluate the ecosystems services that GPP could provide to the city.

KEYWORDS

Urban Green Spaces, Cities, Sustainable Development, Ecology.

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Table 1 - Dimensions evaluated by the Grid.

	Sections	Description
Ecosystems services evaluation	A. Activities	Sports, table games, theatres, civic participation meetings, festivals, concerts, religion and new spiritualities, environmental education
	B. Environmental Quality	Assessment of surrounding area quality, trees density, noise level exceeding > 10.0 dB(A), cycle lanes, paths, maintenance, cleaning routine, art and heritage elements, vandalism, water elements and shadow spaces
	C. Facilities	Existence of environmental education centre, children playground, proximity to car park in the surrounding areas, proximity to public transport, resting spaces (benches), containers with bags for animal manure, fountains, sources of water for animals, cultural/recreational equipment, coffees /bars/restaurants, toilets and accessibility for people with reduced mobility
	D. Safety	Visibility level of the streets that surround the park (exterior-indoor/interior-exterior); identification of areas of difficult visualization, adequate infrastructures for sports activities, lighting and security/vigilant/ surveillance existence

RESULTS

Preliminary results shows different capacity to improve environmental quality and respond to social and ecological challenges related to geographic location of the GPP [6]. Beyond its environmental performance, the possibility to realize different types of activities is different according to GPP facilities. The final GPP scores are presented in Table 2. The highest score (24) corresponds to a park located in a low economic and environmental deprivation cluster. The lowest score (8) corresponds to a garden located in a high economic and environmental deprivation cluster.

Table 2 - PUGS scores organized by SEDI clusters and typology.

Cluster (SEDI)*	GPP (Fig.1)	Typology	Score
2	7	Park	24
3	14	Garden	23
2	8	Park	23
3	13	Garden	21
1	3	Garden	21
1	5	Garden	20
3	12	Garden	20
1	4	Garden	19
5	23	Garden	18
2	6	Garden	18
4	19	Park	17
4	20	Garden	15
5	25	Garden	15
1	1	Garden	15
4	18	Park	15
5	21	Garden	14
5	22	Garden	14
5	24	Garden	14
3	11	Garden	13
3	15	Square	12
2	10	Square	12
4	17	Garden	11
1	2	Garden	11
2	9	Garden	9
4	16	Garden	8

* 1 = very low deprivation; 2 = low deprivation; 3 = moderate deprivation; 4 = high deprivation; 5 = very high deprivation.