

# Outdoor living walls in public spaces in Poland

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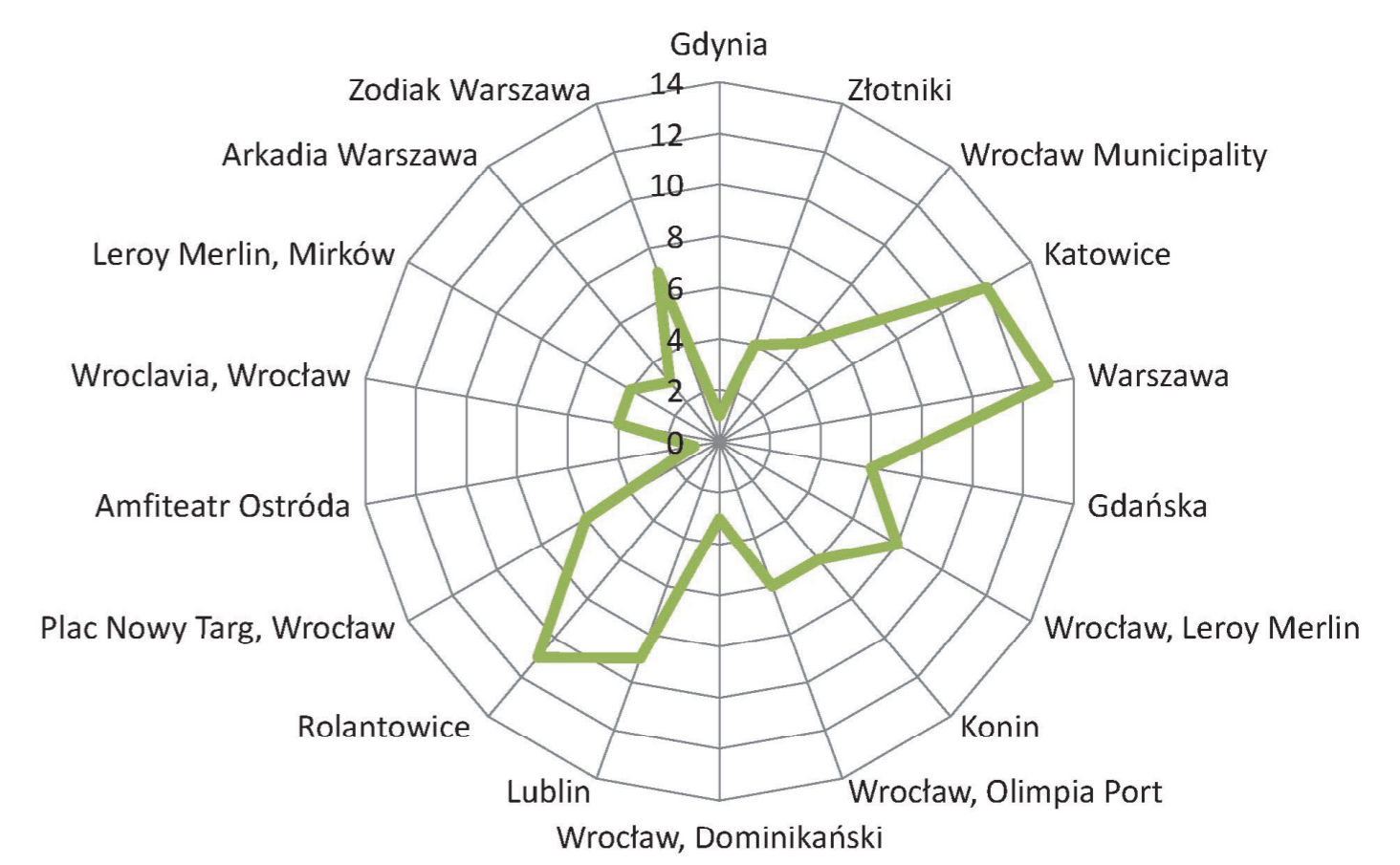
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Under Polish climate conditions, the limitation for the number of outdoor living walls is the high cost of their installation and too low winter temperatures, which significantly shorten the durability of the living walls. Up to now, 18 external living walls of 1853m<sup>2</sup> have been installed in Poland. The first vertical garden in Poland, originally treated as a seasonal one, was built in 2012 in Gdynia. During the next six years 17 new installations were built. The vast majority of the walls are located in the western part of Poland or on the Baltic Sea coast, in the regions with milder winters (USDA7a). Especially mild winters are characterized by Wrocław. It is also the only city in which the policy supporting installation of vertical gardens has been introduced. There are almost 30% of Polish living walls located there. The most difficult climate conditions are in Lublin located in zone 6a. Most of the Polish living walls are implemented as panel systems, only one as a pocket system. The area of green walls ranges from 20 to 300 m<sup>2</sup>. Comparing to the western Europe, Polish vertical gardens are characterized by poor species composition. In the observed objects, there were 46 taxa, of which perennials and shrubs are predominant. Almost all living walls are characterized by seasonal variability. The species selection applied to majority of present 18 living walls may be the basis for preliminary species selection guidelines for living walls established under climate conditions of Poland.

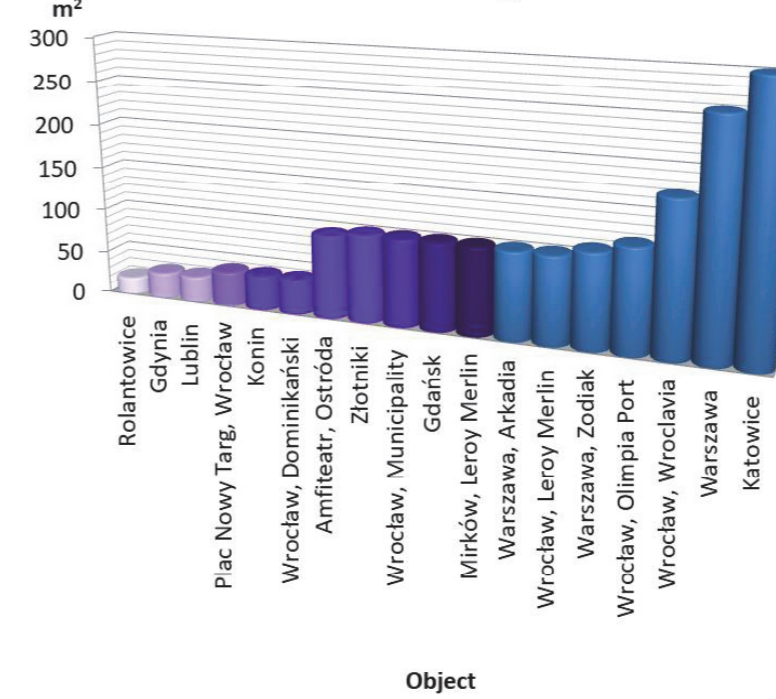
Plant	Location (year of installation) + Exhibit																	Σ <sup>1</sup>	
	Gdynia (2012)	Złotniki near Poznań (2013)	Wrocław Municipality (2014)	Konin (2014)	Warszawa (2013)	Gdańsk (2015)	Wrocław, Leroy Merlin (2016)	Konin (2016)	Wrocław, Olimpia Port (2016)	Wrocław, Dominikański (2016)	Lublin (2015)	Rolantowice near Wrocław (2016)	Plac Nowy Targ, Wrocław (2017)	Amfiteatr Ostróda (2017)	Wrocław, Wrocław (2017)	Leroy Merlin, Mirków (2017)	Arkadia Warszawa (2017)		Zodiak Warszawa (2018)
	E	N, E	W	A <sup>1</sup>	E, N, S	S	S, E	S	S	W <sup>2</sup>	S	N	N	E, N	S	N	S	N, S, W, E	
<i>Achillea millefolium</i>																			1
<i>Acer gramineus</i>																			1
<i>Argemone striata</i>																			1
<i>Artemisia maritima</i>																			1
<i>Aruncus dioicus</i>																			1
<i>Asarum europaeum</i>																			1
<i>Bergenia cordifolia</i>																			2
<i>Brunnera macrophylla</i>																			1
<i>Carex</i> 'Bronze form'																			1
<i>Carex caryophylla</i>																			1
<i>Carex comas</i> 'Bronze Form'																			1
<i>Carex flexuosa</i>																			1
<i>Carex hylor</i> 'Silver Scorpion'																			1
<i>Carex maritima</i> 'Variegata'																			5
<i>Carex ornithopoda</i> 'Variegata'																			1
<i>Carex caryophylla</i> 'The Betels'																			1
<i>Cocconaster dammeri</i>																			1
<i>Cornus sericea</i>																			1
<i>Dianthus deltoides</i>																			4
<i>Eonymus fortunei</i> 'Emerald Gold'																			2
<i>Eonymus fortunei</i> 'Emerald Gold'																			4
<i>Eonymus fortunei</i> 'Minimus'																			1
<i>Festuca glauca</i>																			7
<i>Fragaria vesca</i>																			2
<i>Geranium</i> 'Brookside'																			1
<i>Geranium macrorrhizum</i>																			11
<i>Geranium sanguineum</i>																			2
<i>Heuchera</i>																			5
<i>Hosta</i>																			2
<i>Lamium maculatum</i>																			5
<i>Lavandula angustifolia</i>																			1
<i>Lonicera pileata</i>																			1
<i>Laetia nivea</i>																			2
<i>Ophiopogon planiscapus</i> 'Nigrescens'																			1
<i>Pachysandra terminalis</i>																			13
<i>Physocarpus opulifolius</i> 'Lutescens'																			1
<i>Physocarpus opulifolius</i> 'Diabolo'																			1
<i>Pinus mugo</i>																			1
<i>Polypodium vulgare</i>																			4
<i>Potentilla fruticosa</i>																			1
<i>Sambucus nigra</i>																			1
<i>Saxifraga umbrosa</i>																			1
<i>Sedum spurtum</i>																			1
<i>Spiraea japonica</i>																			12
<i>Thymus</i>																			1
<i>Vinca minor</i>																			1
Σ	1	4	5	12	13	6	8	6	6	3	9	11	6	1	4	6	3	7	12

<sup>1</sup> All geographical directions  
<sup>2</sup> Shaded wall  
<sup>3</sup> *Heuchera micrantha* 'Palace Purple'  
<sup>4</sup> *Lamium maculatum* 'Aureum'

Number of plant species used on the individual living walls



The surface of living walls



Number of exterior living walls in public spaces in Poland

