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The social impact of living indexes: the case of NeXt

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Abstract

The design of proper environmental and social indicators is one of the most critical challenges when monitoring and implementing corporate and government policy measures toward ecological transition and sustainable development. In our paper we outline and discuss characteristics of a new vintage of "living" multi-stakeholder community-based indicators based on the principles of self-evaluation, dialogue and simplification with a specific focus on the NeXt index. We explain the main differences between them and the opposite extreme of static expert-based indicators, how they integrate firm-level scores with compliance with macro multidimensional wellbeing indicators (such as UN Sustainable Development Goals) and how they complement with ongoing regulatory standards currently under development. We as well discuss caveats, policy implications and impact in terms of subjective wellbeing.

Keywords: social and environmental indicators, multi-dimensional wellbeing.

JEL numbers: I30, I31.

1. Introduction

Environmental and social goals are bound to be always more integrated with traditional economic goals in the next future. The pressure coming from ecological transition and the awareness of financial investors that environmental sustainability and reduction of exposure to ESG (environmental, social, governance) risk will be crucial factors for future firms' competitiveness are pushing them to integrate always more the three dimensions. In this new scenario the development of sound and implementable environmental and social indicators becomes a crucial tool enabling companies to evaluate, learn about and signal their progress

in ecological transition to consumers and investors, helping them to attract public and private financial resources as well as increase consumers' willingness to pay for sustainable products. Social and environmental indicators will also be a fundamental intermediate tool for crucial policy related actions such as: i) developing standards for non-financial reporting metrics; ii) defining admissible investment for private and government green bond issues,[1] iii) elaborating minimum environmental criteria regulating access to the "institutional vote with the wallet" in public procurement;[2] iv) gaining access to green finance guarantee funds or tax allowances; and v) outlining key performance indicators used as benchmark for managerial bonuses and workforce wage premia.

Our paper aims to contribute to the literature of social and environmental indicators by discussing the innovation of "living" indicators with specific reference to the experience of NeXt multi-stakeholder community-based indicators[3]. In what follows we will explain the difference between the NeXt "living" multi-stakeholder community-based approach based on the principles of self-evaluation, dialogue and simplification and, at the opposite, traditional static expert-based indicators.

Multidimensional wellbeing development goals demanding the creation of fit-for-purpose indicators are gradually becoming mainstream as researchers, analysts and policy makers become aware that GDP growth is not a proper measure of life sense and satisfaction (Easterlin, 1974; Stiglitz et al. 2012). In parallel, the social science literature has developed a wide set of social and environmental indicators measuring quality and progress in the relevant wellbeing domains. The set of indicators and methodologies adopted obviously differ on whether multidimensional wellbeing is calculated in levels on territorial units (i.e. countries, regions, municipalities), on firms or in first differences (impact) on private and public investments.

What in general happens, however, is that in most cases indicators are created by technical experts without stakeholder involvement and without an ex ante defined revision process for adjustment over time. This approach has several shortcomings. First, stakeholders' knowledge, experience and point of views incorporate crucial information that usually does not overlap with that of the technical experts. To make some examples trade unions have a definite idea of what is workers' wellbeing (even though in some cases their advice can be biased in the direction of the interest of their organisations). In the same way

[1] The market of private and government green bonds is dramatically growing in the last years. The Climate Bond Initiative reports that the total volume of issues amounted to an adjusted USD 257.7 billion in 2019, 51% more than in the previous year. https://www.climatebonds.net/resources/reports/2019-green-bond-market-summary (accessed 6 March 2021).

[2] The importance of green public procurement for sustainable development has been acknowledged with a specific target within the Sustainable Development Goals (SDGs) - SDG target 12.7: "Promote public procurement practices that are sustainable, in accordance with national policies and priorities". Public procurement is estimated to be around 13-20% of GDP for a total amount of nearly 9.5 trillion US dollars (https://www.worldbank.org/en/news/feature/2020/03/23/global-public-procurement-database-share-compare-improve).(World Bank, 2020).

[3] Next is a multi-stakeholder not-for-profit organization created by a network of constituents including consumers' associations, trade unions, entrepreneurial organisations, public administrations, NGOs, schools and universities with the goal of promoting social and environmental responsibility.

consumers' associations have a clear idea on how product quality and customer service can contribute to consumers wellbeing, which cannot be identified with the mere consumer surplus (i.e. the difference between the reservation and the market price) as it is done in standard textbook microeconomics. At the same time environmental NGOs have experience and knowledge related to the most suitable green indicators and therefore consultation of their knowledge and experience could help experts to create better indexes in this specific domain.

Failure of technical experts to incorporate stakeholders' information with timely consultation mechanisms can therefore lead to the design of poorer multidimensional wellbeing indicators, especially if we look at the problem in a dynamic perspective, where the evolution of economic and social conditions can change importance and appropriateness of indicators over time.

The "living" NeXt indicators based on a multi-stakeholder co-design and consultation process repeated over time address these two limits of static expert based indicators. The indicators at firm level in each of the relevant wellbeing domains are as well integrated with macroeconomic indicators such as Sustainable Development Goals, thereby measuring corporate progress toward and contribution to those goals. Another crucial characteristic of the NeXt living indicators is the corporate self-assessment starting point of the process, helping to reduce fixed costs of evaluation that represent a barrier for small and medium sized companies and ensure proper adjustment to changes in the social and economic environment and dynamics.

This is the reason why, as we argue in what follows, "living" indicators based on a dynamic process of multi-stakeholder co-design, revision and participation can produce better outcomes than static technical expert indicators. The "assets" produced in the two cases are completely different. In the latter case the asset is the static indicator subject to depreciation over time, in former case the asset is the multi-stakeholder community and its process of dialogue and co-design and, as such, it has higher value being hardly replicable and depreciable.

The rest of our paper is organised as follows. In the second section we present a short review of the literature also identifying hybrid ancestors of the NeXt living indicator that follow intermediate methods between the static expert-based approach and the NeXt approach, in the third section we sketch a theoretical framework on quality and social acceptance of indicators. In the fourth section we present characteristics of the NeXt indicators in detail. In the fifth section we describe their limits, policy implications and complementarities with the ongoing development of regulatory taxonomies.

2. A short review of the literature

The literature on multidimensional wellbeing indicators originates from the consideration that GDP is not a sufficient indicator of subjective well-being as shown by the empirical contributions in the life satisfaction literature (Easterin, 1974 and 200); Oswald, 1997; Tideman et al., 2008; Diener, 2000; Diener et al., 2010; Dolan and White, 2007; Di Tella and McCulloch, 2006; Easterlin, 2001; Blanchflower and Oswald, 2004; Di Tella et al., 2001; Frey and Stutzer, 2000, 2002; Graham, 2012; Kahneman et al., 1999; Kahneman and Krueger, 2006; UNDP, 1996, 2010; Kahneman et al., 2006; Veenhoven, 1996).

Accordingly, there have been numerous attempts to offer an alternative that has the same synthetic clarity as the GDP, which communicates its message with a single number or score (composite indices and indices directly in competition with GDP). These attempts include the Green GDP, the Ecological Footprint, the Index of Human Development, the Happy Life Years, the Happy Planet Index and the Happiness Atlas. These and similar attempts share a common culture of multidimensional well-being (2007 Istanbul Declaration and the 2009 Stiglitz-Sen-Fitoussi Commission). Among the latter, at an international level, mention similar innovative patterns have been followed by the Gallup research, the Australian experience, the Gross Domestic Happiness, the Canadian Index of Wellbeing, the Quality of Life index, the Better Life Index and the UN Happiness Report.

All these methodologies are mainly expert based and do not include developed forms of stakeholder participation. The creation of BES (Benessere Equo e Sostenibile) indicators in Italy is an example of intermediate hybrid form between the NeXt living community index and static expert-based indexes. The creation of the index followed "beyond GDP" suggestions of the Sen-Stiglitz commission.[4]

In order to develop the BES the Italian National Statistical Institute (ISTAT) developed a four-step process. In the first step representative stakeholders of the Italian society were asked to define the main wellbeing dimensions (these including: health, education and training, work and life time balance, economic well-being, social relations, politics and institutions, safety, subjective well-being, landscape and cultural heritage, environment, research and innovation, quality of services). In the second step statistical and social science experts worked in groups in each of these dimensions to develop proper indicators. In the third step the set of indicators created by experts was discussed with stakeholder representatives. In the fourth step the experts of each group defined the final list of selected indicators.

Overall, the BES includes 140 indicators grouped in the following three category lists: 1) global outcome indicators - able to provide information on the phenomenon as a whole; 2) specific life cycle indicators - which enrich global information with in-depth analysis related to risks that characterize specific phases of the life cycle; 3) indicators relating to risk factors or health protection factors deriving from lifestyles - useful for assessing the sustainability of the current levels of health of the population and their desirable improvement.

The BES system is a hybrid intermediate example between the static expert-based system and the living community-based system. It includes a process of dialogue with stakeholders, even

+[4] Downloadable at http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf.

though neither a co-design process nor a joint periodic update involving relevant stakeholders. As well, differently from the NeXt index, it is directed to measure wellbeing at geographical level and not at firm-level and, consequently, the interaction with corporate end users (starting in the NeXt indicators case from corporate self-assessment) is not as relevant as it is the case when measuring corporate sustainability.

Beyond the BES process, community participation approaches gained prominence in recent years from improving governance and sustainability practices to fair and valid evidence of impacts, from being the supply of information to the active involvement of stakeholders in projects decision. According to a "bottom-up" perspective, also driven by the awareness of "top-down" approaches past limits, participatory methods can generate accurate both quantitative and qualitative data, as well as they can capture local priorities for a higher final decision validity. Second, the legitimacy of the final outcome is higher when potentially affected parties can state their own case before their peers and have equal chances to influence the outcome (i.e., the process was fair). Third, public participation is identified with proper conduct of democratic government in public decision-making activities, since citizens mature into responsible democratic citizens and reaffirm democracy when they become involved in working out a mutually acceptable solution to a project or problem that affects their community and their personal lives. Furthermore, participants can grow to understand their own strengths and abilities, leading to a sense of empowerment, specifically like in the case of empowerment evaluation (Barber 1984; Webler *et al.* 1995, Mayoux and Chambers 2005; Miller and Campbell 2006; Fraser *et al.* 2006; Esteves et *al.* 2012; Worthen *et al.* 2019).

3. A theoretical sketch of our hypothesis

In what follows we sketch a theoretical argument outlining the difference between the NeXt multi-stakeholder community indicators and the static expert-based indicators.

We define the quality[5] of an indicator as a function of the incorporated knowledge and experience of the different relevant stakeholders (ST) and corporate end users (EU) plus the competence and technical skills of the statistical experts (SE)

$QI_t=f(EU_t, SE_t, \Sigma_i ST_{it})$ where =1,..,N

Relevant stakeholders are those having skills, experience and competences on the given wellbeing domain (i.e. trade unions for the workers domain, consumers' association for the product quality domain, environmentalist NGOs for the environmental sustainability domain). Statistical experts are those having know-how on the state of art and methodologies of wellbeing indicators, while end users are the same companies object of the NeXt score that

[5] For quality of an indicator we mean the capacity to capture synthetically the crucial features a given phenomenon, its granularity (ie. its capacity to translate different performances of corporate end users in indicator differences on a quantitative scale), the biunivocal correspondence between ranking order and quantitative order of two different performances. Using the language of the utility function in economics these properties translate into reflexivity, transitivity and monotonicity.

accept to be scrutinized and become users since they take advantage from its definition in terms of learning and monitoring their competitive position in ecological transition.

We assume that knowledge, experience and skills of the three actors do not perfectly overlap. More specifically, we assume that technical experts dispose of all analytical and statistical skills but, without sector specific experience, can miss the fact that some technically valid solutions fail to capture relevant aspects of the reality in that domain, or that it is impossible for corporate end users to collect reliable information on a given indicator. On the other hand, corporate end users and relevant stakeholders have important domain and sector specific knowledge but fail to understand how that knowledge can be translated into methodologically rigorous indicators.

Relevant stakeholders, corporate end users and statistical expert abilities update following the evolution of the state of affairs in the social, environmental and economic dimension as follows:

$ST_{it}=k(w_t)$, $EU_t=e(w_t)$, $SE_{it}=s(w_t)$

where k, e and s are the different functional forms reflecting how different actors of the index update their skill w over time.

The level of social and political acceptance of the indicator on stakeholders' and corporate end users' side is in turn a function of its quality, cost (in terms of adoption and compliance), friendliness, and involvement. All of the four factors are higher in living index due to the process of dialogue between experts and stakeholders producing first a co-design of the indicators and after it a periodic consultation for revision..

$SA_t=g(QI_t,C_t,F_t,Inv_t)$

To the opposite extreme, a static expert-based index fails to incorporate information from stakeholders. Its quality is lower and the degree of acceptance by stakeholders markedly inferior also due to lack of involvement in the process.[6]

This theoretical framework makes it easy to understand how a static expert only based index (SEI) is at the extreme opposite of a living multi-stakeholder community (NEXT) index.

We in fact end up with

$QI_t(SEI)=f(SE_{t0}) < QI_t(NEXT)= f(EU_t, SE_t, \Sigma_i ST_{it})$

and

$SA_t(SEI)=g(f(SE_{t0})) < SA_t(NEXT)=g(f(EU_t, SE_t, \Sigma_i ST_{it}),C_t,F_t,Inv_t)$

Another crucial difference between a SEI and a NEXT index is that the asset of the former is the set of indicators defined at given point in time. As such the asset is subject to strong depreciation and can be easily imitated. In the NeXt case the asset is the community of

[6] We refer here to the theoretical and empirical literature of procedural utility (Frey and Stutzer, 2005) showing that acceptance of a given decision of an individual depends on the degree of her/his involvement in the process leading to such decision.

technical experts, relevant stakeholders and corporate end users in dialogue and consultation. Such asset is not subject to the same rate of depreciation and cannot be easily imitated.

To conclude, higher quality and higher rate of adoption of living multi-stakeholder indexes creates conditions for their superior contribution to progress in sustainability. The NeXt index therefore results to be much more suitable for a process of trial, error and update required by the complexity of the task at stake and the evolving nature of the economic scenario.

4. The process for the construction of the NeXt Index

The basic tool to calculate NeXt indicators is the Participatory Self-Assessment Survey 2.0 (PSAS 2.0) co-designed over time by a community including statistical experts, relevant stakeholders and corporate end users and timely revised at regular intervals.[7] The group of statistical experts is based on members of the NeXt Scientific Committee (see the list provided in Appendix 1).

The Survey includes five indicators for each of the following six relevant domains: i) governance; ii) workers; iii) consumers; iv) the environment; v) suppliers in the value chain; vi) local communities, for a total of 30 indicators. Scores for each indicator are provided on a discrete qualitative scale from 1 (minimum) to 5 (maximum) (questionnaire details describing each domain and the related indicator are in Appendix 2).

4.1 Calculus and ponderation of individual NeXt indicators

The evaluation process follows two steps. In the first step corporate end-users perform their self-assessment report attributing a score in a 1-5 range to each of the 30 indicators in the 6 different domains. For any indicator the survey presents a column where corporate end users are asked to copy links to corresponding documents supporting their self-assessed score. In the second step of the evaluation process the relevant stakeholders and statistical experts evaluate whether the information provided is consistent with the self-assessed score. If so, they confirm the self-assessed score, otherwise they ask for further evidence consistent with the self-attributed score or revise the latter consistently with the available information.

If statistical experts evaluate that a given indicator does not apply to the given business the indicator is left missing and the overall score is reparametrized using a standard n/n-m correction factor that takes it into account where m is the total number of indicators in the Next index and m is the number of missing indicators.

[7] The PSS 2.0-NeXt index can be accessed *on-line* on www.nexteconomia.org where corporate end users are asked to register before performing their self-assessment.

4.2 Aggregation of NeXt indicators

Aggregation of indicator specific scores from each of the five domains (for total scores in domains and across domains) is performed using the Mazziotta-Pareto (2018) Index (MPI) (see Appendix 3). This methodological choice has been made to penalize horizontal variability (i.e. companies with higher variability in individual scores) for a given same unweighted arithmetic mean in order to give value to regularity and penalize low scores on some indicators implying poor evaluation from some of the relevant stakeholders. The theoretical rationale is that, the logic of "integral (all-round) sustainability implies a penalty for low scores on a specific indicator or area.

The total aggregate scores and total domain scores are rescaled on a 0-100 interval.

4.3 Calculation of NeXt indicators impact in terms of macroeconomic BES and SDG domains

Each indicator is linked to a priority reference BES and SDG domain. More specifically on this point, the overall structure of the PSAS2.0 NeXt index is based on a two-sided reference framework:

i) an international framework calculating links and consistence of NeXt indicators with Sustainable Development Goals of Agenda 2030[8] issued in 2015 by the United Nations (this implies that each of the 30 NeXt indicators is linked with a reference priority SDG[9]);

ii) a national framework calculating links of NeXt indicators with the 12 domains of *Benessere Equo e Sostenibile*,[10] the Italian multidimentional wellbeing framework designed by Istat and CNEL (2013), here recalibrated on a corporate basis, becoming BESA, which stands for "fair and sustainable corporate wellbeing" (this implies that each of the 30 NeXt indicators is linked with a reference to a priority BES domain[11]),

[8] https://unric.org/it/agenda-2030/

[9] Link made by connecting the survey indicators, the GRI framework indicators (https://www.globalreporting.org/Pages/default.aspx) and the SDGs to each other. The first match was made by the NeXt Study Center, while the SDGs Compass platform (https://sdgcompass.org/) was used for the second match. This platform helps companies implement coherent business strategies with the social and environmental sustainability indicators set by UN Agenda 2030.

[10] https://www.istat.it/it/benessere-e-sostenibilit%C3%A0/la-misurazione-del-benessere-(bes)/gli-indicatori-del-bes

[11] Link made by connecting the survey indicators, the GRI framework indicators and BES domains to each other. The first match was made by the NeXt Study Center while the BESA theoretical framework was used for the second match.

Reference to these three frameworks enables the PSAS2.0-NeXt to calculate the corporate end user capacity to generate multidimensional wellbeing, through activation of network based processes of sustainable development (for methodological details see appendix 4).

At the end of the evaluation process the final set of NeXt scores (compared with past evaluation if they apply) is given by: i) total aggregate score; ii) degree of corporate commitment in terms of BES and SDG domains; iii) domain score; iv) individual scores for each of the 30 indicators.

5. Discussion

The success of the living index depends on the level of commitment of the three involved actors' categories (statistical experts, relevant stakeholders and corporate end users) and their willingness to participate and activate the process. This, in turn, will depend on the perceived participation benefits. The benefits of statistical experts consist in the refinement of their indicators (and underlying theories and methodologies) with knowledge and experience of the relevant stakeholders and corporate end users allowing them to design proof tested, better fit-for-purpose indicators. The benefits of relevant stakeholders consist of the possibility of co-designing tools that can help them to achieve their statutory goals represented by the wellbeing of their stakeholder category. The living indicators can in fact create a dialogue with corporate end users that foster progress toward higher labor dignity and worker satisfaction (the goal of trade unions), higher product quality and consumers' satisfaction (the goal of consumers' association), higher environmental sustainability (the goal of environmentalist association) and higher quality of life of local communities (the goal of other NGOs and organisations included among relevant stakeholders). The benefit of corporate end users consists in having a dashboard of indicators allowing them to monitor progress and position in terms of stakeholder satisfaction. Monitoring such position is going to be increasingly relevant given the recent strategies and orientation of financial investor and regulators. [12] In this perspective the living index tends to create a separating equilibrium among potential corporate end users. On the one side those reporting high scores that find optimal to make them public in order to have reputational gains (thereby going on the NeXt good practice web geo-referenced map that can lead to the individual scores).[13] On the other side those having lower scores that prefer not to become public but nonetheless find it

[12] The CEO of the first global investment fund (BlackRock) in its 2018 letter to CEOs said that *"Without a sense of purpose, no company, either public or private, can achieve its full potential. It will ultimately lose the license to operate from key stakeholders. It will succumb to short-term pressures to distribute earnings, and, in the process, sacrifice investments in employee development, innovation, and capital expenditures that are necessary for long-term growth. It will remain exposed to activist campaigns that articulate a clearer goal, even if that goal serves only the shortest and narrowest of objectives. And ultimately, that company will provide subpar returns to the investors who depend on it to finance their retirement, home purchases, or higher education."*
https://corpgov.law.harvard.edu/2018/01/17/a-sense-of-purpose/

[13] https://www.nexteconomia.org/

important to calculate values of the indicators in order to monitor their position across relevant stakeholders.

An important limit of the NeXt approach is that the score attribution starting from the corporate end user self-assessment can certainly reduce costs and simplify the process, at the cost however of running the risk self-reporting bias. The NeXt approach corrects for it in three ways. First, it defines strict correspondence between objective outcomes and indicator scores in items where this is possible (i.e. the ratio between top and bottom corporate wage taking value from one to five according to different intervals of the corporate top-bottom wage ratio). Second, it asks companies to provide evidence and documents, where available, to justify their own self-assessment. Third and more important, it asks to relevant stakeholders an evaluation of those self-reported scores.

A second crucial issue is how the NeXt indicator interacts with existing regulation in progress. As well known, there has been a growing effort in incorporating ESG (environmental, social, governance) factors in the financial industry over the recent years. According to a recent PWC survey 77 percent of global fund managers plan to exclude stocks with low ESG standards from their portfolios in the next two years and most of them calculate exposure of stocks to ESG risk considered a risk factor independent from those traditionally considered.[14] Given the growing relevance of CSR concerns and the willingness to pay for it of responsible financial investors, temptation of fraudulent CSR reporting grows and, with it, the risk of greenwashing if expected gains from washing are higher than expected costs of detection and punishment in economic and reputational terms. This is why EU institutions have launched two main initiatives. The first is the EU Taxonomy on sustainable activities[15] where characteristics of investment that can be regarded as sustainable in each of the six domains (climate adaptation, climate mitigation, circular economy, pollution, water, biodiversity) are progressively defined for each industry. The second is the Regulation on Sustainability related disclosure in the financial services sector[16] that is redefining ESG disclosure exactly to address greenwashing. According to this regulation investment funds can promote their ESG characteristics to investors only if they rigorously report progress in environmental quality of their portfolio of stocks and alignment to EU Taxonomy for the so-called article 8 and article 9 products.

Differently from the recent EU regulation mainly concerning large capitalisation listed securities the Next approach is implementable also for small and medium sized companies (the large majority, especially in European economies) and covers a wider range of CSR domains not limiting its scope to environmental issues. The issue of following as close as possible (or not falling in contradiction with the two ongoing regulatory processes) nonetheless applies when the different measurement paths apply to the same companies.

[14] https://www.bloomberg.com/news/articles/2020-10-19/almost-60-of-mutual-fund-assets-will-be-esg-by-2025-pwc-says

[15] https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en

[16] https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/sustainability-related-disclosure-financial-services-sector_it

A crucial issue arising with the living indicator approach, not differently from what happens with static indicators, is the risk of not speaking the same language with international standards that are going to be progressively created in the field. The reasons why this can occur in the two different cases are however different. In static expert-based indicators this occurs because of the missing revision process. In the case of living indicators, it can happen because the dynamic evolution driven by the interaction among participants can lead to directions that do no converge to the international standards. The living index has however two strategies to cope with the problem. The first is endogenous in the process since all participants feel the need to comply with international standard and push in that direction. The second is that the system includes methodologies that translate the original indicators into effort in standard classification domains (as it is for BES and SDGs.).

6. Conclusions: limits and direction for future research

Social and environmental indicators will play an increasing role in the future of ecological transition under the pressure of the urgent transformation required by the climate challenge and the induced reforms of the regulatory framework.

In our paper we argue that the move from static expert-only based indicators to “living” multi-stakeholder community- based indicators developed in processes of participation and co-design among statistical experts, end users and relevant stakeholders is crucial for the quality of indicators and their success in terms of adoption by end users and the overall society. While in the first type of index the main asset is the static set of indicators and, as such, it is exposed to rapid obsolescence and depreciation, in the second type of (living multi-stakeholder) index the asset is the dialogue and interaction (co-design and periodic revision) in the heterogeneous community of technical experts, relevant stakeholders and end users.

We as well emphasize that the living community-based index has other important advantages as it fosters a process of learning among participants, it simplifies and reduces costs of reporting for companies and is therefore easily implementable also by small and medium sized firms allowing them to keep the pace and monitor their progress in ecological transition

The main policy conclusion of our research is that the development of community-based living indicators can significantly improve upon traditional ones in several respects such as better consideration of point of view of end users and relevant stakeholders leading to easier social acceptance, easier implementation from small and medium sized firms, timely updating and higher involvement and participation of all the relevant actors in the society. For these properties it has the advantage of stimulating more effectively involvement in ecological transition goals and therefore progress in sustainability.

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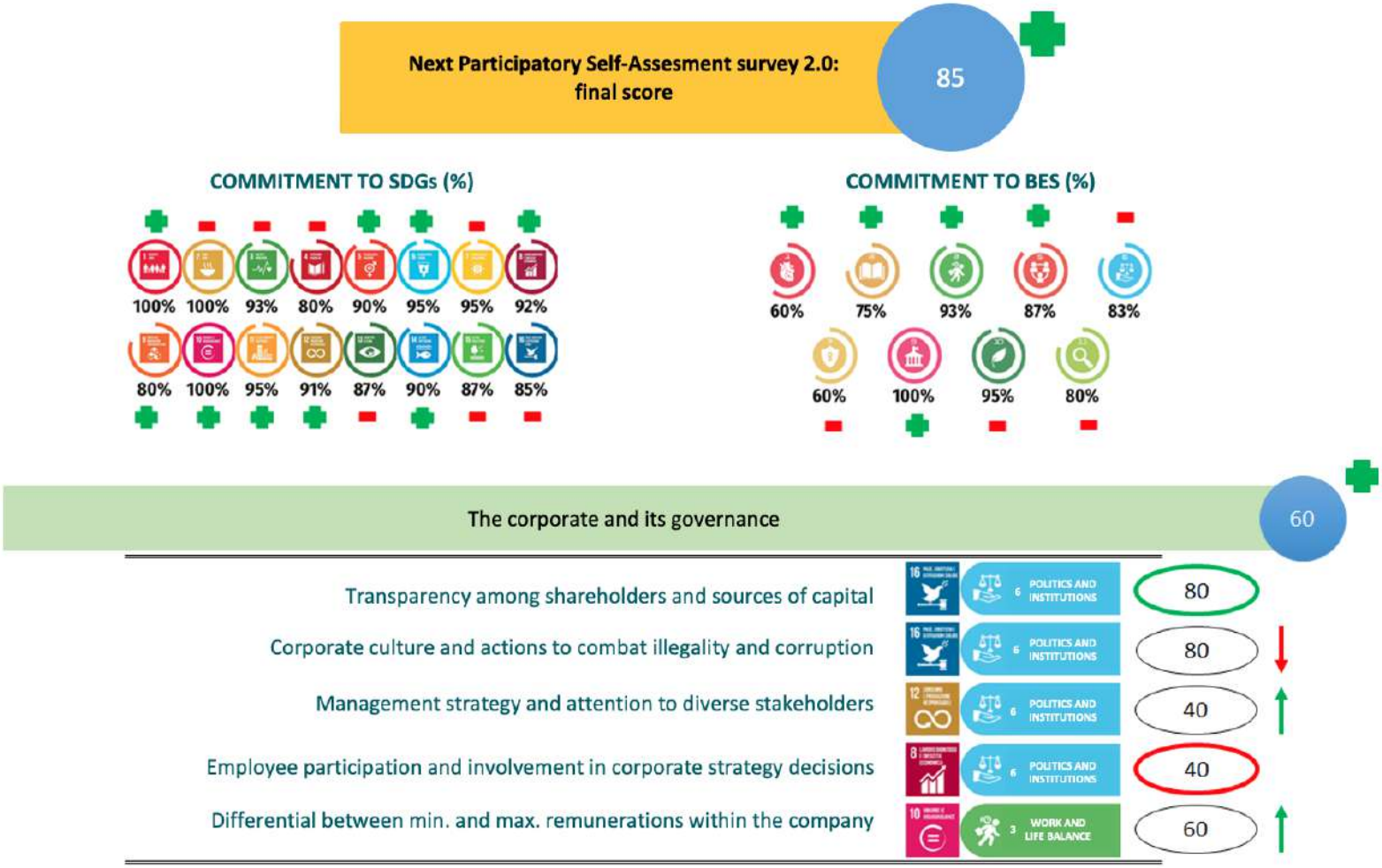
Figure 1 – Showing QAP2.0-NeXt results: an example[17]



Source: own preparation

Appendix 1 List of the 42 NeXt stakeholders by stakeholder type

Stakeholders	**Stakeholder type**
EarthDay Italia, Legambiente, Kyoto Club,	Environmental Ngos
Acli, AOI Cooperazione, ARCI, Cittadinanzattiva, CSVNet, CVX, Fondazione Lanza, Forum Nazionale del Terzo Settore, Transparency International, Opera del Murialdo, Fondazione Ebbene	Other Ngos

[17] The numbers are referred to only by way of example in the current figure and do not take into account any steps of the methodology which is here proposed.

Adige, Fim-CISL, CGIL, CISL, First Social Life, Flaei, UIL,	Trade Unions and/or workers' associations
Adiconsum, Adoc, Federconsumatori, Movimento Consumatori,	Consumers' association
Aipec, Anima, UCID, Fondazione Sodalitas,	Entepreneurs' associations
Altromercato, Banca Etica, Confcooperative, Federcasse, Legacoop,	Cooperative associations and/or social business
FairTradeItalia, Impronta Etica, PEFC Italia,	Label and/or certifying and rating companies
Istituto Maria Ausiliatrice, Tor Vergata, Unitelma Sapienza, ErsHub,	Education institutions
Vita	Media Companies

Appendix 2 – The NeXt Participatory Self-Assessment Survey 2.0 (PSAS 2.0): areas and indicators

AREAS	INDICATORS	LINK with SDGs and BES
THE CORPORATE AND ITS GOVERNANC	1.1 **Transparency on shareholders and sources of capital** Criterion: transparency on capital ownership with respect to a control group (percentage value). For example: if the main shareholders are X (15%), Y (12%) and Z (8%), the information concerns 35% of the ownership. - Less than 10% (score 1) - 11% - 30% (score 2) - 31% - 50% (score 3) - 51% - 70% (score 4) - Greater than 70% (score 5)	
	1.2 **Corporate culture and actions against illegality and corruption** Criterion: control of suppliers' legality and transparency, to be expressed in percentage terms with respect to the controlled suppliers total amount - Less than 10% (score 1) - 11% - 30% (score 2) - 31% - 50% (score 3) - 51% - 70% (score 4)	

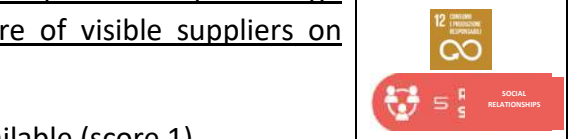
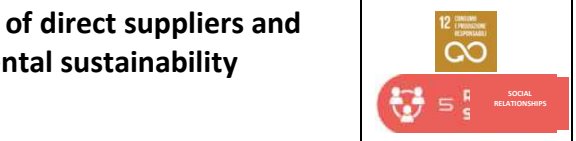
	- Greater than 70% (score 5)	
	1.3 Management strategy and attention to diverse stakeholders <u>Criterion: levels and modes of stakeholders' engagement, to be expressed through numerical values</u> - The firm disregards stakeholders' engagement (score 1) - The firm is aware of the stakeholders' engagement value, but there is no direct involvement (for example, the company only engages them via indirect links and online research) (score 2) - The firm is aware of the stakeholders' engagement value and their direct involvement (for example, one meeting with stakeholders) (score 3) - The firm dialogues with its stakeholders and also involves them in corporate strategy decisions (for example, at least two meetings with stakeholders (score 4) The firm dialogues with its stakeholders, involves them in corporate strategy decisions, and measures stakeholders' satisfaction levels (for example, at least three meetings with stakeholders and measurement of satisfaction level for each of them)	
	1.4 Employee participation and involvement in corporate strategy decisions <u>Criterion: stakeholders' engagement in corporate strategy decisions, to be expressed in percentage terms (100% stands for their engagement in every corporate decisions made)</u> - None (score 1) - Consulting employees for less than 30% of corporate decisions (score 2) - Consulting employees for more than 30% of corporate decisions (score 3) - Sharing and asking for employees' participation in less than 30% of corporate strategy decisions (score 4)	

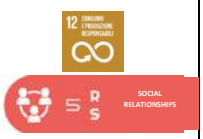
	- Sharing and asking for employees' participation in more than 30% of corporate strategy decisions (score 5) *Explain what kind of decision is shared.	
	1.5 Differential between min. and max. remunerations within the company <u>Criterion: differential between the maximum annual remuneration for the best paid and the minimum annual remuneration for the least paid.</u> - Less than 6 (score 5) - 6 -12 (score 4); - 13 - 25 (score 3); - 26 - 40 (score 2); - More than 41 (score 1)	
PEOPLE AND THE WORKING ENVIRONMEMT	**2.1 Collaborative, participatory and supportive working environment** <u>Criterion: job satisfaction share based on work climate surveys, (percent of at least satisfied workers)</u> - Less than 40% (score 1) - 41% - 50% (score 2) - 51% - 65% (score 3) - 66% - 80% (score 4) - More than 80% (score 5) *To be applied to companies with more than 100 employees only. For companies with less than 100 employees: express the company's own value, explaining the choice on the basis of employees' participation/ engagement.	
	2.2. Respect for employee dignity through fair remuneration (concerning work schedule, tasks performed, and responsibilities assigned) <u>Criterion: positive differential between the total amount of remunerations paid by the company and</u>	

	the minimum levels set by the main union contracts (annual basis), to be expressed in percentage terms - None (score 1) - Less than 5% (score 2) - 5% - 10% (score 3) - 11% - 20% (score 4) - More than 20% (score 5) - *To be applied to companies with more than 50 employees only. In any other case, to be considered as "not applicable"	
	2.3 Dialogue with workers representatives on health and safety at work Criterion: attendance and engagement (of both informative and consultative kind) of one workers' representative for safety and one workers' representative for territorial safety - None (score 1) - Attended, but neither informed nor consulted (score 2) - Attended, but informed only on a few aspects (score 3) - Attended and informed on all aspects (e.g.: accidents at work, risk assessment, prevention and organizational measures, etc.) (score 4) - Attended, informed, and consulted on all aspects (score 5)	
	2.4 ù Work-Life balance (smart working, gender opportunities, etc.) Criterion: attendance and diversity of work-life balance agreements - None (score 1) - One agreement or unilateral decision on work-life balance for a specific employee category (score 2) - One agreement or unilateral decision on work-life balance for all employee categories (score 3) - Two agreements or unilateral decisions on work-life balance for a specific employee	

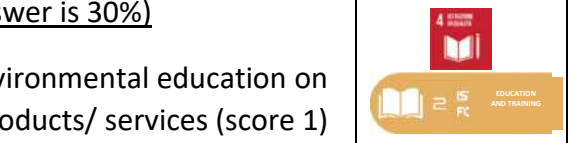
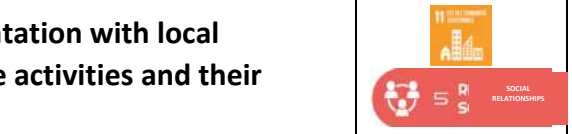
	category or for all employee categories (score 4) - More than two agreements or unilateral decisions on work-life balance for a specific employee category or for all employee categories (score 5)	
	2.5. Employee career development, rewarding employees skills and experience through training and lifelong learning <u>Criterion: for each employee, annual average of training and continuing education hours</u> - Less than 10 (score 1) - 11 - 20 (score 2) - 21 - 30 (score 3) - 31 - 50 (score 4) - Higher than 51 (score 5)	
RELATIONSHIPS WITH CITIZENS AND CONSUMERS	**3.1. Listening, dialogue and relationships tools with consumers to understand and improve their satisfaction (by facilitating dialogue on both new and traditional media, etc.)** <u>Criterion: attendance and diversity of relational tools with clients/ consumers</u> - None (score 1) - Unilateral dialogue (e.g., toll-free number) (score 2) - Regulated dialogue (e.g., regulated toll-free number) (score 3) - Digital/ analogue channels with precise guidelines (score 4) - Digital/ analogue channels with dedicated employee(s), in accordance with corporate mission and culture (score 5)	
	3.2. Full and documented information on the environmental and social sustainability of products/ services and all related processes, available to customers	

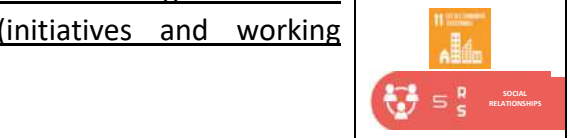
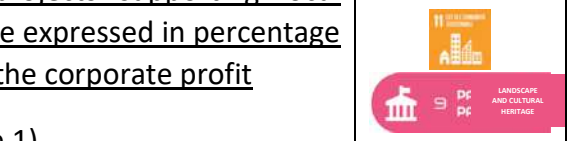
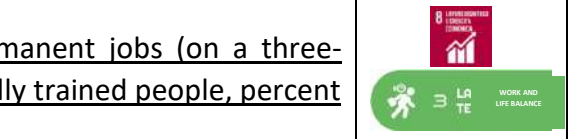
	<u>Criterion: information on products/ service available on labels and informative material</u> - Information available on labels as legally required (score 1) - Additional information available on labels, beyond the legally required information (score 2) - Additional information available on labels, through a link to the corporate website (score 3) - Additional information available on labels about supply chain traceability (score 4) - Additional information about supply chain through ICT/ multimedia systems (e.g., blockchain, GS 1 barcode) (score 5) *To be applied to companies developing services for citizens only	
	3.3. Customers' valorization as a stimulus for partnership innovations and co-design of products/services <u>Criterion: attendance and diversity of interaction modes with clients</u> - The firm disregards customers' suggestions and indications (score 1) - The firm considers customers' suggestions and indications (score 2) - The firm interacts with single customers' (e.g., through social media and F.A.Q.) (score 3) - The firm interacts with consumers associations (score 4) - The firm develops shared improvement actions (score 5)	
	3.4. Effective ways for complaint management and resolution, guaranteeing proper response times and satisfaction levels <u>Criterion: attendance and diversity of complaint management strategies</u> - No way of contact with customers after-sale (score 1)	

	- Unregulated and unilateral after-sale contact with customers (e.g., online form) (score 2) - Direct after-sale contact with customers (score 3) - Regulated and direct after-sale contact with customers (score 4) - Joint conciliation and activation of stable partnerships with consumers associations (e.g., ethical and control committees created with consumers associations in order to monitor processes and all tracking criteria) (score 5)	
	3.5 Measurement of customers satisfaction rate (percent of customers at least satisfied customers) <u>Criterion: customer satisfaction rate</u> - Less than 60% (score 1) - 60% - 70% (score 2) - 71% - 80% (score 3) - 81% - 90% (score 4) - Higher than 90% (score 5)	
THE SUPPLY CHAIN	**4.1 Supply chain transparency** <u>Criterion: public visibility of suppliers on the company's website, to be expressed in percentage terms (percent value share of visible suppliers on total suppliers value)</u> - No information available (score 1) - Less than 10% (score 2) - 10% - 30% (score 3) - 31% - 60% (score 4) - Higher than 60% (score 5)	
	4.2 Activation of criteria and procedures concerning the choice of direct suppliers and their socio-environmental sustainability <u>Criterion: relationship between sustainable suppliers and all suppliers, to be expressed in percentage terms</u>	

	(avoiding minimum price bid auctions without concern for environmental and social criteria and choices based on cost savings only) - None (score 1) - Less than 10% (score 2) - 10% - 30% (score 3) - 31% - 60% (score 4) - Greater than 60% (score 5)	
	4.3 Adoption and applications of monitoring tools by suppliers on the socio-environmental sustainability Criterion: monitoring suppliers' care towards ethics and human rights, through local visits as well as interviews to managers and employees, to be expressed in percentage terms (percent of the value share of monitored suppliers on total suppliers value) - None (score 1) - Less than 10% (score 2) - 10% - 30% (score 3) - 31% - 60% (score 4) - Higher than 60% (score 5)	
	4.4 Fair and transparent agreements on suppliers' payments Criterion: late payments with respect to the total amount of payments to suppliers, to be expressed in percentage terms - Higher than 70% (score 1) - 51% - 70% (score 2) - 31% - 50% (score 3) - 11% - 30% (score 4) - Less than 10% (score 5)	
	4.5 Indirect suppliers' compliance with sustainability principles for the purchase of raw/ processed products	

	Criterion: relationship between the number of materials/ tools/ products purchased according to sustainability criteria and the total number of materials/ tools/ products, to be expressed in percentage terms - Less than 10% (score 1) - 11% - 30% (score 2) - 31% - 50% (score 3) - 51% - 70% (score 4) - Higher than 70% (score 5)	
ATTITUDES/ RESPONSABILITY TOWARD THE ENVIRONMENT	**5.1 Climate change mitigation and energy efficiency** Criterion: energy efficient deviation from the sectors' standard greenhouse gases emissions, percent - None (score 1) - Less than sector standards (score 2) - 0% - 5% (score 3) - 6% - 15% (score 4) - Higher than 15% (score 5)	
	5.2. Circular economy approach through proper waste management Criterion: efficiency trend about resource use (reduction of landfill waste), percent - None (score 1) - 1% - 5% (score 2) - 6% - 10% (score 3) - 11% - 20% (score 4) - Higher than 20% (score 5)	
	5.3 Energy supply from renewable sources Criterion: energy supply from renewable sources, percent - Less than 30% from outside distributors (score 1) - 31% - 60% from outside distributors (score 2)	

	- More than 60% from outside distributors (score 3) - 31% - 60% from own renewable sources (score 4) - Higher than 60% from own renewable sources (score 5)	
	5.4 Communication and education initiatives to promote environmental responsibility among citizens <u>Criterion: availability of communication and education initiatives to promote environmental responsibility among citizens, to be expressed in percentage terms (e.g., if the firm provides information for environmental education on 30 products over 100, the answer is 30%)</u> - Information for environmental education on less than 20% of products/ services (score 1) - Information for environmental education on 20% - 40% of products/ services (score 2) - Information for environmental education on 41% - 60% of products/ services (score 3) - Information for environmental education on 61% - 80% of products/ services (score 4) - Information for environmental education on more than 80% of products/ services (score 5)	
	5.5 Responsible consumption of natural resources (raw materials, water, soil, etc.) <u>Criterion: two-year reduction trend of raw materials consumed for corporate activities, percent</u> - No reduction (score 1) - 3% - 5% (score 2) - 6% - 7% (score 3) - 8% - 10% (score 4) - Greater than 10% (score 5)	
ATTITUDES/ RESPONSABILITY TOWARDS THE	**6.1 Openness and confrontation with local communities on corporate activities and their impact**	

LOCAL COMMUNITY	Criterion: worked hours in activities such as meetings on the local heritage, in comparison with the total amount of worked hours, percent - None (score 1) - Less than 2% (score 2) - 3% - 4% (score 3) - 5% - 6% (score 4) - Higher than 6% (score 5)	
	6.2 Constant dialogue and sharing with local stakeholders (institutions, organizations and others) Criterion: average number of meetings with each stakeholder's category (initiatives and working groups) - None (score 1) - 1 - 2 (score 2) - 3 - 5 (score 3) - 6 - 10 (score 4) - Higher than 10 (score 5)	
	6.3 Participation and support to local development policies, including valorization of local environment and cultural heritage Criterion: reference to projects supporting local development policies, to be expressed in percentage terms in comparison with the corporate profit - Less than 1% (score 1) - 1% - 5% (score 2) - 6% - 10% (score 3) - 11% - 20% (score 4) - Higher than 20% (score 5)	
	6.4 Promotion and growth of stable work at a local level Criterion: increase in permanent jobs (on a three-year basis), related to locally trained people, percent - No growth (score 1) - Less than 1% (score 2) - 1,1% - 2% (score 3)	

	- 2,1% - 5% (score 4) - Higher than 5% (score 5)	
	6.5 Mission achievement in collaboration with other companies and local stakeholders <u>Criterion: local outsourcing, supporting local supply chains and non-profit organizations, percent</u> - Less than 10% (score 1) - 11% - 20% (score 2) - 21% - 40% (score 3) - 41% - 50% (score 4) - Higher than 50% (score 5)	

Source: own preparation

Appendix 3 The Mazziotta-Pareto approach to calculation of the final index score

The score for each domain is computed as

$$A_i = MA_i - SD_i CV_i$$

where:

$$M_i = \frac{\sum_{j=1}^{5} i_j}{6};\ MA_i = \frac{\sum_{j=1}^{5} i_j w_j}{\sum_{j=1}^{5} w_j};\ SD_i = \sqrt{\frac{\sum_{j=1}^{5} (i_j - M_i)^2 w_j}{\sum_{j=1}^{5} w_j}};\ CV_i = \frac{SD_i}{MA_i}$$

and

iii) A_i is the i-th domain score
iv) i_j is the j-th indicator score
v) w_j is the score weight
vi) M_i is the unweighted arithmetic average of indicators' scores in the i-th domain
vii) MA_i is the weighted average of indicators' scores in the i-th domain
viii) SD_i is the weighted standard deviation of indicators' scores in the i-th domain
ix) CV_i is the weighted coefficient of variation in the i-th domain

The final total score is computed as:

$$T = MT - SDT * CVT$$

where:

$$MT = \frac{\sum_{i=1}^{6} A_i}{6}; SDT = \sqrt{\frac{\sum_{i=1}^{6}(A_i - MT)^2}{6}}; CVT = \frac{SDT}{MT}$$

and:

x) T is the aggregate (NeXt Index) score
xi) A_i is the i-th domain score
xii) MT is the unweighted arithmetic average of domain scores
xiii) SDT is the standard deviation of domain scores
xiv) CVT is the coefficient of variation of domain scores

Appendix 4 – Measuring corporate commitment for BES domains and SDGs

With the aim of measuring the overall corporate commitment to improve multi-dimensional well-being and sustainable development processes, two elements are considered: the direct commitment and the indirect one. The first element is given by the relation between the sum of all the scores which were obtained for each indicator associated to priority BES domains/ SDGs and the sum of maximum achievable scores for indicators. The second element relies on the construction of interlinkages between BES domains/ SDGs dynamics, and serves to enhance the multidimensional characteristics of well-being and sustainable development.

Regarding the construction of the interlinkages among BES domains, regional-level components are considered for each domain, as indicated in the "Report on SDGs 2019. Statistical information for the 2030 Agenda in Italy" by ISTAT, with a total of 168 observations and a time reference of 8 years. The correlation is calculated through the Spearman index (Pinar, 2019)[18], adjusted with the Bonferroni methodology ("*" is attributed to the correlation value with a 99% significance). Results are listed in Table A4.1.

[18] Pinar, M. Multidimensional Well-Being and Inequality Across the European Regions with Alternative Interactions Between the Well-Being Dimensions. Soc Indic Res 144, 31–72 (2019). https://doi.org/10.1007/s11205-018-2047-4.

Table A4.1 – Degree of correlation between BES domains

	work and li	economic v	safety	health	education a	social relat	politics and	subjective v	landscape a	environme	innovation	quality of s
work and life-time balance	1											
economic well-being	0,9537*	1										
safety	0,2021	0,1495	1									
health	0,8012*	0,7957*	0,1562	1								
education and training	0,4026*	0,4529*	0,2314	0,6024*	1							
social relations	0,9001*	0,8873*	0,1803	0,7451*	0,3686*	1						
politics and institutions	0,6359*	0,6411*	-0,0734	0,6724*	0,4344*	0,5948*	1					
subjective well-being	0,7467*	0,7045*	0,3255*	0,5099*	0,1985	0,6854*	0,4073*	1				
landscape and cultural heritage	0,8746*	0,8826*	0,1402	0,8020*	0,4810*	0,8867*	0,6126*	0,6447*	1			
environment	0,5310*	0,4866*	0,4022*	0,5489*	0,5061*	0,4789*	0,3675*	0,4380*	0,4041*	1		
research and innovation	0,3725*	0,4164*	-0,4294*	0,4567*	0,4060*	0,3588*	0,5586*	0,0338	0,4317*	-0,0593	1	
quality of services	0,9284*	0,9105*	0,1484	0,7989*	0,4206*	0,8970*	0,6629*	0,6893*	0,8542*	0,4802*	0,4670*	1

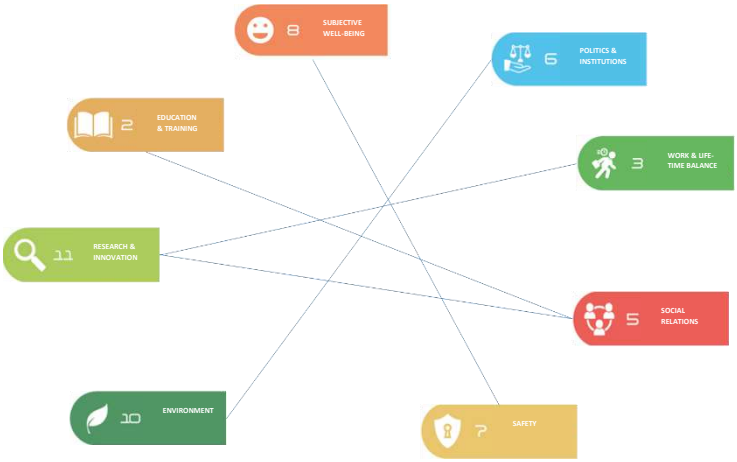
Source: CeSVa based on Istat (2019)

Based on the degree of correlation, three different interlinkages intensities emerge. In particular:

- Light/ weak interlinkages (Fig. A4.1): interlinkages between BES domains with a correlation level between 0 and 0,4 (included)
- Medium interlinkages (Fig. A4.2): interlinkages between BES domains with a correlation level between 0,4 and 0,8
- Strong interlinkages (Fig. A4.3): interlinkages between BES domains with a correlation level equal to or more than 0,8

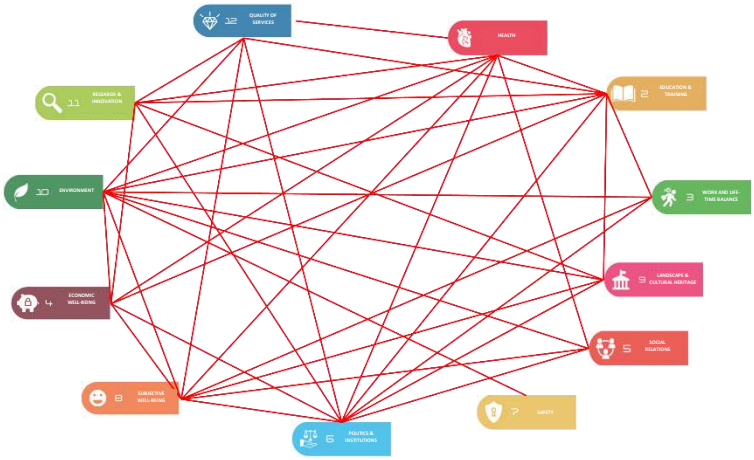
Drawing from the degree of correlation, the following maps of interlinkages are made (respectively: light/ weak, medium and strong)

Fig. A4.1 – Interlinkages between BES domains: light/ weak case



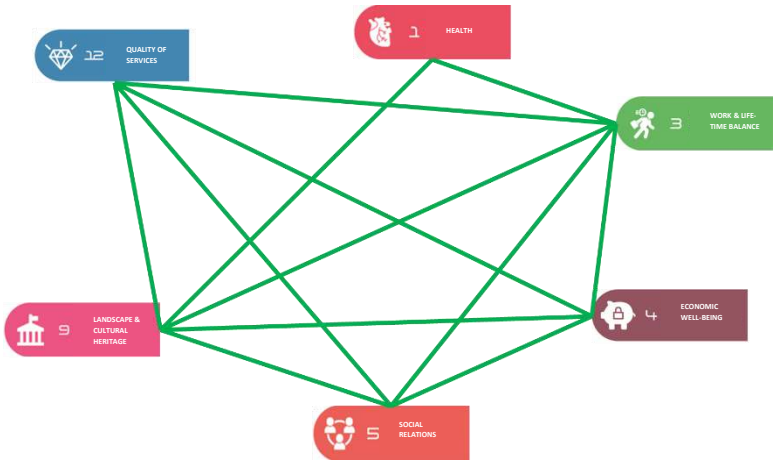
Source: CeSVa based on Istat (2019)

Fig. A1.2 – Interlinkages between BES domains: medium case



Source: CeSVa based on Istat (2019)

Fig. A1.3 – Interlinkages between BES domains: strong case



Source: CeSVa based on Istat (2019)

In order to consider the interlinkages between BES domains in the calculation of all companies' contribution to the improvement of multidimensional well-being, as indicated by the score they obtained for each Participatory Self-Assessment Survey 2.0 indicator, their percentage of commitment is calculated in the following way:

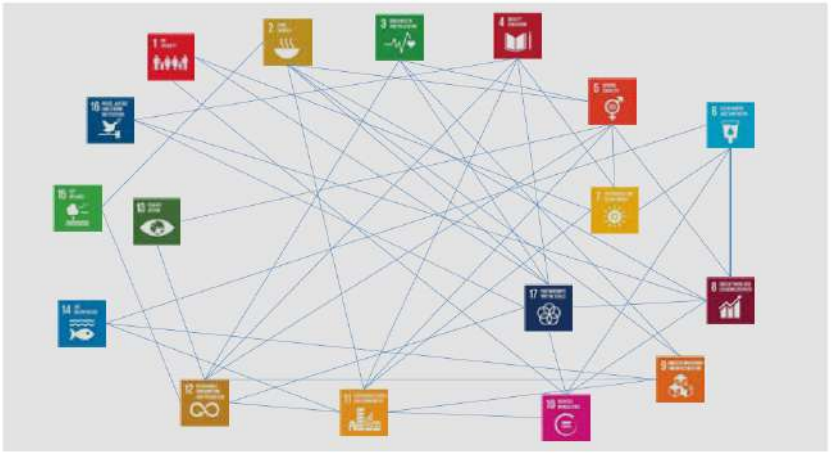
- Percentage ratio between the sum of all the scores obtained for all the indicators associated to BES domains and the sum of maximum achievable scores for the same indicators, considering the interlinkages dynamic as follows:

    - If the interlinkage between the priority BES domain (the NeXt index is related to) and other domains is light/ weak, 0,25% of priority BES domain indicator score is added to the commitment score of the other domains calculated when the latter are priority domains

    - If the interlinkage between the priority BES domain (the NeXt index is related to) and other domains is medium, 0.50% of priority BES domain indicator score is added to the commitment score of the other domains calculated when the latter are priority domainsIf the interlinkage between the priority BES domain (the NeXt index is related to) and other domains is strong, 0.75% of priority BES domain indicator score is added to the commitment score of the other domains calculated when the latter are priority domains

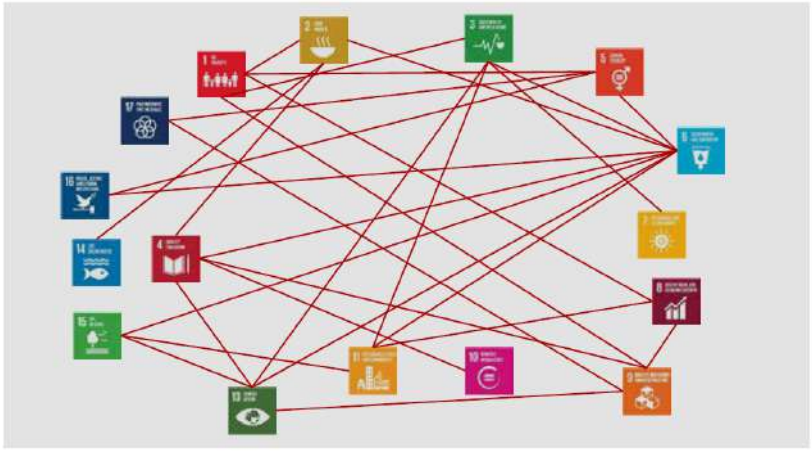
The intensity of interlinkages between SDGs is readapted by the "Report on SDGs 2019. Statistical information for 2030 Agenda in Italy" by Istat (Istat, 2019.) Synthetic representations of the relationships among goals are given by the indicated interlinkages sum (when UN-IAEG- SDGs metadata are available, analysis of relations among objectives, targets and indicators, defining possible connections with other indicators' goals: when metadata are available and well-defined, interrelated targets are reported for each indicator), without taking directions into consideration. In this way, light/ weak interlinkages (from 1 to 3 interlinkages – Fig. A4.4), medium interlinkages (from 4 to 10 – Fig. A4.5) and strong interlinkages (more than 10 – Fig. A4.6) are shown.

Fig. A4.4 – Interlinkages between SDGs: light/ weak case



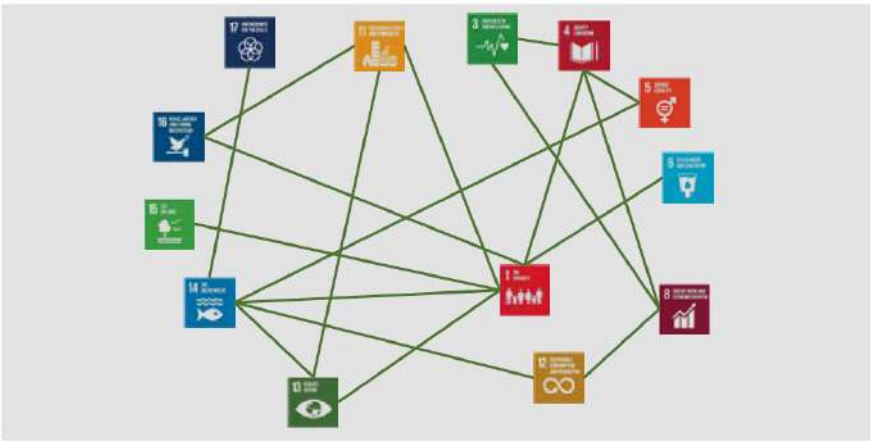
Source: Istat (2019)

Fig. A4.5 – Interlinkages between SDGs: medium case



Source: Istat (2019)

Fig. A4.6 – Interlinkages between SDGs: strong case



Source: Istat (2019)

In order to consider the interlinkages between SDGs in the calculation of all companies' contribution to the activation of sustainable development processes, as indicated by the score they obtained for each Participatory Self-Assessment Survey 2.0 indicator, their percentage of commitment is calculated in the following way:

- The percentage ratio between the sum of the scores achieved in the indicators connected to each SDG [19] and the maximum achievable score in the same indicators[20], taking the interlinkages dynamics into consideration as follows:

[19] For the link between indicators and priority SDGs, see NeXt Participatory Self-Assessment Survey 2.0. By way of example, SDGs 16 is considered as such for the following indicators: 1.1, 1.2 e 6.5.

[20] The maximum achievable score for each SDGs is: SDGs 16, 15; SDGs 12, 50; SDGs 8, 35; SDGs 10, 5; SDGs 4, 10; SDGs 9, 5; SDGs 13, 5; SDGs 7, 5; SDGs 14, 5; SDGs 15, 5; SDGs 11, 15. With respect to SDGs 1, 2, 3, 5, 6 e 17,

- If the interlinkage between the priority SDG domain (the NeXt index is related to) and other domains is light/ weak, 0,25% of priority SDG domain indicator score is added to the commitment score of the other domains calculated when the latter are priority domains

If the interlinkage between the priority SDG domain (the NeXt index is related to) and other domains is medium, 0.50% of priority SDG domain indicator score is added to the commitment score of the other domains calculated when the latter are priority domains. If the interlinkage between the priority SDG domain (the NeXt index is related to) and other domains is strong, 0.75% of priority SDG domain indicator score is added to the commitment score of the other domains calculated when the latter are priority domains. From a Mathematical point of view, the total commitment in each BES domain or SDG is determined by the following general formula (for a detailed description of the commitment calculation in each BES domain and SDG, see Table A4.2):

$$I_R D_i = \frac{\sum_j P_R I_j D_i}{\sum_j P_{max} I_j D_i} + 0{,}25\left(\frac{\sum_z \sum_j P_R I_j D_z}{\sum_z \sum_j P_{max} I_j D_z}\right) + 0{,}50\left(\frac{\sum_y \sum_j P_R I_j D_y}{\sum_y \sum_j P_{max} I_j D_y}\right) + 0{,}75\left(\frac{\sum_v \sum_j P_R I_j D_v}{\sum_v \sum_j P_{max} I_j D_v}\right)$$

where

$I_R D_i$ stands for the commitment in the i-th domain/ SDG.

$\sum_j P_R I_j D_i$ stands for the sum of the score achieved in j-th indicators of i-th domains/ SDGs (direct commitment).

$\sum_j P_{max} I_j D_i$ stands for the sum of the maximum achievable score in j-th indicators of i-th domain/ SDG (maximum direct commitment).

$\sum_z \sum_j P_R I_j D_z$ stands for the sum of the score achieved in j-th indicators of z-th domains/ SDGs. Z-th domains/ SDGs have a "light"/ weak interlinkage with i-th domains/ SDGs.

$\sum_z \sum_j P_{max} I_j D_z$ stands for the sum of the maximum achievable score in j-th indicators of z-th domains/ SDGs.

$\sum_y \sum_j P_R I_j D_y$ stands for the sum of the score achieved in j-th indicators of y-th domains/ SDGs. Y-th domains/ SDGs have a medium interlinkage with i-th domains/ SDGs.

$\sum_y \sum_j P_{max} I_j D_y$ stands for the sum of the maximum achievable score in j-th indicators of y-th domains/ SDGs.

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the percentage of commitment is calculated by considering the interlinkages dynamics, since they cannot be primarily related to any indicator of the NeXt Participatory Self-Assessment Survey 2.0.

$\sum_v \sum_j P_R I_j D_v$ stands for the sum of the score achieved in j-th indicators of v-th domains/ SDGs. V-th domains/ SDGs have a strong interlinkage with i-th domains/ SDGs.

$\sum_v \sum_j P_{max} I_j D_v$ stands for the sum of the maximum achievable score in j-th indicators of the v-th domains/ SDGs.

The calculation of the total commitment percentage of all BES domains/SDGs is determined by the following formula:

$$\%ID_i = \frac{I_R D_i}{I_{max} D_i}$$

where

$I_{max} D_i$ stands for the maximum achievable commitment in i-th domains/ SDGs[21].

[21] The maximum achievable score for each BES domain/ SDG: Health, 4,5; Education and training, 3,75; Work and life-time balance, 4,75; Economic well-being, 4,75; Social Relations, 4,5; Politics and institutions, 4,25; Safety, 0,75; Subjective well-being, 3,5; Landscape and cultural heritage, 5; Environment, 3,75; Research and innovation, 3; Quality of services, 4,75; SDGs 1, 6; SDGs 2, 2; SDGs 3, 3,5; SDGs 4, 4,25; SDGs 5, 3; SDGs 6, 3,5; SDGs 7, 1,5; SDGs 8, 4; SDGs 9, 3,25; SDGs 10, 2; SDGs 11, 5; SDGs 12, 3,75; SDGs 13, 4,25; SDGs, 14, 2,25; SDGs, 15, 2,25; SDGs 16, 2,25; SDGs 17, 2,5.

Table A4.2 – Formula to calculate the commitment in each BES domain and SDG

BES domains/SDGs[22]	Formula
Health[23]	$I_R D_{HEA} = 0.50\left(\frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}} + \frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}} + \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}} + \frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + \frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} + \frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}}\right)$ $\%ID_{HEA} = \frac{I_R D_{HEA}}{I_{max} D_{HEA}}$
Education and training	$I_R D_{ET} = \frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} + 0.25\left(\frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}} + \frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}} + \frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + \frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}}\right)$ $\%ID_{ET} = \frac{I_R D_{ET}}{I_{max} D_{ET}}$
Work and work-life balance	$I_R D_{WLB} = \frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}} + 0.25\left(\frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}} + \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}} + \frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + \frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}}\right)$ $\%ID_{WLB} = \frac{I_R D_{WLB}}{I_{max} D_{WLB}}$

[22] In formula, BES domains are abbreviated as follows: Health, HEA; Education and training, ET; Work and life-time balance, WLB; Economic well-being, EW; Social relations, SR; Politics and institutions, PI; Safety, SAF; Subjective well-being, SW; Landscape and cultural heritage, LCH; Environment, ENV; Research and innovation, RI; Quality of services, QS.

[23] For those BES domains (Health, Safety, Quality of services and Economic well-being) and SDGs (1, 2, 3, 5, 6 e 17) which cannot be primarily related to any indicator of the NeXt Participatory Self-Assessment Survey 2.0., one may calculate only the direct commitment.

Economic well-being	$I_R D_{EB} = 0.50\left(\frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} + \frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}} + \frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}} + \frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}} + \frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}}\right)$ $\%ID_{EB} = \frac{I_R D_{EB}}{I_{max} D_{EB}}$
Social relations	$I_R D_{SR} = \frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}} + 0.25\left(\frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} + \frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}}\right) + 0.50\left(+\frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}} + \frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}}\right)$ $\%ID_{SR} = \frac{I_R D_{SR}}{I_{max} D_{SR}}$
Politics and Institutions	$I_R D_{PI} = \frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + 0.25\left(\frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} + \frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}} + \frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}} + \frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}} + \frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}}\right)$ $\%ID_{PI} = \frac{I_R D_{PI}}{I_{max} D_{PI}}$
Safety	$I_R D_{SAF} = 0.25\left(\frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}}\right)$ $\%ID_{SAF} = \frac{I_R D_{SAF}}{I_{max} D_{SAF}}$
Subjective well-being	

	$I_R D_{SW} = \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}} 0.25 \left(\frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} + \frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}} \right) + 0.50 \left(\frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}} + \frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + \frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}} + \frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}} \right)$ $\%ID_{SW} = \frac{I_R D_{SW}}{I_{max} D_{SW}}$
Landscape and cultural heritage	$I_R D_{LCH} = \frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + 0.50 \left(\frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + \frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} + \frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}} + \frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}} + + \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}} \right) + 0.75 \left(\frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}} + \frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}} \right)$ $\%ID_{LCH} = \frac{I_R D_{LCH}}{I_{max} D_{LCH}}$
Environment	$I_R D_{ENV} = \frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}} + 0.25 \left(\frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} \right) + 0.50 \left(\frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} + \frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}} + \frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}} + \frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}} \right)$ $\%ID_{ENV} = \frac{I_R D_{ENV}}{I_{max} D_{ENV}}$
Research and Innovation	$I_R D_{RI} = \frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}} + 0.25 \left(\frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}} + \frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}} + \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}} \right) + 0.50 \left(\frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + \frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} \right)$ $\%ID_{RI} = \frac{I_R D_{RI}}{I_{max} D_{RI}}$

Quality of services	$I_R D_{QS} = 0.50\left(\frac{\sum_j P_R I_j D_{ENV}}{\sum_j P_{max} I_j D_{ENV}} + \frac{\sum_j P_R I_j D_{SW}}{\sum_j P_{max} I_j D_{SW}} + \frac{\sum_j P_R I_j D_{PI}}{\sum_j P_{max} I_j D_{PI}} + \frac{\sum_j P_R I_j D_{ET}}{\sum_j P_{max} I_j D_{ET}} + \frac{\sum_j P_R I_j D_{RI}}{\sum_j P_{max} I_j D_{RI}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{LCH}}{\sum_j P_{max} I_j D_{LCH}} + \frac{\sum_j P_R I_j D_{WLB}}{\sum_j P_{max} I_j D_{WLB}} + \frac{\sum_j P_R I_j D_{SR}}{\sum_j P_{max} I_j D_{SR}}\right)$ $\%ID_{QS} = \frac{I_R D_{QS}}{I_{max} D_{QS}}$
SDGs 1[24]	$I_R D_1 = 0.25\left(\frac{\sum_j P_R I_j D_7}{\sum_j P_{max} I_j D_7} + \frac{\sum_j P_R I_j D_{10}}{\sum_j P_{max} I_j D_{10}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8} + \frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_{16}}{\sum_j P_{max} I_j D_{16}} + \frac{\sum_j P_R I_j D_{15}}{\sum_j P_{max} I_j D_{15}} + \frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}} + \frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}}\right)$ $\%ID_1 = \frac{I_R D_1}{I_{max} D_1}$
SDGs 2	$I_R D_2 = 0.25\left(\frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8} + \frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9} + \frac{\sum_j P_R I_j D_{15}}{\sum_j P_{max} I_j D_{15}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}}\right)$ $\%ID_2 = \frac{I_R D_2}{I_{max} D_2}$
SDGs 3	$I_R D_3 = 0.25\left(\frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}} + \frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9}\right) + 0.50\left(\frac{\sum_j P_R I_j D_7}{\sum_j P_{max} I_j D_7} + \frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}} + \frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8}\right)$

[24] In formula, SDGs are abbreviated by indicating only their numbers

	$\%ID_3 = \frac{I_R D_3}{I_{max} D_3}$
SDGs 4	$I_R D_4 = \frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + 0.25\left(\frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}} + \frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_{16}}{\sum_j P_{max} I_j D_{16}} + \frac{\sum_j P_R I_j D_7}{\sum_j P_{max} I_j D_7}\right) + 0.50\left(\frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}} + \frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9} + \frac{\sum_j P_R I_j D_{10}}{\sum_j P_{max} I_j D_{10}}\right) + 0.75\left(+\frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8}\right)$ $\%ID_4 = \frac{I_R D_4}{I_{max} D_4}$
SDGs 5	$I_R D_5 = 0.25\left(\frac{\sum_j P_R I_j D_7}{\sum_j P_{max} I_j D_7} + \frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}} + \frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_{16}}{\sum_j P_{max} I_j D_{16}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}}\right)$ $\%ID_5 = \frac{I_R D_5}{I_{max} D_5}$
SDGs 6	$I_R D_6 = 0.25\left(\frac{\sum_j P_R I_j D_7}{\sum_j P_{max} I_j D_7} + \frac{\sum_j P_R I_j D_{10}}{\sum_j P_{max} I_j D_{10}} + \frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8} + \frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_{16}}{\sum_j P_{max} I_j D_{16}} + \frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_{15}}{\sum_j P_{max} I_j D_{15}} + \frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}}\right)$ $\%ID_6 = \frac{I_R D_6}{I_{max} D_6}$
SDGs 7	$I_R D_7 = \frac{\sum_j P_R I_j D_7}{\sum_j P_{max} I_j D_7} + 0.25\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}}\right)$

	$\%ID_7 = \frac{I_R D_7}{I_{max} D_7}$
SDGs 8	$I_R D_8 = \frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8} + 0.25\left(\frac{\sum_j P_R I_j D_{16}}{\sum_j P_{max} I_j D_{16}} + \frac{\sum_j P_R I_j D_{10}}{\sum_j P_{max} I_j D_{10}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9}\right) + 0.75\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}}\right)$ $\%ID_8 = \frac{I_R D_8}{I_{max} D_8}$
SDGs 9	$I_R D_9 = \frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9} + 0.25\left(\frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}} + \frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}} + \frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8} + \frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4}\right)$ $\%ID_9 = \frac{I_R D_9}{I_{max} D_9}$
SDGs 10	$I_R D_{10} = \frac{\sum_j P_R I_j D_{10}}{\sum_j P_{max} I_j D_{10}} + 0.25\left(+\frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8}\right) + 0.50\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4}\right)$ $\%ID_{10} = \frac{I_R D_{10}}{I_{max} D_{10}}$
SDGs 11	$I_R D_{11} = \frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + 0.25\left(\frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}} + \frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}} + \frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_7}{\sum_j P_{max} I_j D_7} + \frac{\sum_j P_R I_j D_{10}}{\sum_j P_{max} I_j D_{10}} + \frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9}\right) + 0.50\left(\frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8} + \frac{\sum_j P_R I_j D_{15}}{\sum_j P_{max} I_j D_{15}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}} + \frac{\sum_j P_R I_j D_{16}}{\sum_j P_{max} I_j D_{16}}\right)$

	$\%ID_{11} = \frac{I_R D_{11}}{I_{max} D_{11}}$
SDGs 12	$I_R D_{12} = \frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}} + 0.25\left(\frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9} + \frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_{15}}{\sum_j P_{max} I_j D_{15}} + \frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}} + \frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4}\right) + 0.75\left(\frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8} + \frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}}\right)$ $\%ID_{12} = \frac{I_R D_{12}}{I_{max} D_{12}}$
SDGs 13	$I_R D_{13} = \frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}} + 0.25\left(\frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9} + \frac{\sum_j P_R I_j D_{15}}{\sum_j P_{max} I_j D_{15}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}}\right)$ $\%ID_{13} = \frac{I_R D_{13}}{I_{max} D_{13}}$
SDGs 14	$I_R D_{14} = \frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}} + 0.25\left(\frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9} + \frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}}\right)$ $\%ID_{14} = \frac{I_R D_{14}}{I_{max} D_{14}}$
SDGs 15	$I_R D_{15} = \frac{\sum_j P_R I_j D_{15}}{\sum_j P_{max} I_j D_{15}} + 0.25\left(\frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}} + \frac{\sum_j P_R I_j D_{13}}{\sum_j P_{max} I_j D_{13}}\right)$ $\%ID_{14} = \frac{I_R D_{15}}{I_{max} D_{15}}$

SDGs 16	$I_R D_{16} = \frac{\sum_j P_R I_j D_{16}}{\sum_j P_{max} I_j D_{16}} + 0.25\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8}\right) + 0.75\left(\frac{\sum_j P_R I_j D_{11}}{\sum_j P_{max} I_j D_{11}}\right)$ $\%ID_{16} = \frac{I_R D_{16}}{I_{max} D_{16}}$
SDGs 17	$I_R D_{17} = 0.25\left(\frac{\sum_j P_R I_j D_4}{\sum_j P_{max} I_j D_4} + \frac{\sum_j P_R I_j D_8}{\sum_j P_{max} I_j D_8} + \frac{\sum_j P_R I_j D_{10}}{\sum_j P_{max} I_j D_{10}} + \frac{\sum_j P_R I_j D_{12}}{\sum_j P_{max} I_j D_{12}} + \frac{\sum_j P_R I_j D_{16}}{\sum_j P_{max} I_j D_{16}}\right) + 0.50\left(\frac{\sum_j P_R I_j D_9}{\sum_j P_{max} I_j D_9}\right) + 0.75\left(+\frac{\sum_j P_R I_j D_{14}}{\sum_j P_{max} I_j D_{14}}\right)$ $\%ID_{17} = \frac{I_R D_{17}}{I_{max} D_{17}}$

Source: NeXt CeSVa

Drawing from the results obtained from a NeXt Participatory Self-Assessment Survey 2.0 (Table A4.3 e A4.4) distributed in real life, the table A4.5 offers an example to the reader and helps to understand the methodology applied.

Table A4.3 – Scores obtained from NeXt Participatory Self-Assessment Survey 2.0 indicators (example)

Indicator	Score obtained	BES domain	SDGs
1.1	5	Politics and Institutions	16
1.2	1	Politics and Institutions	16
1.3	3	Politics and Institutions	12
1.4	5	Politics and Institutions	8
1.5	5	Work and life-time balance	10
2.1	5	Work and life-time balance	8
2.2	3	Work and life-time balance	8
2.3	5	Politics and Institutions	8
2.4	1	Work and life-time balance	8
2.5	5	Education and training	8
3.1	5	Social relations	12
3.2	2	Education and training	4
3.3	5	Research and innovation	9
3.4	3	Subjective well-being	12

3.5	4	Education and training	12
4.1	5	Social relations	12
4.2	1	Social relations	12
4.3	1	Social relations	12
4.4	5	Social relations	12
4.5	1	Social relations	12
5.1	5	Environment	13
5.2	5	Environment	12
5.3	2	Environment	7
5.4	1	Education and training	4
5.5	1	Environment	14/15
6.1	2	Social relations	11
6.2	4	Social relations	11
6.3	1	Landscape and cultural heritage	11
6.4	5	Work and life-time balance	8
6.5	1	Social relations	16

Source: CeSVa based on NeXt (2021)

Table A4.4 – Direct commitment in BES domains and SDGs (example)

BES domains	Direct commitment	SDGs	Direct commitment
Politics and institutions	0.76	4	0.3
Education and training	0.6	7	0.4
Work and life-time balance	0.76	8	0.83
Social relations	0.55	9	1
Environment	0.65	10	1
Research and innovation	1	11	0.47
Subjective well-being	0.6	12	0.66
Landscape and cultural heritage	0.2	13	1
		14	0.2
		15	0.2
		16	0.47

Source: CeSVa based on NeXt (2021)

Table A4.5 – Total commitment in BES domains and SDGs (example)

BES domains/SDGs	Calculating total commitment
Health	$I_R D_{HEA}$=0.50(1+0.65+0.6+0.76+0.6+0.55) + 0.75(0.2+0.76)=2.8 $I_{max} D_{HEA}$=4.5 → $\%ID_{HEA}$=2.8*100/4.5=62.22%
Education and training	$I_R D_{ET}$=0.6+0.25(0.55) + 0.5(0.2+1+0.76+0.76+0.65)=2.4225

	$I_{max}D_{ET}$=3.75 → $\%ID_{ET}$=2.4225*100/3.75=64.6%
Work and life-time balance	I_RD_{WLB}=0.76+0.25(1) + 0.5(0.65+0.6+0.76+0.6)+0.75(0.2+0.55)=2.8775 $I_{max}D_{WLB}$=4.75 → $\%ID_{WLB}$=2.8775*100/4.75=60.58%
Economic well-being	I_RD_{EW}=0.50(0.6+1+0.76+0.6+0.65) + 0.75(0.2+0.76+0.55)=2.9375 $I_{max}D_{EW}$=4.75 → $\%ID_{EW}$=2.9375*100/4.75=61.84%
Social relations	I_RD_{SR}=0.55+0.25(0.6+1) + 0.5(0.76+0.6+0.65)+0.75(0.2+0.76)=2.675 $I_{max}D_{SR}$=4.5 → $\%ID_{SR}$=2.7775*100/4.5=59.44%
Politics and institutions	I_RD_{PI}=0.76+0.25(0.65) + 0.5(0.6+0.76+0.55+1+0.2+0.6)=2.7775 $I_{max}D_{PI}$=4.25 → $\%ID_{PI}$=2.7775*100/4.25=65.35%
Safety	I_RD_{SAF}=0.25(0.6) + 0.5(0.65)=0.475 $I_{max}D_{SAF}$=0.75 → $\%ID_{SAF}$=2.7775*100/0.75=63.33%
Subjective well-being	I_RD_{SW}=0.6+0.25(0.6+1) + 0.5(0.55+0.76+0.2+0.76+0.65)=2.46 $I_{max}D_{SW}$=3.5 → $\%ID_{SW}$=2.46*100/3.5=70.28%
Landscape and cultural heritage	I_RD_{LCH}=0.2+0.50(0.76+0.6+0.65+1+0.6) + 0.75(0.76+0.55)=2.9875 $I_{max}D_{LCH}$=5 → $\%ID_{LCH}$=2.9875*100/5=59.75%
Environment	I_RD_{ENV}=0.65+0.25(0.76) + 0.5(0.6+0.76+0.55+0.2+0.6)=2.195 $I_{max}D_{ENV}$=3.75 → $\%ID_{ENV}$=2.195*100/3.75=58.53%
Research and innovation	I_RD_{RI}=1+0.25(0.76+0.55+0.6) + 0.5(0.2+0.76+0.6)=2.2575 $I_{max}D_{RI}$=3

	→ $\%ID_{RI}$=2.2575*100/3=75.25%
Quality of services	I_RD_{QS}=0.50(0.65+0.6+0.76+0.6+1) + 0.75(0.2+0.76+0.55)=2.9375 $I_{max}D_{QS}$=4.75 → $\%ID_{QS}$=2.9375*100/4.75=61.84%
SDGs 1	I_RD_1=0.25(0.4+1) + 0.50(0.83+1)+0.75(0.47+0.3+0.47+0.2+0.2+1)=3.245 $I_{max}D_1$=6 → $\%ID_1$=3.245*100/6=54.08%
SDGs 2	I_RD_2=0.25(0.47+0.83+1+0.2) + 0.5(0.3+0.2)=0.875 $I_{max}D_2$=2 → $\%ID_2$=0.875*100/2=43.75%
SDGs 3	I_RD_3=0.25(0.66+1) + 0.5(0.4+1+0.47)+0.75(0.3+0.83)=2.1975 $I_{max}D_3$=3.5 → $\%ID_3$=2.1975*100/3.5=62.78%
SDGs 4	I_RD_4=0.3+0.25(0.66+0.47+0.47+0.4) + 0.5(1+1+1)+0.75(0.83)=2.9225 $I_{max}D_4$=4.25 → $\%ID_4$=2.9225*100/4.25=68.76%
SDGs 5	I_RD_5=0.25(0.4+0.47+1+0.66) + 0.5(0.47)+0.75(0.3+0.2)=1.2425 $I_{max}D_5$=3 → $\%ID_5$=1.2425*100/3=41.42%
SDGs 6	I_RD_6=0.25(0.4+1+0.83+0.2) + 0.5(0.3+0.47+0.47+0.2+1)=1.8275 $I_{max}D_6$=3.5 → $\%ID_6$=1.8275*100/3.5=52.21%
SDGs 7	I_RD_7=0.4+0.25(0.3+0.47)=0.5925 $I_{max}D_7$=1.5 → $\%ID_7$=0.5925*100/1.5=39.5%
SDGs 8	I_RD_8=0.83+0.25(0.47+1) + 0.5(0.47+1)+0.75(0.3+0.66)=2.6525 $I_{max}D_8$=4 → $\%ID_8$=2.6525*100/4=66.31%

SDGs 9	$I_R D_9$=1+0.25(0.66+0.47+0.2) + 0.5(1+0.83+0.3)=2.3975 $I_{max} D_9$=3.25 → $\%ID_9$=2.3975*100/3.25=73.77%
SDGs 10	$I_R D_{10}$=1+0.25(0.47+0.83) + 0.5(0.3)=1.475 $I_{max} D_{10}$=2 → $\%ID_{10}$=1.475*100/2=73.75%
SDGs 11	$I_R D_{11}$=0.47+0.25(0.66+0.2+0.3+0.4+1+1) + 0.5(0.83+0.2)+0.75(1+0.47)=2.9775 $I_{max} D_{11}$=5 → $\%ID_{11}$=2.9775*100/5=59.55%
SDGs 12	$I_R D_{12}$=0.66+0.25(1+0.47+0.2+1+0.3) + 0.75(0.83+0.2)=2.175 $I_{max} D_{12}$=3.75 → $\%ID_{12}$=2.175*100/3.75=58%
SDGs 13	$I_R D_{13}$=1+0.25(0.66) + 0.5(0.3+1+0.2)+0.75(0.47+0.2)=2.4175 $I_{max} D_{13}$=4.25 → $\%ID_{13}$=2.4175*100/4.25=56.88%
SDGs 14	$I_R D_{14}$=0.2+0.25(1+0.47) + 0.75(1)=1.3175 $I_{max} D_{14}$=2.25 → $\%ID_{14}$=1.3175*100/2.25=58.55%
SDGs 15	$I_R D_{15}$=0.2+0.25(0.66) + 0.5(0.47+1)=1.1 $I_{max} D_{15}$=2.25 → $\%ID_{15}$=1.1*100/2.25=48.89%
SDGs 16	$I_R D_{16}$=0.47+0.25(0.3+0.83)+0.75(0.47)=1.105 $I_{max} D_{16}$=2.25 → $\%ID_{16}$=1.105*100/2.25=49.11%
SDGs 17	$I_R D_{17}$=0.25(0.3+0.83+1+0.66+0.47) + 0.5(1)+0.75(0.2)=1.465 $I_{max} D_{17}$=2.5 → $\%ID_{17}$=1.465*100/2.5=58.6%

Source: NeXt CeSVa based on NeXt (2021)