

**Development and Management of
Green Spaces in European Cities:
A Comparative Analysis**

Research Memorandum 2002-25

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Abstract

The provision, design, management and protection of urban green spaces are at the top of the agenda of "sustainability" and "liveability" of human settlements for improving the quality of local environments. Quality of urban green spaces is a key factor in making cities attractive and viable places to live in. Urban green spaces play an important role in improving the liveability of towns and cities. The present paper considers urban green spaces as an important contribution to a sustainable development of cities. From this perspective, this paper aims to investigate and compare the present state and availability of urban green spaces in various European cities. The results of a multidimensional factor analysis and a spider model applied to a database gathered by means of extensive survey questionnaires show interesting links and patterns between and in European cities. Factor analysis shows that the availability of "urban green" is relatively high in metropolises and big cities, whereas the availability of "natural green" is relatively high in medium sized and small cities. On the other hand, spider models show that the availability of green spaces per inhabitant is higher in small and medium-sized cities than in metropolises and big cities. This comparative framework shows that the conditions in terms of the green space available to the inhabitants are more problematic for metropolises and big cities.

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1. Introduction

In the history of urban developments urban planners have tried to create urban spaces that also incorporate elements from nature (MachHarg, 1971). Several models, some utopian, influence "green city" advocates. Charles Fourier's fantasy villages called 'phalansteries', Ernest Callebach's novel 'Ecotopia' and the most famous Ebenezer Howard's 'Garden City' had a major influence on green city advocates (Roelofs, 1999). This interest in greening cities has increased with the concept of "sustainable development" which is developed in the report called "Our Common Future" (Brundtland Report) published by the World Commission on Environment and Development in 1987 (WCED, 1987). The concept of sustainability has become an important paradigm in urban planning since a high proportion of the world's production, consumption and waste generation is concentrated in cities. Therefore, a general concern for quality of life and sustainability, with a particular focus on the city, has emerged. Societies have become concerned with the built environment and with shaping nature in urban areas and this has led to specific landscape patterns in the countryside and to the creation of parks and gardens in urban areas (Goede et al., 2001). Today, development and management of urban green spaces are at the top of the agenda of sustainability. However, urban green spaces are under a permanent pressure on the one hand, and the potential of green spaces is not always being realised, as current management practices are sometimes sub-optimal on the other hand. Therefore, it is of strategic importance to create an analytical and taxonomic framework for mapping out the importance of green space in cities.

This paper is part of the project "Development of Urban Green Spaces to Improve the Quality of Life in Cities and Urban Regions" (URGE) and considers urban green spaces as an important contribution to a sustainable development of cities. The URGE project aims to develop interdisciplinary tools for scientists as well as for planners all over Europe for the planning and management of urban green spaces. The main question of the project is how urban green spaces (both in a qualitative and a quantitative sense) can be developed from ecological, economic, social and planning perspectives, and which tools and instruments are helpful in this respect. The project includes the elaboration and testing of an interdisciplinary catalogue of methods and measures, based on experience from various European cities. This catalogue of methods will be validated by comparing case studies in several European "partner cities" and various European "reference cities". The knowledge gained may be used to improve existing green spaces and to optimise urban green policies in Europe (URGE, 2002).

This study analyses several European cities, including reference cities, in order to obtain strategic and policy relevant information on the key features of urban green. We will compare the present state and availability of urban green spaces in these European cities by means of factor-analytic methods and the so-called spider model. In the next section, we will describe "urban green" from a conceptual perspective and discuss the importance of urban green for the quality of urban life. In Section 3 we will give a description of our study and the data obtained from the extensive survey questionnaires and compare and evaluate the present state and availability of urban green spaces based on the application of a factor-analytic method and a spider model. In the final section, we will discuss the policy relevance for the development and management of urban green spaces.

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2. Urban Green Spaces and its Importance for Quality of Life

Since this paper is related to the URGE project, the definition of urban green space that is used here is almost similar to the one that is used within the URGE project, and has been formulated by ecologists, economists, social scientists and planners. They agreed on the following definition:

By urban green spaces we understand public and private open spaces in urban areas, primarily covered by vegetation, which are directly (e.g., active or passive recreation) or indirectly (e.g., positive influence on the urban environment) available for the users.

Urban green spaces play a key role in improving the liveability of our towns and cities. The quality and viability of cities largely depend on the design, management and maintenance of green as well as open and public spaces in order to fulfil their role as an important social and visual focus. Urban green spaces are not only an important component in housing areas, but also in business, leisure, retail and other commercial developments.

The quality of green spaces helps to define the identity of towns and cities, which can enhance their attractiveness for living, working, investment and tourism. Therefore, they can contribute positively to the competitiveness of cities. From a **social perspective**, particular types of green space can offer a bigger diversity of land uses and opportunities for a wide range of activities, help to foster active lifestyles, and can be of real benefit to health. Well-managed and maintained green spaces contribute to social justice by creating opportunities for people of all ages to interact (Scottish Executive, 2001). Urban green spaces emphasise the diversity of urban areas by reflecting the different communities they serve and meeting their varying needs. They enhance cultural life by providing venues for local festivals, civic celebrations and theatrical performances. Urban green spaces provide safe play space for children (Jacobs, 1961, cited in Haughton and Hunter, 1994), contribute to children's physical, mental and social development (Hart, 1997) and play an important role in the basic education of schoolchildren with regard to the environment and nature. From a planning perspective, a network of high quality green spaces linking residential areas with business, retail and leisure developments can help to improve the accessibility and attractiveness of local facilities and employment centres. Well-designed networks of green spaces help to encourage people to travel safely by foot or by bicycle for recreation or commuting (Scottish Executive, 2001). Furthermore, well-designed urban green spaces provide a barrier to noise and can function as a visual screen (Dole, 1989, cited in Haughton and Hunter, 1994). From an **economic perspective**, a green space might deliver products such as wood or fruits and also compost and energy as a result of urban green production. Their presence can create an increase in the economic value of an area and provides new jobs. From an **ecological perspective**, urban green spaces moderate the impact of human activities by, for example, absorbing pollutants and releasing oxygen (Hough, 1984, cited in Haughton and Hunter, 1994), contribute to the maintenance of a healthy urban environment by providing clean air, water and soil (De Groot, 1994), improve the urban climate and maintain the balance of the city's natural urban environment (Stanners and Bourdeau, 1995). They preserve the local natural and cultural heritage by providing habitats for a diversity of urban wildlife and conserve a diversity of urban resources. Despite the enormous benefits that urban green spaces provide there is a serious lack of information about the quantity and quality of urban green spaces. However, with the new integrated approaches to combine strategic planning for green spaces with innovative design and delivery and the active involvement of the community at all stages, urban green spaces can be part of an 'urban renaissance' (DTLR, 2001).

3. A Comparative Framework for Urban Green Spaces: A Case Study on European Cities

This paper aims to compare the present state and availability of urban green spaces in various European cities. The sample contains 26 cities from 15 countries that aim to share their experience in innovative green space policies and strategies. The data and information used for comparison and evaluation are based on extensive survey questionnaires filled out by experts of relevant city departments (see Appendix I). For the data concerning land use and population, factor analytic methods and spider models are applied to show interesting links and patterns in European cities.

3.1. Land use and urban green spaces in European cities : A factor-analytic approach

Factor Analysis is a multivariate statistical technique that can be used to analyse interrelationships between a large number of variables and to explain these variables in terms of their common underlying dimensions. The objective is to find a way of condensing the information contained in a large number of original variables into a smaller set of factors or components with a minimum loss of information. With help of factor analysis, separate dimensions of the structure can be identified and the extent to which each variable is explained by each dimension can be determined. Factor Analysis is an interdependence technique in which all variables are considered as each relates to all others, and the concept of the variate, the linear composite of variables, is employed (Hair et al. 1998). In this paper we use principal component analysis, which transforms the set of originally mutually correlated variables into a new set of independent variables. It is a non-stochastic approach and it only deals with the common variance of the original variables. It first derives the first factor or the first principal component, which is supposed to account for the greatest part of the common variance. The second factor is supposed to account for the next greatest part of the common variance, and so on. A minimum part of the common variance is set, and factors below this critical level are eliminated.

For this factor analysis, two groups of data were used. One group contains data concerning "general land use" such as residential areas or industrial areas, whereas the second group contains data concerning "green land use" such as urban green areas or (urban) forests. For the evaluation of the results of the factor analysis, our 26 cities were divided into four groups: Metropolises (5), Big Cities (6), Medium-Sized Cities (12) and Small Cities (3) according to their population size (see Table 1).

Table 1 Four groups of European cities

Metropolises Pop:1.000.000 +	Big Cities Pop:500.000-1.000.000	Medium-Sized Cities Pop:100.000-500.000		Small Cities Pop:<100.000
Berlin	Birmingham	Antwerp	Leipzig	Alphen aan de Rijn
Budapest	Cracovia	Bern	Montpellier	Freiberg
Istanbul	Genoa	Chemnitz	Salzburg	Gorlitz
Vienna	Helsinki	Dresden	Sarajevo	
Warsaw	Lodz	Edinburgh	Tallinn	
	Turin	Espoo	Zurich	

To perform the factor analysis, seven types of land use were distinguished (see Table 2). The factor analysis concerning general land use identified three factors: (1) "Mixed Land Use" (X), such as residential areas, industrial areas, forest and agricultural areas; (2) "Man Made Environment" (M), such as built-up area and urban green areas; and (3) "Water" (W). Several factor analyses have been performed, showing that the variables "urban green" and "built-up areas" were often grouped together. This may sound contradictory, but they are related to each other since both of them describe "man-made environment". The city scores show that especially metropolises have a high score on man-made environment. The other city groups show high scores for mixed land use or water (see Table 3).

Table 2 Land use in and directly around the city

	Land use	Factor 1 'Mixed Land Use' (X)	Factor 2 'Man Made Environment' (M)	Factor 3 'Water' (W)
1	Built-up area		X	
2	Residential areas	X		
3	Industrial areas	X		
4	Forest	X		
5	Urban green areas		X	
6	Agricultural areas	X		
7	Water			X

Table 3 City scores for land use

Metropolises Pop:1.000.000 +		Big Cities Pop:500.000-1.000.000		Medium-Sized Cities Pop:100.000-500.000				Small Cities Pop:-100.000	
Berlin	M	Birmingham	M	Antwerp	M	Leipzig	-	Alphen aan de Rijn	-
Budapest	M	Cracovia	X	Bern	-	Montpellier	-	Freiberg	-
Istanbul	X	Genoa	W	Chemnitz	-	Salzburg	-	Gorlitz	-
Vienna	M	Helsinki	W	Dresden	X	Sarajevo	-		
Warsaw	M	Lodz	X	Edinburgh	M	Tallinn	-		
		Turin	-	Espoo	W	Zurich	-		

X: Mixed Land Use, M: Man Made Environment, W: Water

The second factor analysis (concerning green land use) was performed for four groups of variables: Urban Green Areas, Forests, Agricultural Areas and Water (see Table 4). Because of the lack of detailed data on green areas and in order to evaluate the green image of the cities, not only green land use such as forest and urban green have been used, but also the other non built-up areas, such as agricultural areas and water surfaces. The analysis identified two factors: "Natural Green Areas" (N), containing forest and agricultural areas, and "Urban Green Areas" (U), containing urban green and water. Several factor analyses that have been performed with variables describing green land use showed that the variables urban green and water were clearly related to each other. This can be explained by the recreational facilities that both types of land use offer.

Table 4 Natural and urban green areas

	Land use	Factor 1 'Natural Green Areas' (N)	Factor 2 'Urban Green Areas' (U)
1	Forest	X	
2	Urban green areas		X
3	Agricultural areas	X	
4	Water		X

When the factors are compared with the scores per city, some conclusions can be drawn about the cities and the availability of green areas (see Table 5). The metropolises and the big cities have a high score on the urban green factor. This may be explained by the fact that they are older cities with high population densities or by the loss of natural areas. Therefore, these cities have to invest in urban green spaces. On the other hand, medium-sized cities have a relatively high score on the natural green factor. Because of the availability of natural green areas, medium-sized cities might invest less in urban green areas.

Table 5 Availability of natural and urban green in European cities

Metropolises Pop:1.000.000 +		Big Cities Pop:500.000-1.000.000		Medium-Sized Cities Pop:100.000-500.000				Small Cities Pop:-100.000	
Berlin	U	Birmingham	U	Antwerp	-	Leipzig	N	Alphen aan de Rijn	-
Budapest	U	Cracovia	N	Bern	-	Montpellier	-	Freiberg	-
Istanbul	N	Genoa	-	Chemnitz	N	Salzburg	-	Gorlitz	-
Vienna	U	Helsinki	U	Dresden	N	Sarajevo	-		
Warsaw	U	Lodz	N	Edinburgh	U	Tallinn	-		
		Turin	-	Espoo	U	Zurich	-		

U: Urban Green, N: Natural Green

The results of the factor analysis for the availability of urban green spaces in European cities show many similarities with the results of a case study research on Dutch cities (van Leeuwen et al., 2002). This study shows that big Dutch cities have a high score in terms of the urban recreation factor, whereas new cities have higher scores on the daily leisure factor, and peripheral cities show high scores on the structural, longer stay recreation areas. The (similar) results of these two studies draw the attention towards big cities. Although the availability of urban green spaces is higher in big cities than in medium-sized and small cities, it does not mean that this amount of green space is enough to facilitate inhabitants and a high urban quality of life. For a clearer picture of the availability of urban green spaces further information and empirical testing are required, especially for metropolises and big cities.

3.2. Availability of urban green spaces in European cities: A spider model

Urban green spaces serve as either signposts for policy-making or as quantified tools for comparative analysis. As an analytical tool for our comparative analysis in terms of the usable public urban green space available to the inhabitants, we employed the so-called spider model (see Rienstra, 1998). Spider models can be used to visualise the relative strengths and weaknesses of the selected case studies or different scenarios for various chosen factors. Each factor is represented by an axis starting from the interior towards the outer boundary of the spider, in which the lowest scores are to be found in the centre of the spider. The score of each factor is based on quantitative data, standardised on a ten-point scale, in which the centre of the web represents a score of zero, whereas the outer edges represent the highest score (10). All factors are scored on this range under the assumption that a higher score represents a better performance. Nevertheless, there is no weighing between the factors. A score of 7 on one factor does not necessarily mean that it is a better score than a score of 6 on another factor. The extreme points on each axis have only a qualitative meaning; they do not present numerical information, but rather a rank order (in terms of 'more' or 'less'). This is important for scenario design or comparative analysis since experts are more concerned with statements on which systems options and underlying forces are likely to be viable than on precise assessments of all consequences of such options. The advantage of this visualisation by means of the spider model is that it is easy to show the relative score of the various city types concerning urban green.

For application of the spider model, we used the same data set as with the factor analysis concerning general land use, such as residential areas or industrial areas, and green land use, such as urban green areas or forests. The application of the spider model for general land use is based on a percentage of the total surface of the city groups, whereas the application for green land use is based on green space (in hectares) per inhabitant.

Figure 1 shows the different kinds of land use that can be found within the four city groups as a percentage of the total surface of the city groups. Although metropolises have the highest scores on total surfaces, they have the lowest scores on built-up and residential areas. This can be explained by the size of the city since they are considered here as a percentage of the total surface. The other type of land use, agriculture, shows also a low score. This can be explained by the loss of natural areas for the growth and expansion of cities. While urban green spaces show lower scores than big and medium-sized cities, contrary they have the highest scores on forest. Big cities have the highest scores on built-up area and water, they have also higher scores on urban green spaces after medium-sized cities. But they have the lowest scores on forest contrary to the metropolises. Parallel structures in terms of built-up area and urban green spaces are observed in big and medium-sized cities. Cities having higher scores on built-up area show also higher scores on urban green spaces. This is the same result as that of the factor analysis. Medium-sized cities have relatively higher scores on all types of land use. They have the highest scores on urban green spaces and industrial areas and they have also higher scores on water. Here, again the same result as with the factor analysis is shown for the relationship between urban green spaces and water. Having higher

scores on urban green spaces means also having higher scores on water in the same city groups. Small cities have the highest scores on agricultural and residential areas, whereas they have the lowest scores on total surfaces, industrial areas, urban green spaces and water. The highest scores on agricultural areas naturally show the rural structure of the small cities and the highest scores on residential areas can be explained by the small size of the city.

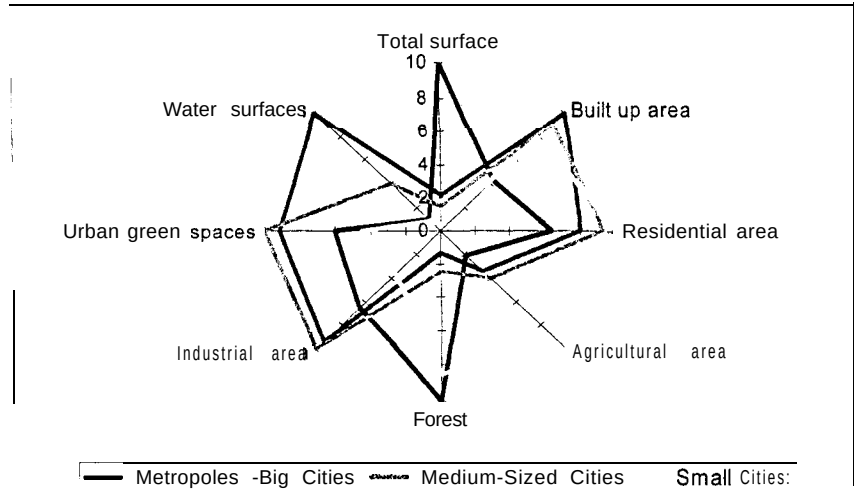


Figure 1: General land use within the four city groups

When we compare all city groups together in terms of their scores on natural and urban green spaces, we can say that the most advantaged city group is the group of medium-sized cities (see Table 6). Medium-sized cities have the highest scores on urban green spaces and the second highest scores on agricultural areas and water. Forest is at the third rank and this city group has no lowest scores. The group of big cities is at the second rank with its relatively higher scores. Both of these two groups (big and medium-sized cities) have higher scores in terms of urban green regarding urban green spaces and water. Small cities on the other hand have the lowest scores in terms of urban green but they have higher scores in terms of natural green regarding forest and agricultural areas. The most disadvantaged group within the four city groups is metropolises. They have lower scores in terms of urban green and also they have the lowest scores in terms of natural green such as agricultural areas. Therefore, from a political perspective it could be very interesting to analyse possibilities for the use of forests as a substitute for urban green in metropolises. This comparative framework shows that the conditions in terms of the usable public urban green space available to the inhabitants are most problematic for the metropolises and the big cities.

Table 6 Rank order of 'green' land use within the four city groups

'Green' Land Use	Metropolises	Big Cities	Medium-Sized Cities	Small Cities
Urban green spaces	3	2	1	4
Forest	1	4	3	2
Agriculture	4	3	2	1
Water	3	1	2	4

Figure 2 shows the types of green land use within the four city groups in hectares per inhabitant. Because of the lack of detailed data on green land use, we decided to show not only green land use such as urban green spaces and forest, but also the other non built-up areas such as agriculture and water surfaces. Therefore, we can say that this figure presents urban green in terms of non built-up area. Although agriculture and water surfaces are not real green land uses, our approach can be seen as an evaluation of the green image of the cities. Within the four city groups, metropolises have the lowest scores for all land use types except the forest. They have the second highest scores on forest after small cities. This clearly shows that the metropolises have lost their natural and green areas except for forest. Big cities also do not show a high performance. They have the lowest scores on forest and they have the second lowest scores on urban green spaces and agricultural areas. The highest scores for this group are on water. Metropolises and big cities, respectively, have the lowest scores on urban green spaces and agricultural areas. For these same categories medium-sized cities and small cities have the highest scores. While medium-sized cities have the highest scores on urban green spaces, small cities have the highest scores on agricultural areas. On the other hand, medium-sized cities show a quite high performance in all types of green land uses. They have the highest score on urban green spaces and the second highest score on agricultural areas and water. Their lowest score is for forest but this score is at the third rank in the four city groups. Small cities show also a high performance in all types of green land use. They have the highest scores on forest and agricultural areas and the second highest score on urban green spaces. The lowest score of this group is on water but this score is at the third rank in the four city groups.

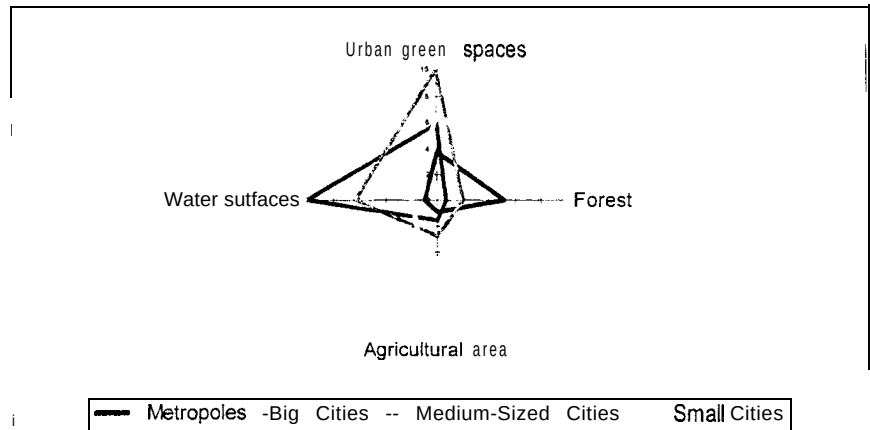


Figure 2: Green land use within the four city groups

When we compare all city groups together in terms of their scores on natural and urban green space per inhabitant, we can say that there is an order from small cities to metropolises according to their performance on availability of green space (see Table 7). Metropolises constitute the most disadvantaged group in the four city groups, and the big cities follow metropolises with their lowest scores. The most advantaged groups in terms of their performance are medium-sized cities and small cities. The availability of green space per inhabitant is relatively high in these city groups. Medium-sized cities show a high performance especially on urban green, such as forest and urban green spaces, whereas small cities show a high performance on natural green such as agricultural areas. This second spider model

shows once again the conditions in terms of the usable public green space available to the inhabitants. These are most problematic for metropolises and the big cities.

Table 7 Rank order of available 'green' per inhabitant within the four city groups

'Green' Land Use	Metropolises	Big Cities	Medium-Sized Cities	Small Cities
Urban green spaces	4	3	1	2
Forest	4	1	2	3
Agriculture	2	4	3	1
Water	4	3	2	1

The analysis by means of spider models shows interesting results. When we focus on the availability of green space in cities, metropolises and big cities show lower scores on the availability of green space. They accommodate less green spaces, especially less natural green spaces, not only as a percentage of the total land use, but also concerning the availability per inhabitant. The results of the spider model for the availability of urban green spaces in European cities show many similarities with the results of a case study research on Dutch cities (Rodenburg et al. 2002). The results of this study show that Big-Dutch cities have the lowest scores on the availability of different types of urban green. The similarity between the results of these two studies draws the attention towards big cities.

On the other hand, when the results of the factor analysis and the spider model are compared, a strong relationship between built-up area and urban green, and urban green and water is observed in both of the analyses. Cities show parallel structures in terms of these factors. Both of these analyses show also that metropolises and big cities have higher scores on urban green, whereas medium-sized and small cities have higher scores on natural green. Not surprisingly there is a strong relationship between city size and the characteristics of green. Besides these similar results, factor analysis shows that the metropolises and the big cities have a high score on the urban green, whereas the spider model shows that these cities have the lowest scores. But this should not be seen as a contradictory result, since different indicators of land use are used in these analyses. While total area is used for each land use in the factor analysis, area as a percentage of the total surface and area per inhabitant are used in the spider models. Therefore, a high score on urban green in metropolises and big cities means a bigger amount of green space which is parallel to the size of the cities. It does not mean that this amount of green space is enough to facilitate inhabitants and a high urban quality of life. The results of the spider models clearly show that the availability of green spaces per inhabitant is more problematic for metropolises and big cities.

4. Policy Relevance for the Development and Management of Urban Green Spaces

Urban green spaces play an important role in improving the liveability of towns and cities. They provide a range of benefits at both national and local level and offer many opportunities to people in different ways. However, this potential of green spaces is not always being realised, as current management practices are sometimes sub-optimal. Despite the benefits that urban green spaces provide there is a serious lack of information about the quantity and quality of urban green spaces. In this paper, we focussed on the present state and availability of urban green spaces in various European cities.

The comparative analyses by means of the factor-analytic methods and the spider models showed interesting results. A final conclusion of the comparison on the twenty-six European cities is that, when focussing on the availability of green spaces in and directly around the cities, especially metropolises and big cities show lower scores on the availability of urban green space. They accommodate less green spaces, especially less natural spaces, not only as a percentage of the total land use, but also regarding the availability per inhabitant. The (similar) results of this study and the case studies on Dutch cities draw the attention towards big cities. Therefore, more attention should be paid to the analysis of urban green spaces in

metropolises and big cities. Such an **analysis** should not **only** focus on the availability of urban green **spaces**, but **also** on the **importance** of urban green **spaces** for the inhabitants of cities.

On the other hand, from a policy perspective, the **results** of several case studies showed important needs and priorities for the development and management of urban green **spaces**. *First*, to improve the quality of urban green **spaces** an informative database is needed. However, there is a serious lack of information about the quantity and quality of urban green **spaces**. Information on the quantity and quality of green **spaces** within urban **areas** is incomplete and fragmented. There is no single source and no single accurate set of **figures**. To improve current practice an informative database and good **practice** networks should be created. *Second*, urban green and open space planning **policies** should be determined locally and these **policies** in development plans should aim at satisfying local **needs** and assisting in the achievement of national and international **objectives**. *Third*, more integrated approaches for the development and management of urban green **spaces** are needed. New approaches to combine **strategic** planning for green space with innovative design and the delivery and **active** involvement of the community at **all** stages should be developed. A **collaborative** and enabling partnership among local authorities, local businesses and voluntary groups should be formed. Community involvement including local residents and the **specific** users of the **spaces** should be provided. *Fourth*, most development **plans** adopt a simple, population-based standard approach to the need for green space in new housing developments and they largely ignore the other green **spaces** as part of other developments **such** as industry, leisure, etc. Planning authorities should develop their own local standards for green **spaces** not only in new housing developments but **also** in non-housing developments **such** as industry, and business. *Fifth*, quantity, quality and accessibility of green **spaces** should form the basis for a vision for urban green space. Planning **policies** should give a high priority to ensuring that new green **spaces** are of sustainable high quality, if **necessary** at the expense of quantity. As a **result**, all research and policy **efforts** for improving the quality of life in cities and urban regions of Europe will have an impact on the quality of locations both on a **small** and a large **scale**. Providing **attractive** and **accessible** green **spaces** creates benefits to the competitiveness of the urban location in a broader perspective.

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Appendix I

Data on population and land use in European cities

No	Countries	Cities	Area		Population	Land use					
			Administrative area (ha)	Built-up area (ha)		Residential areas (ha)	Industrial areas (ha)	Forest (ha)	Urban green spaces (ha)	Agricultural areas (ha)	Water surfaces (ha)
1	The Netherlands	Alphen aan den Rijn	5768	1000	70162	125	219	0	401	3692	255
2	Belgium	Antwerp	20450	18450	446525	9322	6909	0	2300	50	2000
3	Germany	Berlin	89170	49830	3382169	18633	3567	15940	12780	4690	5920
4	Switzerland	Bern	52001	1750	127000	870	180	1600	540	780	120
5	United Kingdom	Birmingham	26785	23035	937763	14094	1765	554	3749	2102	
6	Hungary	Budapest	52510	30100	1811552	18220	5990	6300	8550	1770	1700
7	Germany	Chemnitz	22085	7625	259246	10138	40	3240	770	10592	192
8	Poland	Cracovia	32686	8286	741500	4203	2558	1514	853	16240	169
9	Germany	Dresden	32831	12341	477807	18276	67	6981	1062	12053	644
10	Scotland	Edinburg	26228	13100	453000	5240	65	9	6550	13000	135
11	Finland	Espoo	52800		215000	890	120	2000	526		21600
12	Germany	Freiberg	4054	1213	40129	1296	40	1921	72	1921	31
13	Italy	Genoa	23955	7353	636104	3196	1295	2700	3142		
14	Germany	Gorlitz	6722	2143	61599	2659	9	3068	192	3068	82
15	Finland	Helsinki	68600	10400	555474	4130	740	1370	5230	780	50100
16	Turkey	Istanbul	534304		10072447	49749	7280	2E+05	2694	57296	8716
17	Germany	Leipzig	29800		493208	1090	710	2080	4420	12630	560
18	Poland	Lodz	29440	7190	795468	9873		2378	1189	13114	159
19	France	Montpellier	5708	2886	225392	3367	869	110	626	720	3
20	Austria	Salzburg	6600	2300	144912	1000	300	1000	700	2700	220
21	Bosnia and Herzegovina	Sarajevo	35490	9500	355373	4300	476	0	420	525	288
22	Estonia	Tallinn	15800	7000	399850	1058	1226	3250	4006	0	1208
23	Italy	Turin	13000	9000	900000	2700	1600	300	1800	2000	280
24	Austria	Vienna	41495	13607	1615438	8598	3156	7469	5955	6841	1932
25	Poland	Warsaw	49330	13719	1609800	24490	2062	2998	11027	12939	1567
26	Switzerland	Zurich	9188	5046	361551	39101	494	2190	1600	1450	546