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2 **Supplementary Materials**3 **S1. Overview of the studies assessed in this review sorted according to reading order**

Authors	Title	Journal	Issue	Page	Year
A.F. Speak, A. Mizgajski, J. Borysiak	Allotment gardens and parks: Provision of ecosystem services with an emphasis on biodiversity	Urban Forestry and Urban Greening	14	772-781	2015
A. Tiwary, P. Kumar	Impact evaluation of green–grey infrastructure interaction on built-space integrity: An emerging perspective to urban ecosystem service	Science of Total Environment	487	350-360	2014
Á. Takács, M. Kiss, A. Hof, E. Tanács, Á. Gulyás, N. Kántor	Microclimate modification by urban shade trees – an integrated approach to aid ecosystem service based decision-making	Procedia Environmental Sciences	32	97-109	2016
A. Robert, J.L. Yengué	What ideal green spaces for the city of tomorrow, providing ecosystem services?	Procedia Engineering	198	116-126	2017
A. Speak, F.J. Escobedo, A. Russo, S. Zerbe	An ecosystem service-disservice ratio: Using composite indicators to assess the net benefits of urban trees	Ecological Indicators	95	544-553	2018
A. Clayden, T. Green, J. Hockey, M. Powell	Cutting the lawn – Natural burial and its contribution to the delivery of ecosystem services in urban cemeteries	Urban Forestry and Urban Greening	33	99-106	2018
A. Voigt, N. Kabisch, D. Wurster, D. Haase, J. Breuste	Structural Diversity: A Multi-dimensional Approach to Assess Recreational Services in Urban Parks	AMBIO	43	480-491	2014
F. Baró, D. Haase, E. Gómez-Baggethun, N. Frantzeskaki,	Mismatches between ecosystem services supply and demand in urban areas: A quantitative assessment in five European cities.	Ecological Indicators	55	146-158	2015
C.M.V.B. Almeida, M.V. Mariano, F. Agostinho, G.Y. Liu, B.F. Giannetti	Exploring the potential of urban park size for the provision of ecosystem services to urban centres: a case study in São Paulo, Brazil	Building and Environment	144	450-458	2018
C.M.V.B. Almeida, M.V. Mariano, F. Agostinho, G.Y. Liu, Z.F. Yang, L. Coscieme, B.F. Giannetti	Comparing costs and supply of supporting and regulating services provided by urban parks at different spatial scales	Ecosystem Services	30	236-247	2017
C. Pueffel, D. Haase, J.A. Priess	Mapping ecosystem services on brownfields in Leipzig, Germany	Ecosystem Services	30	73-85	2018
C. Zhao, H.A. Sander	Assessing the sensitivity of urban ecosystem service maps to input spatial data resolution and method choice	Landscape and Urban Planning	175	11-22	2018

C. Mak, M. Scholz, P. James	Sustainable drainage system site assessment method using urban ecosystem services	Urban Ecosystems	20	293-307	2017
D. Johnson, S. Geisendorf	Are Neighborhood-level SUDS Worth it? An Assessment of the Economic Value of Sustainable Urban Drainage System Scenarios Using Cost-Benefit Analyses	Ecological Economics	158	194-205	2019
D. Wurster, M. Artmann	Development of a Concept for Non-monetary Assessment of Urban Ecosystem Services at the Site Level	AMBIO	43	454-465	2014
D.J. Nowak, D.E. Crane, J.C. Stevens, R.E. Hoehn, J.T. Walton, J. Bond	A Ground-Based Method of Assessing Urban Forest Structure and Ecosystem Services	Arboriculture and Urban Forestry	34(6)	347-358	2008
D.A. Shoemaker, T.K. BenDor, R.K. Meentemeyer	Anticipating trade-offs between urban patterns and ecosystem service production: Scenario analyses of sprawl alternatives for a rapidly urbanizing region	Computers, Environment and Urban Systems	74	114-125	2019
E. Pedersen, S.E.B. Weisner, M. Johansson	Wetland areas' direct contributions to residents' well-being entitle them to high cultural ecosystem values	Science of Total Environment	646	1315-1326	2019
F. Marando, E. Salvatori, A. Sebastiani, L. Fusaro, F. Manes	Regulating Ecosystem Services and Green Infrastructure: assessment of Urban Heat Island effect mitigation in the municipality of Rome, Italy	Ecological Modelling	392	92-102	2019
F. Sun, J. Xiang, Y. Tao, C. Tong, Y. Che	Mapping the social values for ecosystem services in urban green spaces: Integrating a visitor-employed photography method into SolVES	Urban Forestry and Urban Greening	38	105-113	2019
F. Baro, L. Chaparro, E. Gomez-Baggethun, J. Langemeyer, D.J. Nowak, J. Terradas	Contribution of Ecosystem Services to Air Quality and Climate Change Mitigation Policies: The Case of Urban Forests in Barcelona, Spain	AMBIO	43	466-479	2014
F. Bottalico, G. Chirici, F. Giannetti, A. De Marco, S. Nocentini, E. Paoletti, F. Salbitano, G. Sanesi, C. Serenelli, D. Travaglini	Air pollution removal by green infrastructures and urban forests in the city of Florence	Agriculture and Agricultural Science Procedia	8	243-251	2016
G. Cetinkaya Cifcioglu, A. Aydin	Urban ecosystem services delivered by green open spaces: an example from Nicosia City in North Cyprus	Environmental Monitoring and Assessment	10	Article No. 190	2018
H. Ko, Y. Son	Perceptions of cultural ecosystem services in urban green spaces: A case study in Gwacheon, Republic of Korea	Ecological Indicators	91	299-306	2018

H. Zepp, A. Mizgajski, C. Mess, I. Zwierzchowska,	A Preliminary Assessment of Urban Ecosystem Services in Central European Urban areas. A Methodological Outline with Examples from Bochum (Germany) and Poznań (Poland)	Berichte. Geographie und Landeskunde.	90(1)	67-84	2016
H.-F. Wang, S. Qureshi, S. Knapp, C.R. Friedman	A basic assessment of residential plant diversity and its ecosystem services and disservices in Beijing, China	Applied Geography	64	121-131	2015
I. Cabral, J. Keim, R. Engelmann, R. Kraemer, J. Siebert, A. Bonn	Ecosystem services of allotment and community gardens: A Leipzig, Germany case study	Urban Forestry and Urban Greening	23	44-53	2017
I. Zwierzchowska, A. Hof, C.I. Ioja, C. Mueller, L. Ponizy, J. Breuste, A. Mizgajski	Multi-Scale Assessment of Cultural Ecosystem Services of Parks in Central European Cities	Urban Forestry and Urban Greening	30	84-97	2018
J. Arnold, J. Kleemann, C. Fürst	A Differentiated Spatial Assessment of Urban Ecosystem Services Based on Land Use Data in Halle, Germany	land	7 (3)	1-29	2018
J. Sieber, M. Pons	Assessment of Urban Ecosystem Services using Ecosystem Services Reviews and GIS-based Tools	Procedia Engineering	115	53-60	2015
J. De Valck, A. Beames, I. Liekens, M. Bettens, P. Seuntjens, S. Broekx	Valuing urban ecosystem services in sustainable brownfield redevelopment	Ecosystem Services	35	139-149	2019
J. Maes, G. Zulian, S. Günther, M. Thijssen, J. Raynal	Enhancing Resilience Of Urban Ecosystems through Green Infrastructure (EnRoute) - Final Report	Publications Office of the European Union			2019
J. Vieira, P. Matos, T. Mexia, P. Silva, N. Lopes, C. Freitas, O. Correia, M. Santos-Reis, C. Branquinho, P. Pinho	Green spaces are not all the same for the provision of air purification and climate regulation services: The case of urban parks	Environmental Research	160	306-313	2018
J. Langemeyer, M. Camps-Calvet, L. Calvet-Mir, S. Barthel, E. Gómez-Baggethun	Stewardship of urban ecosystem services: understanding the value(s) of urban gardens in Barcelona	Landscape and Urban Planning	170	79-89	2018
J. Mathey, S. Rößler, J. Banse, I. Lehmann, A. Bräuer	Brownfields As an Element of Green Infrastructure for Implementing Ecosystem Services into Urban Areas	Journal of Urban Planning and Development	141(3)		2015
J. Meri, L. Lian	A mixed methods approach to urban ecosystem services: Experienced environmental quality and its role in ecosystem assessment within an inner-city estate	Landscape and Urban Planning	161	10-21	2017

K. Yua, M. Van Geel, T. Ceulemans, W. Geerts, M.M. Ramos, N. Sousa, P.M.L. Castro, P. Kastendeuch, G. Najjar, T. Ameglio, J. Ngao, M. Saudreau, O. Honnay, B. Somers	Foliar optical traits indicate that sealed planting conditions negatively affect urban tree health	Ecological Indicators	95	895-906	2018
K.G. Radford, P. James	Changes in the value of ecosystem services along a rural–urban gradient: A case study of Greater Manchester, UK	Landscape and Urban Planning	109	117-127	2013
K. Grönmeier, S.-M. Hönig, I. Jentsch, S. Leib, J. Loskyll, C. Mayer, S. Rothardt, J. Seimetz, S. Tweraser, F. Villinger, G. Waldenmeyer, S. Norra	Assessment of Ecosystem Services in Urban Systems for the Example of Karlsruhe	Urban Environment		133-142	2013
K. Hubacek	A GIS-based mapping methodology of urban green roof ecosystem services applied to a Central European city	Urban Forestry and Urban Greening	22	54-63	2017
P. Kremer, Z. A. Hamstead, T. McPhearson	The value of urban ecosystem services in New York City: A spatially explicit multicriteria analysis of landscape scale valuation scenarios	Environmental Science and Policy	62	57-68	2016
N. Larondelle, S. Lauf	Balancing demand and supply of multiple urban ecosystem services on different spatial scales	Ecosystem Services	22	18-31	2016
I. Lehmann, J. Mathey, S. Rößler, A. Bräuer, V. Goldberg	Urban vegetation structure types as a methodological approach for identifying ecosystem services - Application to the analysis of micro-climatic effects	Ecological Indicators	42	58-72	2014
L. Szücs, U. Anders, R. Bürger-Arndt	Assessment and illustration of cultural ecosystem services at the local scale – A retrospective trend analysis	Ecological Indicators	50	120-134	2015
L. Inostroza	Open spaces and urban ecosystem services. Cooling effect towards urban planning in South American cities	TeMA, Journal of Land Use, Mobility and Environment	Special issue	523-534	2014
Maes J, Zulian G, Thijssen M, Castell C, Baró F, Ferreira AM, Melo J, Garrett CP, David N, Alzetta C, Geneletti D; Cortinovia C, Zwierzchowska I, Louro Alves F, Souto Cruz C, Blasi C, Alós Ortí MM, Attorre F, Azzella MM, Capotorti G, Copiz R,	Mapping and Assessment of Ecosystems and their Services. Urban Ecosystems.	Publications Office of the European Union			2016

Fusaro L, Manes F, Marando F, Marchetti M, Mollo B, Salvatori E, Zavattoni L, Zingari PC, Giarratano MC, Bianchi E, Duprè E, Barton D, Stange E, Perez-Soba M, van Eupen M, Verweij P, de Vries A, Kruse H, Polce C, Cugny-Seguin M, Erhard M, Nicolau R, Fonseca A, Fritz M, Teller A					
M. Riechers, J. Barkmann, T. Tschardtke	Diverging perceptions by social groups on cultural ecosystem services provided by urban green	Landscape and Urban Planning	175	161-168	2018
M. Johansson, E. Pedersen, S. Weisner	Assessing cultural ecosystem services as individuals' place-based appraisals	Urban Forestry and Urban Greening	39	79-88	2019
M.S. Orta Ortiz, D. Geneletti	Assessing Mismatches in the Provision of Urban Ecosystem Services to Support Spatial Planning: A Case Study on Recreation and Food Supply in Havana, Cuba	Sustainability	10	Article Nr 2165	2018
M.S. Graça, P. Alvesa, J. Gonçalves, D.J. Nowak, R. Hoehn, P. Farinha-Marques, M. Cunhab	Assessing how green space types affect ecosystem services delivery in Porto, Portugal	Landscape and Urban Planning	170	195-208	2018
M.S. Graça, J.F. Gonçalves, P.J.M. Alves, D.J. Nowak, R. Hoehn, A. Ellis, P. Farinha-Marques, M. Cunha	Assessing mismatches in ecosystem services proficiency across the urban fabric of Porto (Portugal): The influence of structural and socioeconomic variables	Ecosystem Services	23	82-93	2017
M. Kiss, Á. Takács, R. Pogácsás, Á. Gulyás	The role of ecosystem services in climate and air quality in urban areas: Evaluating carbon sequestration and air pollution removal by street and park trees in Szeged (Hungary)	Moravian Geographical Reports	23	36-46	2015
M.W. Strohbach, D. Haase	Above-ground carbon storage by urban trees in Leipzig, Germany: Analysis of patterns in a European city	Landscape and Urban Planning	104	95-104	2012
N. Nikodinoska, A. Paletto, F. Pastorella, M. Granvik, P.P. Franzese	Assessing, valuing and mapping ecosystem services at city level: The case of Uppsala (Sweden)	Ecological Modelling	368	411-424	2018
N. Larondelle, D. Haase	Urban ecosystem services assessment along a rural-urban gradient: A cross-analysis of European cities	Ecological Indicators	29	179-190	2013
Oppla	Oslo BiodiverCity - Maintaining ecosystem services in a rapidly developing but biodiversity rich city	Oppla Webpage			2018

Oppla	Mapping and assessing ecosystem services to support urban planning in Trento	Oppla Webpage			2018
Oppla	Assessing urban ecosystem services provided by urban trees in Strasbourg City	Oppla Webpage			2013
P.C. Sutton, S.J. Anderson	Holistic valuation of urban ecosystem services in New York City's Central Park	Ecosystem Services	19	87-91	2016
P. Czembrowski, J. Kronenberg, M. Czepkiewicz	Integrating non-monetary and monetary valuation methods – SoftGIS and hedonic pricing	Ecological Economics	130	166-175	2016
R. Giedych, G. Maksymiuk	Specific Features of Parks and Their Impact on Regulation and Cultural Ecosystem Services Provision in Warsaw, Poland	Sustainability	9	Article No. 792	2017
D.R. Richards, B. Tunçer,	Using image recognition to automate assessment of cultural ecosystem services from social media photographs	Ecosystem Services	31, Part C	318-325	2018
R. Mendonça De Carvalho, C.F. Szlafsztajn	Urban vegetation loss and ecosystem services: The influence on climate regulation and noise and air pollution	Environmental pollution	245	844-852	2019
S. Sacchelli, S. Fabbrizzi, F. Geri, M. Ciolli	Place-Based Policy-Making and Community Security: A Decision Support System for Integrated Planning of Urban Ecosystem Services and Disservices	Green energy and technology		95-104	43191
S. Tresch, M. Moretti, R.-C. Le Bayon, P. Mäder, A. Zanetta, D. Frey, A. Fließbach	A Gardener's Influence on Urban Soil Quality	Frontiers in Environmental Science	6	(article 25)	2018
S. Zhang, F. Muñoz Ramírez	Assessing and mapping ecosystem services to support urban green infrastructure: The case of Barcelona, Spain	Cities	92	59-70	2019
S. Buchel, N. Frantzeskaki	Citizens' voice: A case study about perceived ecosystem services by urban park users in Rotterdam, the Netherlands	Ecosystem Services	12	169-177	2015
TEEB – The Economics of Ecosystems and Biodiversity	TEEB Manual for Cities: Ecosystem Services in Urban Management.				2011
T. Mexia, J. Vieira, A. Príncipe, A. Anjos, P. Silva, N. Lopes, C. Freitas, M. Santos-Reis, O. Correia, C. Branquinho, P. Pinho	Ecosystem services: Urban parks under a magnifying glass	Environmental Research	160	469-478	2018
The URBES Project	URBES Factsheet no. 3				2013

T. Hu, J. Chang, X. Xu Liu, S. Feng	Integrated methods for determining restoration priorities of coal mining subsidence areas based on green infrastructure: –A case study in the Xuzhou urban area, of China	Ecological Indicators	94(2)	164-174	2018
V.A. Parsa, E. Salehi, A.R. Yavari, P.M. van Bodegom	Analyzing temporal changes in urban forest structure and the effect on air quality improvement	Sustainable Cities and Society	48	Article NR 101548	2019
V. Pappalardo, D. La Rosa, A. Campisano, P. La Greca	The potential of green infrastructure application in urban runoff control for land use planning: A preliminary evaluation from a southern Italy case study	Ecosystem Services	26	345-354	2017
Y. Andersson-Sköld, J. Klingberg, B. Gunnarsson, K. Cullinane, I. Gustafsson, M. Hedblom, I. Knez, F. Lindberg, Å. Ode Sang, H. Pleijel, P. Thorsson, S. Thorsson	A framework for assessing urban greenery's effects and valuing its ecosystem services	Environmental Management	205	274-285	2018
Z. Wu, Y. Zhang	Water Bodies' Cooling Effects on Urban Land Daytime Surface Temperature: Ecosystem Service Reducing Heat Island Effect	Sustainability	11		2019
Z.G. Davies, M. Dallimer, J.L. Edmondson, J. R. Leake, K.J. Gaston	Identifying potential sources of variability between vegetation carbon storage estimates for urban areas	Environmental pollution	183	133-142	2013

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6 S2. Short descriptions of method categories

Method categories	Description (cf. MAES-Explorer with own modifications)
Spatial Proxy methods	Spatial proxy methods are derived from indirect measurements which deliver a biophysical value in physical units, e.g., extrapolation from land use data to ES supply capacities.
Sampling/ Field mapping + observations	Collecting physical samples or making field observations / field mappings in the nature and taking direct measurements (based on physical units), e.g., botanical surveys.
Surveys + questionnaires	Questioning and surveying people (experts, laypersons), e.g., expert interviews. This method can provide expert information on ecosystem services, but it can be also used to evaluate uncertainties of other methodologies.
Economic valuation methods	Valuation of ES with monetary units, e.g., market price or public pricing.
Model-based methods	This group includes modelling tools that are used for ecosystem services modelling and mapping and that can assess tradeoffs and scenarios for multiple services, e.g., i-Tree Eco model.
Social media-based methods	Methods that use data from social networks or smartphone applications for ES-assessments. This method can reveal preferences for ES and give spatially explicit data on location for nearby ES provision, e.g., Geo-tagged photo-series analysis.
Remote sensing + earth observations	Assessments of ES with datasets (e.g., Optical, radar and LiDAR data) and indicators that are derived from Satellite Earth observation as well as airborne and drone observations.

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9 S3. Overview of assessed ES sections and classes according to CICES V5.1 in regard to urban green
 10 infrastructures. Note: Articles which lack specifications on the considered ES class are assigned to the ES
 11 class “in general, specifications missing” in each ES section.

ES section	ES class	Number
Provisioning (12)	Cultivated terrestrial plants (including fungi, algae) grown for nutritional purposes	14
	Fibres and other materials from cultivated plants, fungi, algae and bacteria for direct use or processing (excluding genetic materials)	4
	Cultivated plants (including fungi, algae) grown as a source of energy	2
	Animals reared for nutritional purposes	2
	Fibres and other materials from reared animals for direct use or processing (excluding genetic materials)	2
	Wild plants (terrestrial and aquatic, including fungi, algae) used for nutrition	2
	Fibres and other materials from wild plants for direct use or processing (excluding genetic materials)	1
	Wild animals (terrestrial and aquatic) used for nutritional purposes	1
	Fibres and other materials from wild animals for direct use or processing (excluding genetic materials)	2
	Surface water for drinking	1
	Surface water used as a material (non-drinking purposes)	2
	Ground (and subsurface) water for drinking	9
<i>Provisioning services (in general, specifications missing)</i>		4
Regulation and Maintenance (16)	Filtration/sequestration/storage/accumulation by micro-organisms, algae, plants, and animals	23
	Noise attenuation	1
	Control of erosion rates	1
	Hydrological cycle and water flow regulation (Including flood control, and coastal protection)	10
	Wind protection	3
	Fire protection	21
	Pollination (or 'gamete' dispersal in a marine context)	1
	Seed dispersal	1
	Maintaining nursery populations and habitats (Including gene pool protection)	1
	Pest control (including invasive species)	7
	Disease control	4
	Weathering processes and their effect on soil quality	5
	Decomposition and fixing processes and their effect on soil quality	39
	Regulation of the chemical condition of freshwaters by living processes	2
	Regulation of chemical composition of atmosphere and oceans	30
	Regulation of temperature and humidity, including ventilation and transpiration	7
<i>Regulation and maintenance services (in general, specifications missing)</i>		5
Cultural (9)	Characteristics of living systems that that enable activities promoting health, recuperation or enjoyment through active or immersive interactions	7
	Characteristics of living systems that enable activities promoting health, recuperation or enjoyment through passive or observational interactions	14
	Characteristics of living systems that enable scientific investigation or the creation of traditional ecological knowledge	5
	Characteristics of living systems that enable education and training	6
	Characteristics of living systems that are resonant in terms of culture or heritage	4
	Characteristics of living systems that enable aesthetic experiences	10
	Elements of living systems that have sacred or religious meaning	5
	Elements of living systems used for entertainment or representation	6
	Other (Communication and interaction with other people)	4
<i>Cultural services (in general, specifications missing)</i>		10