Level of expertise required	Low
Synergies with other indicators	Relation to *Design for sense of place* and *Participatory governance* indicators
Connection with SDGs	SDG 10 Reduced inequalities, SDG 11 Sustainable cities and communities, SDG 16 Peace, justice and strong institutions, SDG 17 Partnerships for the goals
Opportunities for participatory data collection	
Additional information	
References	

17.2 Sense of empowerment: perceived control and influence over decision-making

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Perceived control and influence over NBS decision-making	Participatory Planning and Governance
Description and justification	Although generally recognized as a concept that bespeaks having, or taking, control over resources and decision-making processes that can affect one's quality of life (Carr, 2016), empowerment remains fairly ambiguous and debatable due to poor definitional clarity, followed by difficulties in measurement (Cross, Woodall, & Warwick-Booth, 2017). One of the most enduring problem arising from definitional diversity and differential understandings is the widespread use of a reductionist approach to its measurement (i.e., centered around individual/psychological empowerment) despite across-the-board acknowledgment that it can occur at different levels (individual, group, community or society) (Cross et al., 2017). Pratley (2016) emphasizes the five conceptual dimensions of empowerment commonly found throughout the literature (i.e., psychological, social, economic, legal, political), and states that the 'major challenges include complexity in measuring progress in several dimensions, and the situational, context dependent nature of the empowerment process' (p. 119). The fact that empowerment is a moving target (i.e., distinction between empowering processes and empowering outcomes, and

appreciation of the intricate interplay of their dynamics), and that its assessment is value-driven (i.e., culturally and ideologically molded) have added to measurement of empowerment often falling short of the range of expectations (Jupp, Ali, & Barahona, 2010).

In his delineation of a nomological network of empowerment at the individual level of analysis (i.e., psychological empowerment, PE), Zimmerman (1990) argues that 'PE may be an open-ended construct that is not easily reduced to a universal set of operational rules and definitions' (p. 583), and concedes that measures developed for one study may not be appropriate for another. One key component of empowerment targeted by NBS research is the participatory processes engaged in by individuals as they work to improve their quality of life (Cumbers, Shaw, Crossan & McMaster, 2018; Feldman & Westphal, 2000; Fernandez & Burch, 2003; Jennings & Bamkole, 2019; Westphal, 2003). Consequently, the theoretical work on empowerment from a psychological/individual perspective (Zimmerman, 1990a, 1990b, 1995; Zimmerman, Israel, Schulz, & Checkoway, 1992) has been valued for its insights into the active participation of individuals and groups in altering and shaping the socio-environmental context (Speer, Jackson, & Peterson, 2001).

Feldman and Westphal (2000) affirm the value of citizens' participation in environmental decision making and stress the importance of careful consideration of the *process* of participation through all the stages of an urban greening project in order to harness the individual and collective empowering potential of participatory practices. Drawing on case study, the authors illustrate how an open space revitalization project in a public housing development in Chicago contributed to empowerment by ultimately producing a useful and satisfying space, attracting other professional knowledge, and garnering economic resources.

Westphal (2003) brings forth more insight into the imperative of careful consideration of unique factors at play in the *process* of participatory planning and design on a case by case basis. The author designed a qualitative research founded on empowerment theory (Zimmerman, 1995) and collected data on indicators of empowerment like efficacy, mastery, control, new resources, participation, increased skills, proactive behavior, critical awareness, sense of competence, shared leadership, etc., from 4 sites involved in landscaping projects, approximately 2 years after their implementation. Two of the sites had been initially thought to greatly benefit from the greening project, while other two had not been foreseen as socially benefitting from it. The comparative analysis illustrates how "empowerment outcomes from urban and community forestry projects are possible but far from a given" (p.

	144), and how what might initially look as a success can end in utter failure, bringing empirical evidence to the notion that empowerment is "a possible, but not automatic" social benefit of urban and community NBS, and outlining recommendations for before, during, and after the project to guide the effective involvement of individuals and communities in urban forestry. Cumbers et al. (2018) carried out a qualitative research between February and July 2014 in 16 gardens across Glasgow and built on Massye's (1991) notion of an active sense of place to find empirical support for the role of community gardening in advancing community empowerment by facilitating "the recovery of individual agency, construction of new forms of knowledge and participation, and renewal of reflexive and proactive communities that provide broader lessons for building more progressive forms of work in cities" (p. 133). Notably, Calvet-Mir and March (2019) analyse the meanings and politics of urban gardening in post-economic crisis Barcelona, and report data that support the assertion that urban gardens have proven successful as a source of collective empowerment promoting emancipatory and alternatives views about the right of citizen to the city and challenging speculative urban development.
Definition	PE is a process by which individuals gain mastery and control over their lives, and a critical understanding of their environment; it operates through intrapersonal, interactional, and behavioral components (Zimmerman et al., 1992; Zimmerman, 1995): *The intrapersonal component (self-perception)* refers to how people think about their capacity to influence social and political systems important to them (i.e., domain-specific perceived control, domain-specific self-efficacy, motivation to exert control, perceived competence) *The interactional component (information, knowledge, decision process)* refers to the transactions between persons and environments that enable one to successfully master social or political systems (i.e., knowledge about the resources needed to achieve goals, understanding causal agents, a critical awareness of one's environment, and the development of decision-making and problem-solving skills necessary to actively engage one's environment) *The behavioral component (participation)* refers to the specific actions one takes to exercise influence on the social and political environment through participation in community organizations and activities (i.e., participation in community organizations such as neighborhood associations, political groups, and participation in community-related activities, like contacting public officials or organizing a neighborhood issue).

Strengths and weaknesses	+ reliable indicator of resources (psychosocial, etc.) that ground individual/group self-efficacy, self-esteem, and confidence, as well as sustain participation, pro-activeness and tenacity in the pursuit of goals that ultimately lead to socio-environmental change + oriented towards inclusiveness, high potential to further sense of belonging and trust within community, and to inculcate a community sense of pride -complex concept and ambiguous definitions, followed by considerable limitations in psychometric quality of measurement -individual (psychological) empowerment by itself does little to influence change in the political and social context in which people live (Woodall, Warwick-Booth, & Cross, 2012); research design and measurement has to depart from an understanding of the culture in which studies are carried out, and account for the economic, political, legal, and social dimensions (at least at the level of community members' understanding of their sociopolitical environment) in order to lend credence to data collected by quantitative measures of PE

Measurement procedure (P) and tool (T)	☒ *Quantitative P*: Scale inventory/Questionnaire (survey procedure, paper-and-pencil administration, computer-based administration)
	    o T: 3 items at measuring respondents' perception of their ability to make decisions that affect everyday activities and may change the course of their life from the *"Empowerment and Political Action" module* of Social Capital-Integrated Questionnaire (SC-IQ) (Grootaert et al., 2004)
	☒ *Qualitative P*:
	    o T: case study methodology – semistructured interviews, case study analysis, participant and non-participant observation (Calvet-Mir & March, 2019; Cumbers et al., 2018; Fernandez & Burch, 2003; Nikolaïdou, Klöti, Tappert, & Drilling, 2016)
	    o T: participatory data collections methods, such as Community-based Participatory Research (Bateman et al., 2017), Stakeholder Analysis participatory or non-participatory methods (e.g., focus groups, Social Network Analysis, Q methodology, Knowledge Mapping, Interest-Influence Matrices, Actor-Linkage Matrices) (Reed, 2008; Reed, Graves, Dandy, Posthumus, Hubacek, Morris, Prell, Quinn & Stringer, 2009); collaborative participatory data collection - narrative study (communal narratives and personal stories) (Rappaport, 1995), photoelicitation and semistructured interview techniques (Westphal, 2003); participatory action research (PAR) to follow empowering processes in a community (Zimmerman, 1995); historical analysis of the process of creating

	just or unjust environmental conditions ([Schönach, 2014](#)); ethnographic accounts of justice ([Checker, 2011](#), as quoted in [Raymond et al., 2017](#)); public participatory GIS to assess experiential qualities ([Laatikainen et al., 2015](#); [Raymond et al., 2016](#))
Scale of measurement	▪ Items aimed at empowerment from the *Empowerment and Political Action module* of SC-IQ ([Grootaert et al., 2004](#)) **1.** How much control do you feel you have in making decisions that affect your everyday activities? Do you have … 1.1 No control 1.2 Control over very few decisions 1.3 Control over some decisions 1.4 Control over most decisions 1.5 Control over all decisions **2.** Do you feel that you have the power to make important decisions that change the course of your life? Rate yourself on a 1 to 5 scale, where 1 means being totally unable to change your life, and 5 means having full control over your life. 1.1 Totally unable to change life 1.2 Mostly unable to change life 1.3 Neither able nor unable 1.4 Mostly able to change life 1.5 Totally able to change life **3.** Overall, how much impact do you think you have in making your street/ your neighborhood/ your city a better place to live? 1.1 A big impact 1.2 A small impact 1.3 No impact
Data source	
Required data	✓ Essential: NBS characteristics for each city/site, more specifically objectives (long-term) and challenges ✓ Desirable: Data on empowerment processes and outcomes specifically related a certain NBS initiative in a community/city, and accounting for country/community-distinctive cultural, economic, legal, and political factors that play a role in empowerment dynamics (narrative studies, participatory data collection methods, participatory action research)
Data input type	Quantitative (quantitative and qualitative, if narrative studies, participatory data collection methods, and/or participatory action research are opted for)
Data collection frequency	Aligned with NBS implementation and timing of targeted objectives

Level of expertise required	☒ Methodology and data analysis requires high expertise in psycho-social research ☒ Quantitative data collection requires no expertise ☒ Qualitative data collection (case study and narrative study methodology, for example) requires high expertise in psycho-social research o Basic training needed if participatory data collection is opted for
Synergies with other indicators	SC1 Bonding social capital SC2 Bridging social capital SC3 Linking social capital SC4.1 Trust in community SC4.2 Solidarity between neighbours SC4.3 Tolerance and respect SC7 Geographical access to NBS SC8 Perceived access to NBS SC11.1 Positive environmental attitudes motivated by contact with NBS SC11.2 Environmental Identity SC12 Social desirability
Connection with SDGs	Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation Goal 10. Reduce inequality within and among countries Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable Goal 13. Take urgent action to combat climate change and its impacts Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Opportunities for participatory data collection	Participatory methods (e.g., narrative studies, participatory data collection methods, and/or participatory action research) may be applied to collect community-relevant information on empowerment processes and outcomes specifically related to a certain NBS/green space initiative in a community/city, and accounting for country/community-distinctive cultural, economic, legal, and political factors that play a role in empowerment dynamics
Additional information	
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17.3   Public-private partnerships activated

Project Name: PHUSICOS (Grant Agreement no. 776681)

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Adoption of new forms of governance: Public-Private Partnership Activated	Participatory Planning and Governance
Description and justification	The level of cooperation between public and private sector in the Design Scenarios implementation should be taken into account in order to assess the quality of participation process. It should be estimated counting the number of partnership activated between public and private agencies.
Definition	The Indicator can be defined as the number of public-private partnerships activated in order to achieve the implementation of the Design Scenario. This Indicator will be equal to 0 in the Baseline Scenario and will be assessed in the Design Scenario computing the number of stakeholder taking part to the participatory process. In the Long-term scenario the indicators should be calculated considering data made available some years after NBS/Grey/Hybrid solutions have been implemented.