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Monitoring the Performance of Sustainable Development Goals in the Italian Regions

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Abstract: The Sustainable Development Goals (SDGs) are a shared agenda among countries but also a rallying point for forward-looking policy dialogue. Analysis and monitoring of the SDGs are decisive steps in evaluating possible corrective actions. This paper aims to reach two research objectives: (i) providing methodological insights for the application of multicriteria decision analysis (MCDA) in the evaluation of the SDGs and (ii) emphasizing the relevance of monitoring the outcomes of the SDGs by evaluating the Italian regions. For the first objective, an online survey among twenty academics is used, while for the second, an MCDA is proposed that compares the temporal performance of a sustainability score for each Italian region. The results, based on 27 targets, show that in 2021 the northern regions showed better performance, with the province of Trento topping the list. This is followed by Valle d'Aosta and the province of Bolzano, confirming the trio that emerged in the previous year. A very interesting fact is the growth of the central regions, which overall tend to reach a value close to that of the northern regions. In particular, Toscana, Marche and Lazio stand out for a good performance. It is also confirmed that the southern regions occupy the last places in the ranking with the only exception of Abruzzo. The implications of this paper suggest collaboration between different regions in order to achieve a social community in which resources and skills can be enhanced.

Keywords: Italy; monitoring; multicriteria decision analysis; performance indicators; sustainable development goals; sustainability

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1. Introduction

The topic of Sustainable Development Goals (SDGs) shows a very growing trend in the literature. A major problem in assessing the SDGs is the multiplicity of aspects to be considered and the different scales [1], but also the relationships among the indicators [2]. While, in fact, SDG 5 (Gender Equality) has the most relationships, unlike SDG 7 (Affordable and Clean Energy) [3], the literature has placed more emphasis on SDG 3 (Good Health and Well-Being) followed by SDG 2 (Zero Hunger) and SDG 1 (No Poverty), and less on SDG 14 (Life Below Water) and SDG 16 (Peace and Justice Strong Institutions) [4]. Thus, to achieve the 2030 Agenda, synergies among the goals must be exploited and suitable trade-offs should be identified [5].

Climate change, health and global governance puts the SDGs at the center of research [6], but nevertheless, care must be taken to avoid sustainable washing phenomena by favoring a pragmatic approach [4]. Markets are characterized by new economic models, as it has been shown that gross domestic product does not capture the full economic dimension of sustainability, and an overcoming of the selfish view that may characterize some stakeholders emerges in importance [7]. Another key aspect is cooperation to support economic exchanges, foster technological innovation and develop a global culture of sustainable development [8]. One issue to be resolved is the structural distances between actors

and the consequences of their acts, and policy has the task of reducing and eliminating them [9]. Thus, it is necessary to think of the SDGs as a shared agenda among different countries, but they are also a proposed meeting point for forward-looking policy and programmatic dialogue. Indeed, there is a problem of fragmentation in global sustainability governance [10]. Therefore, improvements in green technological innovation can be identified [11], but a balance between the digital economy and industrial eco-efficiency needs to be identified [12]. Similarly, there is also a need for policies to encourage sustainable monetary supply [13] through public–private partnership [14].

In addition, analyses on the SDGs require appropriate policies because otherwise their achievement is at risk [15] and it is necessary to assess which policies are most appropriate [16] by fostering a global partnership between developed and developing countries [17]. Some authors emphasize how achieving the SDGs requires each city government to demonstrate its support toward these goals and congruity with global sustainability [18]. Along this direction, cities' progress toward SDGs can be proposed according to seven directions (economy, environment, human, operations, organization, society and staff). In particular, the criteria considered most relevant are sustainable policy and green public investments, and rationing public spending and political stability also show important relevance [19]. In addition, public administrators can put data-driven policy targets into their government programs [20].

The relationship between indicators on the SDGs and policy implications is an essential aspect of their achievement [21], and the literature highlights the key role of indicators in monitoring progress. Therefore, it is necessary to measure and monitor progress toward the SDGs [22,23]. It is useful to create a sustainable development index and dashboard to track countries' development in relation to the SDGs [24]. Analyses can be conducted at various levels, concerning a single country [25], as a comparison of several countries [23] or arriving at a global view [26]. Thus, the use of statistical methods supports assessments of sustainability goals [27,28], and the analyses need to integrate different information [29,30]. According to the literature, ranking various options is likely to raise awareness and accountability for achieving the SDGs [31,32]. The use of multicriteria decision analysis (MCDA) can aggregate different data to compare several territories [33]. The MCDA is used to measure the performance of Italian regions, and monitoring their performance is crucial to the achievement of the SDGs [24]. This paper covers two research objectives (ROs):

RO1—The first is to provide methodological insights for the application of MCDA in the evaluation of the SDGs.

RO2—The second is to emphasize the relevance of monitoring the outcomes of the SDGs by evaluating the Italian regions.

The methodological implications of RO1 can be used in other MCDAs to be implemented in different geographical contexts. RO2 can provide policy-makers with information regarding the roles and degrees of satisfaction of the different SDGs. This will help indicate where to focus future investments so as to foster sustainable development in different regions. This approach needs to be applied from both local and national perspectives, fostering interregional collaborations for sustainability.

The paper is organized as follows: after this introduction, the methodology and dataset used are presented in Section 2, where the online survey among academics and the MCDA are proposed. The results for the two ROs are proposed in Section 3, and discussion are presented in Section 4. Section 5 shows the conclusions.

2. Materials and Methods

This section consists of an analysis of an online survey among academics to assess insights on MCDA versus the SDGs (Section 2.1—RO1) and a description of MCDA and related data used in this paper (Section 2.2—RO2).

2.1. Survey with Academic Experts

Expert surveys are a method used in studies described in the literature to enhance their backgrounds in order to provide useful implications for the development of the topic examined [25,26]. In this paper, we want to consider what approaches may be most useful for conducting MCDA. Responses can be scored from 0% to 100%. The content of the email sent to experts described the purpose of the paper, the time to complete the questionnaire (maximum 5 min), the methodology used, and that only the first 20 responses would be included. In addition, it was specified that anonymity would be guaranteed. Other works in the literature use samples with the same number of observations [19,27]. The list of profiles to contact was chosen by looking at the Scopus database [28] and identifying academics with at least ten years of experience and expertise on SDG issues [19].

These authors were identified from those who published several papers with the word SDG in the title, abstract or keywords. Approximately one hundred emails were forwarded, and among the twenty responses obtained (Table 1), five of them were received from women (25%). In addition, eleven of these twenty experts work in Europe. The survey was conducted in August 2023.

Table 1. List of academic experts.

Number	Role	Country	Years of Experience
E1	Professor	France	16
E2	Professor	Spain	11
E3	Professor	India	14
E4	Professor	Sweden	13
E5	Professor	Italy	11
E6	Professor	Spain	12
E7	Professor	Italy	13
E8	Professor	Germany	15
E9	Professor	Italy	18
E10	Professor	India	20
E11	Professor	China	18
E12	Professor	Canada	12
E13	Professor	Australia	14
E14	Professor	Bangladesh	11
E15	Professor	Cyprus	19
E16	Professor	Greece	14
E17	Professor	China	16
E18	Professor	USA	18
E19	Professor	Poland	11
E20	Professor	Brazil	12

Before being sent, the questions were submitted to the attention of two colleagues who have opened discussions on the special issues on SDG themes and have more than ten years of experience each. Some suggestions were implemented. This initial survey was done through a video call lasting about half an hour. Table 2 presents the nine questions submitted to the twenty academics who participated in the online survey. Experts could provide comments.

Table 2. List of questions.

Number	Question
Q1	How useful do you think MCDA is as a method for assessing the SDGs?
Q2	How congruous do you think the number of public indicators on the SDGs is?
Q3	How robust do you think an indicator composed of 27 targets is for assessing individual local realities?
We proceed below to evaluate the approach related to values and weights, where it is specified that answers should be provided for a small sample of targets (about 30).	
Q4	How valid do you think the 0–1 range approach is (0 = weak performance; 1 = strong performance)?
Q5	How valid do you think the maximum value approach is as a benchmark (1 = strong performance)?
Q6	How valid do you think equal weight among SDGs (EWG) scenario is?
Q7	How valid do you think equal weight among indicators (EWI) scenario is?
Finally, two final questions are provided on the possible decomposition of the results obtained.	
Q8	How useful do you think it is to break down the final data according to the three dimensions of sustainability?
Q9	How useful do you think it is to break down the final figure according to geographic macro-areas?

2.2. Multicriteria Decision Analysis

MCDA synthesizes a large multiplicity of data, also considering their different nature and belonging to different concepts. The method is widely used in the literature to make comparisons between different geographical realities, and the initial objective is to arrive at a ranking among different alternatives in order to provide insights for the decision-maker [29]. Thus, we can identify three precise stages:

- The first step is to assign suitable criteria to achieve this goal;
- The second step is to assign weights and values to these criteria;
- The third step is to aggregate the different information obtained, calculating the sustainability score of each alternative.

One of the major limitations is the lack of dynamicity, such that evaluation of the interactions between the different variables does not occur.

MCDA falls under the field of operations research, and the final results can be decomposed to understand which criteria affect the others the most. In addition, strengths and weaknesses can be ranked for each alternative, and how the trend varies over the years can be measured. The alternatives are represented by the geographic realities, which in this paper are the twenty regions of Italy (considering, for the Trentino Alto Adige region, the decomposition into the two provinces of Bolzano and Trento)—Figure 1.

The accuracy of these analyses depends on their data reliability, and for this reason, the data released by ASviS (Italian Alliance for Sustainable Development) are used, an approach already used in the literature [30,31], given the active role that ASviS plays in providing recent and reliable data.

This paper aims to monitor the data comparing the 2021 and 2022 ASviS reports [31,32], where 26 targets were confirmed, while two targets were not re-proposed: (i) target 4.1 (a)—By 2030, reduce the number of students who do not reach the sufficient level of numerical proficiency (18–19 years old) below the 15% quota and (ii) target 4.1 (b)—By 2030, reduce the number of students who do not reach the sufficient level of literacy proficiency (18–19 years old) below the 15% quota. Instead, this paper, in accordance with the new report released by ASviS for 2022, considers a new target [33]: by 2027 to reach at least 33% of placement in early childhood education services (3–36 months). Specifically, the latest report shows values for 27 targets attributable to 16 of the 17 SDGs (SDG 17 is absent)—Table 3.

Figure 1. The map of Italy.

Table 3. List of criteria.

SDG	Target	Unit
SDG 1	Target 1.2—By 2030 reduce the number of people at risk of poverty or social exclusion by 16% compared to 2020	%
SDG 2	Target 2.4 (a)—By 2030 reduce the use of fertilizer distributed in non-organic agriculture by 20% compared to 2020	quintals per ha
SDG 2	Target 2.4 (b)—By 2030 achieve the 25% share of UAA invested by organic crops	%
SDG 3	Target 3.4—By 2025 reduce the probability of dying from no communicable diseases by 25% compared to 2013	%
SDG 3	Target 3.6—By 2030 reduce road traffic injuries by half compared to 2019	per 10,000 population
SDG 4	Target 4.1—By 2030 reduce early exit from education and training (18–24 years old) below the 9% rate	%
SDG 4	Target 4.2—By 2027 achieve at least 33% of places in early childhood education services (3–36 months)	%
SDG 4	Target 4.3—By 2030 to reach the 50% share of college graduates (30–34 years old)	%
SDG 5	Target 5.5—By 2030 to halve the gender employment gap compared to 2020	females/males * 100
SDG 6	Target 6.3—By 2027 ensure high or good ecological quality status for all surface water bodies	%
SDG 6	Target 6.4—By 2030 achieve 90% efficiency share of drinking water distribution networks	%
SDG 7	Target 7.2—By 2030 achieve at least 45% share of energy from renewable sources	%
SDG 7	Target 7.3—By 2030 to reduce final energy consumption by at least 20% compared to 2020	ktoe per 10,000 population
SDG 8	Target 8.5—By 2030 achieve 78% share of the employment rate (20–64 years old)	%
SDG 8	Target 8.6—By 2030 reduce the share of NEETs to below 9% (15–29 years old)	%
SDG 9	Target 9.5—By 2030 achieve the share of 3% of GDP devoted to research and development	%
SDG 9	Target 9.c—By 2026 ensure that all households have coverage to the Gigabit network	%
SDG 10	Target 10.4—By 2030 reduce net income inequality (S80/S20) to levels observed in the best of European countries	s80/s20
SDG 11	Target 11.2—By 2030 increase public transport seat-km per inhabitant offered by 26% compared to 2004	places-Km per inhabitant
SDG 11	Target 11.6—By 2030 reduce PM10 exceedances to below 3 days per year	days

Table 3. *Cont.*

SDG	Target	Unit
SDG 12	Target 12.4—By 2030 reduce the share of municipal waste generated per capita by 26% compared to 2004	kg/inhab.* year
SDG 13	Target 13.2—By 2030 reduce emissions of CO_2 and other climate-altering gases by 55% from 1990 levels	ton CO_2 equivalent per capita
SDG 14	Target 14.5—By 2030 achieve 30% share of marine protected areas	%
SDG 15	Target 15.3—By 2050 achieve zero increase in annual land consumption	ha per 100,000 population
SDG 15	Target 15.5—By 2030 achieve 30% share of terrestrial protected areas	%
SDG 16	Target 16.3—By 2030 achieve zero overcrowding in penal institutions	%
SDG 16	Target 16.7—By 2026 reduce the average duration of civil proceedings by 40 percent compared to 2019	days

In particular, it emerges that SDG 4 is the one most represented, with 3 targets, while there are 2 targets for the following SDGS: 2, 3, 6, 7, 8, 9, 11, 15 and 16. The remaining 6 targets refer to SDGs 1, 5, 10, 12, 13 and 14, while SDG 17 is absent.

Another observation concerns the reference year related to the target data. In fact, for 12 targets, it is 2021 (targets 1.2, 2.4 (a), 2.4 (b), 3.6, 4.1, 4.3, 5.5, 8.5, 8.6, 15.3, 16.3 and 16.7), while for 10 other targets, it is earlier than 2021 (targets 3.4, 4.2, 6.3, 6.4, 9.5, 11.2, 11.6, 12.4, 14.5 and 15.3). Finally, for 5 targets, the Italian figure is 2021, while that of individual regions is before 2021 (targets 7.2, 7.3, 9.c, 10.4, 13.2). It should also be pointed out that the latest available data are used.

The product between a value and the weights associated with the various criteria was the basis for the overall sustainability indicator, which was calculated for all alternatives. Having completed the first stage of the multicriteria analysis, we proceeded to examine whether the data are homogeneous with each other or not, and it emerged that they are all comparable. Thus, the more populous regions have data that can be compared with the less populous ones. Particular mention should be made of target 14.5, whose value is not proposed for six regions (Piemonte, Valle d'Aosta, Lombardia, the province of Bolzano, the province of Trento and Umbria). A number of 26 targets is therefore considered for these six regions. Instead, when the value 0 is proposed, it is considered as input data.

The second step was to assign weights and values to the criteria for the different alternatives. A value of 1 was assigned to the most relevant performance and 0 to the least relevant performance. In addition, an intermediate value was assigned to the other alternatives using the interpolation method. The choice of the normalized method is the one that emerges most from the indications from the literature [7]. In addition, this choice was verified before presenting RO2 results by examining what emerged from RO1.

Table 4 proposes all the values assigned to the 21 alternatives. Two assumptions are considered: (i) Italy's data for target 11.6 is estimated as a function of population and (ii) the maximum value for target 7.2 is considered to be 100%.

Table 4. List of values. IT = Italy; A1 = Piemonte; A2 = Valle d'Aosta; A3 = Liguria; A4 = Lombardia; A5 = Province Bolzano; A6 = Province Trento; A7 = Veneto; A8 = Friuli Venezia Giulia; A9 = Emilia Romagna; A10 = Toscana; A11 = Umbria; A12 = Marche; A13 = Lazio; A14 = Abruzzo; A15 = Molise; A16 = Campania; A17 = Puglia; A18 = Basilicata; A19 = Calabria; A20 = Sicilia; A21 = Sardegna.

Target	IT	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
1.2	0.617	0.794	0.938	0.706	0.851	1.000	0.886	0.828	0.848	0.970	0.821
2.4 (a)	0.634	0.521	1.000	0.676	0.000	0.972	0.958	0.028	0.479	0.183	0.831
2.4 (b)	0.449	0.102	0.000	0.335	0.087	0.122	0.198	0.111	0.219	0.455	0.968
3.4	0.583	0.528	0.833	0.583	0.722	0.917	1.000	0.889	0.667	0.833	0.667
3.6	0.636	0.717	0.854	0.000	0.655	0.574	0.809	0.650	0.730	0.377	0.280
4.1	0.625	0.721	0.522	0.610	0.728	0.610	0.912	0.875	0.926	0.831	0.743
4.2	0.491	0.600	0.897	0.627	0.591	0.370	0.815	0.609	0.721	0.900	0.806

Table 4. *Cont.*

Target	IT	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
4.3	0.559	0.596	0.615	0.522	0.839	0.429	0.988	0.807	0.509	0.981	0.696
5.5	0.546	0.747	1.000	0.694	0.755	0.794	0.850	0.677	0.744	0.772	0.766
6.3	0.384	0.503	0.874	0.707	0.260	0.933	0.826	0.340	0.388	0.248	0.298
6.4	0.406	0.585	1.000	0.448	0.770	0.857	0.648	0.439	0.296	0.728	0.382
7.2	0.107	0.137	1.000	0.000	0.076	0.660	0.432	0.116	0.146	0.044	0.114
7.3	0.388	0.313	0.013	0.650	0.313	0.181	0.163	0.231	0.031	0.000	0.456
8.5	0.581	0.808	0.866	0.751	0.866	1.000	0.895	0.840	0.888	0.927	0.831
8.6	0.574	0.743	0.796	0.726	0.778	1.000	0.813	0.974	0.874	0.922	0.800
9.5	0.529	1.000	0.000	0.529	0.471	0.176	0.588	0.471	0.647	0.882	0.588
9.c	0.920	0.697	0.127	0.984	0.636	0.000	0.352	0.376	0.434	0.592	0.516
10.4	0.368	0.737	0.921	0.447	0.632	0.921	0.816	0.789	0.868	0.816	0.737
11.2	0.371	0.373	0.018	0.328	1.000	0.309	0.354	0.457	0.330	0.217	0.206
11.6	0.367	0.022	0.944	0.944	0.000	0.967	0.900	0.022	0.578	0.167	0.622
12.4	0.512	0.515	0.095	0.393	0.576	0.597	0.522	0.549	0.478	0.000	0.180
13.2	0.519	0.432	0.247	0.494	0.531	0.457	0.469	0.259	0.667	0.284	0.617
14.5	0.370			0.130				0.000	0.109	0.000	1.000
15.3	0.730	0.597	0.803	1.000	0.790	0.777	0.853	0.617	0.813	0.590	0.820
15.5	0.331	0.203	0.436	0.124	0.150	0.556	0.853	0.128	0.192	0.094	0.165
16.3	0.442	0.518	0.917	0.252	0.085	0.000	1.000	0.222	0.128	0.403	0.598
16.7	0.609	0.919	1.000	0.853	0.834	0.953	0.946	0.797	0.951	0.842	0.733
Target	**A11**	**A12**	**A13**	**A14**	**A15**	**A16**	**A17**	**A18**	**A19**	**A20**	**A21**
1.2	0.851	0.908	0.600	0.425	0.428	0.000	0.438	0.440	0.226	0.167	0.408
2.4 (a)	0.775	0.746	0.732	0.789	0.944	0.704	0.775	0.915	0.845	0.887	0.944
2.4 (b)	0.446	0.685	0.653	0.347	0.143	0.510	0.592	0.714	1.000	0.630	0.297
3.4	0.833	0.972	0.444	0.639	0.472	0.000	0.611	0.556	0.417	0.306	0.444
3.6	0.730	0.439	0.480	0.765	1.000	0.957	0.604	0.911	0.987	0.760	0.809
4.1	0.676	0.978	0.882	0.971	1.000	0.353	0.265	0.919	0.529	0.000	0.588
4.2	1.000	0.606	0.736	0.436	0.324	0.000	0.261	0.318	0.027	0.045	0.597
4.3	1.000	0.689	0.776	0.578	0.950	0.211	0.081	0.429	0.236	0.000	0.248
5.5	0.738	0.652	0.621	0.379	0.203	0.000	0.067	0.223	0.070	0.022	0.632
6.3	0.000	0.344	0.342	0.346	0.010	0.301	0.011	0.025	1.000	0.571	0.507
6.4	0.030	0.648	0.075	0.000	0.299	0.301	0.313	0.313	0.319	0.152	0.131
7.2	0.175	0.125	0.036	0.218	0.348	0.136	0.123	0.485	0.391	0.068	0.217
7.3	0.188	0.694	0.794	0.538	0.613	1.000	0.625	0.619	0.913	0.950	0.725
8.5	0.792	0.780	0.636	0.562	0.364	0.016	0.192	0.390	0.032	0.000	0.399
8.6	0.743	0.883	0.639	0.661	0.374	0.096	0.248	0.483	0.122	0.000	0.552
9.5	0.235	0.235	0.824	0.235	0.294	0.412	0.176	0.059	0.000	0.176	0.176
9.c	0.392	0.115	1.000	0.268	0.033	0.840	0.455	0.178	0.150	0.577	0.225
10.4	0.842	1.000	0.395	0.789	0.789	0.000	0.395	0.842	0.289	0.079	0.368
11.2	0.114	0.147	0.508	0.158	0.000	0.120	0.130	0.048	0.099	0.106	0.234
11.6	0.422	0.678	0.144	0.811	1.000	0.133	0.889	0.900	0.911	0.844	0.578
12.4	0.451	0.468	0.502	0.627	0.922	0.641	0.573	1.000	0.878	0.661	0.661
13.2	0.432	0.728	0.778	0.704	0.111	1.000	0.296	0.185	0.654	0.617	0.000
14.5		0.000	0.109	0.261	0.000	0.435	0.217	0.000	0.196	0.478	0.413
15.3	0.657	0.780	0.850	0.000	0.480	0.800	0.663	0.617	0.937	0.750	0.710
15.5	0.218	0.297	0.410	1.000	0.000	0.906	0.455	0.665	0.571	0.342	0.083
16.3	0.472	0.550	0.448	0.470	0.298	0.397	0.062	0.647	0.565	0.677	0.943
16.7	0.558	0.735	0.612	0.719	0.500	0.371	0.362	0.000	0.161	0.340	0.458

Once the values were obtained, we proceeded to consider the weights to be assigned to the criteria. Two approaches (EWG, Equal Weights Goals, and EWI, Equal Weights Indicators) are proposed in the literature [24], and this choice emerged from the result related to the question proposed in RO1. Thus, also for this methodological stage, the choices that would be implemented in RO2 would depend on what emerged in RO1. However, it is also useful to show what the literature proposes on the topic. The choice of not giving more emphasis to some goals and indicators is proposed in several works [34,35].

This practice appears to be widespread because it is based on the logic of assigning the same impact to the individual indicators analyzed [36,37]. However, approaches with different weights can also be used [38].

Finally, during the third step, all data were aggregated and a sustainability score for each alternative was obtained by the product between a row vector (referred to as the values of the criteria) and a column vector (referred to as the weights of the criteria). The results were also broken down according to the three main geographic macro-areas of Italy:

- North—Valle d'Aosta, Piemonte, Lombardia, Liguria, Trentino Alto Adige, Veneto, Friuli Venezia Giulia and Emilia Romagna.
- Center—Toscana, Umbria, Marche and Lazio.
- South—Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sardegna and Sicilia.

3. Results

This section is divided as follows: results related to RO1 are proposed in Section 3.1 and those related to RO2 are examined in the following subsections. In fact, first, the sustainability score in the base scenario is proposed (Section 3.2), then its value is monitored over time (Section 3.3), and finally, an alternative scenario is considered (Section 3.4).

3.1. Methodological Insights for the Application of MCDA in the Evaluation of the SDGs

The responses from the different experts are collected and proposed in Table 5. It should be pointed out that in order to ensure anonymity, there is no correspondence between the numbers of the experts in Tables 1 and 5. In order to give statistical significance to the results obtained, a Kruskal–Wallis test was conducted. The comparison of the questions determines that the hypothesis H_0 was rejected ($\chi 2 = 146.68$, $p < 0.001$). This suggested that certain groups' average ranks were indeed not equal. The post hoc Dunn's test using a Bonferroni corrected alpha of 0.0014 indicated that the mean ranks of the following pairs are significantly different: Q1–Q2, Q1–Q3, Q1–Q5, Q1–Q6, Q1–Q8, Q2–Q5, Q2–Q6, Q3–Q4, Q3–Q7, Q4–Q5, Q4–Q6, Q4–Q8, Q5–Q7, Q5–Q9, Q6–Q7, Q6–Q9, Q7–Q8 and Q8–Q9.

Table 5. Survey online according to 20 academic experts—all data are in percentages.

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E18	E19	E20
Q1	95	100	100	95	100	100	95	100	100	95	100	95	100	95	100	100	100	100	90	90
Q2	90	90	90	85	90	95	90	90	85	85	85	85	90	90	85	85	90	90	80	80
Q3	70	80	85	75	85	85	75	90	80	70	70	65	85	75	75	70	85	85	65	70
Q4	95	100	95	100	95	95	90	95	100	90	95	95	95	90	95	95	95	100	90	90
Q5	70	80	70	75	65	70	65	70	70	65	70	65	65	60	65	65	70	70	65	65
Q6	75	70	70	65	65	60	60	65	60	65	70	70	65	60	60	60	65	70	70	70
Q7	90	95	95	90	90	90	85	90	90	85	90	90	90	85	90	95	95	95	85	80
Q8	75	65	65	70	75	65	75	75	90	75	80	60	75	65	85	80	85	90	65	75
Q9	95	90	90	90	85	85	90	85	90	90	95	90	95	85	90	90	85	90	85	90

The next step was to aggregate all responses, giving the experts equal weighting. It is worth mentioning that the experts could assign a percentage value between 0% and 100%—Table 6.

Table 6. Average values of questions.

Number	Question	Percentage Average
Q1	How useful do you think MCDA is as a method for assessing the SDGs?	97.50
Q2	How congruous do you think the number of public indicators on the SDGs is?	87.50
Q3	How robust do you think an indicator composed of 27 targets is for assessing individual local realities?	77.00
Q4	How valid do you think the 0–1 range approach is (0 = weak performance; 1 = strong performance)?	94.75
Q5	How valid do you think the maximum value approach is as a benchmark (1 = strong performance)?	68.00
Q6	How valid do you think equal weight among SDGs (EWG) scenario is?	65.75
Q7	How valid do you think equal weight among indicators (EWI) scenario is?	89.75
Q8	How useful do you think it is to break down the final data according to the three dimensions of sustainability?	74.50
Q9	How useful do you think it is to break down the final figure according to geographic macro-areas?	89.25

The responses to question Q1 show a percentage of 97.5%, with more than half of the experts assigning the maximum value. The result is not surprising given the wide use of MCDA. A limitation of the paper also emerges from this question, as some experts pointed out that such an approach is not the only useful way to compare different methodologies in order to monitor and analyze SDG values.

However, one of the problems encountered when using these methodologies is the availability of data, and the Q2 figure should be interpreted in this direction. A relevant value emerges, of 87.5%; however, a comment that has come from several experts should be highlighted. For example, Eurostat is a useful tool that compares different countries; however, then, the national figure cannot always be broken down to a more detailed local level.

In this direction, we then investigated whether an indicator consisting of 27 targets (Table 3) would be suitable for evaluating a local reality. The Q3 value is 77%. It is useful to underline that having specified individual local realities led to providing a higher value to this question.

The analyses of questions Q4 and Q5 aimed to evaluate the method to be assigned to the criteria values. Absolute values should tend to be normalized in order to be made homogeneous. In these questions, a choice toward the 0–1 approach emerges (94.75% vs. 68%) because it is believed that, just as the emphasis is placed on the best performance, likewise the weakest performance should be penalized. Clearly, the 0–1 approach tends to accentuate differences in terms of normalized values.

Instead, questions Q6 and Q7 evaluate the method related to the assignment of weights. In these questions, too, a clear choice toward the EWI scenario emerges (89.75% vs. 65.75%) because with a small number of criteria, individual SDGs might themselves be underrepresented. Thus, both methods are considered suitable with a larger sample of criteria, since being alternatives may or may not confirm the results obtained.

Finally, the last two questions, Q8 and Q9, aim to provide insights into the breakdown of sustainability scores at the size and geographic area level. The subdivision by economic, environmental and social dimensions is considered very useful; however, like the previous observation, it is noted that its significance loses significance (74.5%) when the sample number is small. In contrast, geographic data are crucial (89.25%) when conducting analyses at the level of individual territorial realities.

Consequently, it follows from this analysis that the MCDA of this paper will use the following assumptions:

- Value will be assigned through the 0–1 approach.
- Weight will be assigned through the EWI approach.
- Results will be decomposed only at the geographical area level.

3.2. Sustainability Score for Italian Regions—Baseline Scenario

The main result of a quantitative analysis is to provide numbers, and in the case of this paper, the sustainable performance of the Italian regions is indicated. Another key step is to be able to compare these results with those of the previous year. This approach allows the performance of alternatives to be monitored and improvements or worsening to be evaluated.

The number of criteria examined is small compared to other studies [39], but nevertheless, it still plays its role of providing new information to stakeholders. Pragmatic sustainability calls for evaluating the performance of alternatives based on real data, which could be affected by virtuous policies. Within the EWI scenario, the different values were normalized, which made it possible to homogenize criteria characterized by different units of measurement (Table 3).

This subsection shows the sustainability score in the EWI scenario, in which a value trending toward 1 indicates excellent sustainability performance. All alternatives were compared with each other, but also, with respect to the Italian average, it was considered in addition to the 21 alternatives. It is worth noting that Figure 2 proposes the average value for the Trentino Alto Adige region (that is composed of the two provinces of Bolzano and Trento, and the same will also be repeated in the monitoring phase).

Province of Trento	0.725
Valle d'Aosta	0.643
Province of Bolzano	0.620
Toscana	0.602
Marche	0.588
Lazio	0.557
Piemonte	0.555
Friuli Venezia Giulia	0.543
Lombardia	0.538
Liguria	0.538
Umbria	0.530
Emilia Romagna	0.521
Abruzzo	0.507
Italy	**0.505**
Veneto	0.485
Basilicata	0.477
Calabria	0.464
Sardegna	0.457
Molise	0.441
Campania	0.394
Sicilia	0.378
Puglia	0.366

Figure 2. Sustainability score in EWI scenario.

The results see the province of Trento excel, with a score of 0.725, which is a high performance and shows a significant difference from that of Valle d'Aosta, which follows with 0.643, and the province of Bolzano, with 0.620. The difference is thus 0.082 with the second, and it increases to 0.220 compared to the national benchmark. There are 13 alternatives placed above the national average (0.505), with Abruzzo placed at 0.507, while the last position, occupied by Puglia, is 0.139 away from the national benchmark. These results show how northern regions occupy the top positions, while southern regions are placed at the bottom of the ranking. It is interesting to note the performance of the three central regions (Toscana, Marche and Lazio), which are behind the first three northern regions mentioned above.

In order to understand the results obtained, we identify which alternatives perform better or worse in the individual targets, and the corresponding concentration indicator (Table 7 and Figure 3).

Table 7. The best and worst alternative for each target audience and the value of indicator concentration for each target.

Target	Max	Min	Indicator Concentration
1.2	Province of Bolzano	Campania	0.644
2.4 (a)	Valle d'Aosta	Lombardia	0.700
2.4 (b)	Calabria	Valle d'Aosta	0.410
3.4	Province of Trento	Campania	0.635
3.6	Molise	Liguria	0.671
4.1	Molise	Sicilia	0.697
4.2	Umbria	Campania	0.538
4.3	Umbria	Sicilia	0.580
5.5	Valle d'Aosta	Campania	0.543
6.3	Calabria	Umbria	0.421
6.4	Valle d'Aosta	Abruzzo	0.416
7.2	Valle d'Aosta	Liguria	0.240
7.3	Campania	Emilia Romagna	0.476
8.5	Province of Bolzano	Sicilia	0.611
8.6	Province of Bolzano	Sicilia	0.630
9.5	Piemonte	Valle d'Aosta, Calabria	0.389
9.c	Lazio	Province of Bolzano	0.426
10.4	Marche	Campania	0.642
11.2	Lombardia	Molise	0.250
11.6	Molise	Lombardia	0.594
12.4	Basilicata	Emilia Romagna	0.538
13.2	Campania	Sardegna	0.474
14.5	Toscana	Veneto, Emilia Romagna, Marche, Molise, Basilicata	0.223
15.3	Liguria	Abruzzo	0.710
15.5	Abruzzo	Molise	0.374
16.3	Province of Trento	Province of Bolzano	0.460
16.7	Valle d'Aosta	Basilicata	0.650

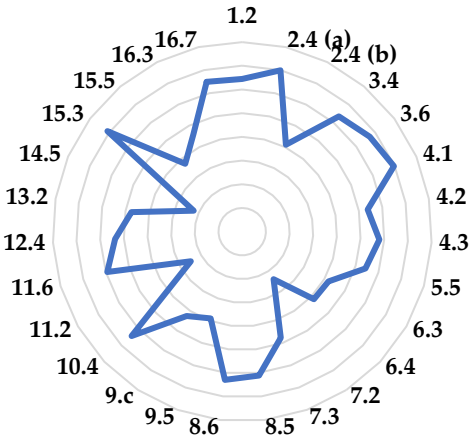

Figure 3. Indicator concentration.

The province of Trento confirms its leadership in targets 3.4 and 16.3, and while it loses the first position in target 4.1, it still maintains a high value, whereas its reduction is much more significant in target 9.5. The province of Bolzano retains leadership in targets 8.5 and

8.6, and gains it in target 1.2, replacing Valle d'Aosta, which nevertheless confirms it in targets 2.4 (b), 5.5, 6.4, 7.2 and 16.7. Most of the different alternatives present a highest value in the different targets; the only ones never to reach this target are Veneto, Friuli Venezia Giulia, Emilia Romagna, Puglia, Sicilia and Sardegna. However, the data in Table 7 show how for some targets of the same SDG, the alternatives are able to achieve diametrically opposite results. This is the case for Valle d'Aosta for target 2.4 (a) and 2.4 (b), Lombardia and Molise for targets 11.2 and 11.6, and Abruzzo for targets 15.3 and 15.5.

Focusing on the alternatives occupying the first three positions, however, it should be pointed out that they too show weak performance in the following cases: the province of Trento presents a value below 0.2 only in targets 2.4 (b) and 7.3; the province of Bolzano, in addition to the two mentioned above, is also weak in target 9.5, but especially occupies the last position in targets 9.c and 16.3 and finally Valle d'Aosta is last in targets 2.4 (b) and 9.5 and below 0.2 in targets 7.3, 11.2 and 12.4. Thus, it emerges that the province of Trento prevails over Valle d'Aosta despite having fewer first positions in the targets, as it has a higher value in the other criteria.

Among the northern regions, Veneto is the only one that is below the national average, presenting a performance below 0.2 in targets 2.4 (a), 2.4 (b), 7.2, 11.6, 14.5 and 15.5, and, as highlighted above, does not excel in any target. As noted earlier, the central regions show very interesting performances. Primacy is verified in target 14.5 (Toscana), targets 4.2 and 4.3 (Umbria), target 10.4 (Marche) and target 9.c (Lazio). In contrast, the situation tends to change considerably when analyzing the southern ones, where only Abruzzo is above the national average. Abruzzo is first in target 15.5 and it has very high performance in target 4.1 and high performance in target 11.6. On the other hand, it is last in targets 6.4 and 15.3 and is also weak in target 11.2. The other seven regions occupy the last positions in the ranking. This aspect clearly denotes a strong criticality, which, however, is also proclaimed at the European level, where targeted funding programs are allocated precisely for southern Italy.

The indicator concentration shows that where this value is high, many alternatives have significant performances, and this reduces the advantages of those occupying the top positions over the other alternatives. Similarly, when the value of the concentration index is low, the alternatives occupying the top positions will have much more significant numerical values than the alternatives that have values close to the concentration index. High values occur for targets 15.3 and 2.4 (a), while low values occur for targets 14.5, 7.2 and 11.2.

3.3. Sustainability Score Monitoring for Italian Regions

An additional element of the analysis was to compare the sustainability score in the EWI scenario for the two reference years (Figure 4 and Table 8). Results from the 2022 ASviS report were obtained for this paper and can be compared with what is reported in the literature regarding the 2021 ASviS report [24].

The two maps show no significant color differences, while the analysis of the values shows that numerical changes have occurred. As noted earlier, the very low target concentration index, 9.5, in the previous year led the province of Trento to have a very high value. This explains the 0.060 reduction. The other alternative that marks a reduction is Veneto. As for increases, there are very important changes for the central regions Lazio (0.058) and Toscana (0.053). At the ranking level, the most significant change is in Lazio, which climbs seven positions, while Lombardia and Liguria lose three positions. These variations also determine that the performance of the three macro-areas tends to increase when comparing years (Figure 5). While the increase in the northern regions is minimal (+0.004), the increase in the southern regions is appreciable (+0.022), wherein a very important role is played by Sardegna and Puglia. However, it is the central regions, as shown above, that mark the most significant increases, with +0.041. However, these data confirm the existence of gaps between regions with different performances. It is worth noting that the new figure for the central regions (0.569) is close to that of

the northern regions (0.574). These values are significantly different from that of the southern regions (0.436).

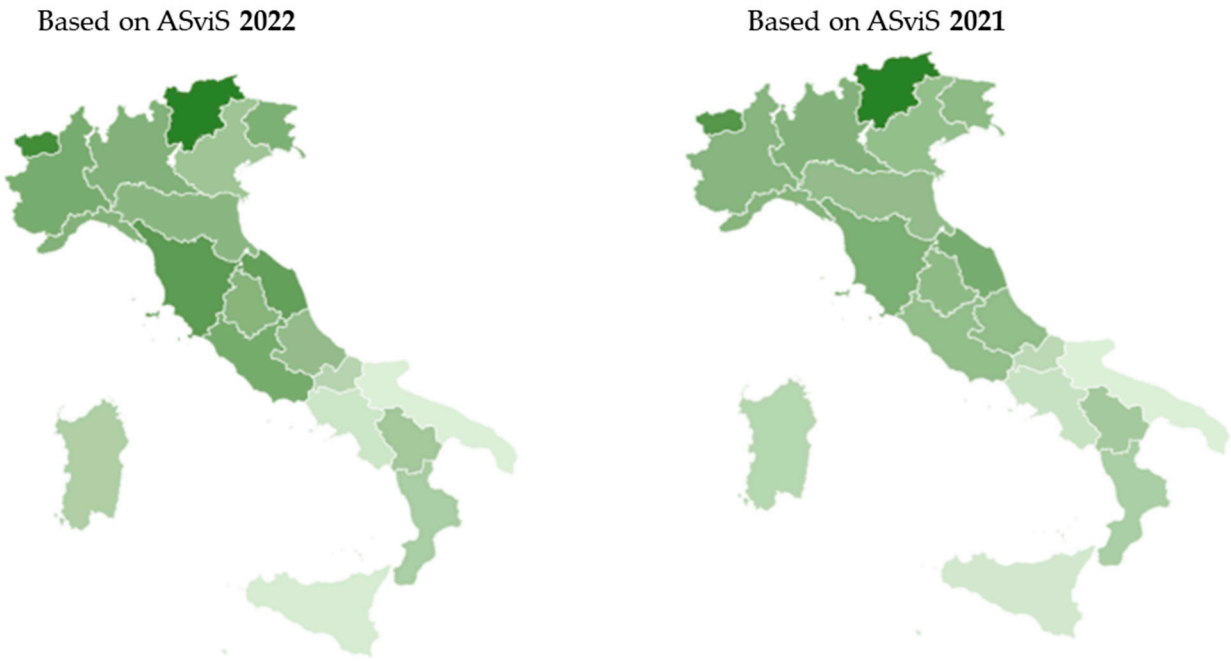

Figure 4. Monitoring of SDGs in Italian regions in the period 2021–2022.

Table 8. Delta sustainability score in the period 2021–2022.

	ASviS 2021	Delta ASviS 2022–ASviS 2021	Delta Ranking (2022 vs. 2021)
Province of Trento	0.785	−0.060	0
Valle d'Aosta	0.628	0.015	0
Province of Bolzano	0.612	0.009	0
Toscana	0.548	0.053	+1
Marche	0.556	0.032	−1
Lazio	0.498	0.058	+7
Piemonte	0.528	0.027	+1
Friuli Venezia Giulia	0.514	0.029	+1
Lombardia	0.536	0.002	−3
Liguria	0.529	0.009	−3
Umbria	0.508	0.021	−1
Emilia Romagna	0.502	0.019	0
Abruzzo	0.504	0.003	−2
Italia	0.494	0.011	
Veneto	0.495	−0.010	0
Basilicata	0.460	0.017	0
Calabria	0.446	0.018	0
Sardegna	0.418	0.040	0
Molise	0.411	0.030	0
Campania	0.380	0.014	0
Sicilia	0.358	0.020	0
Puglia	0.333	0.033	0

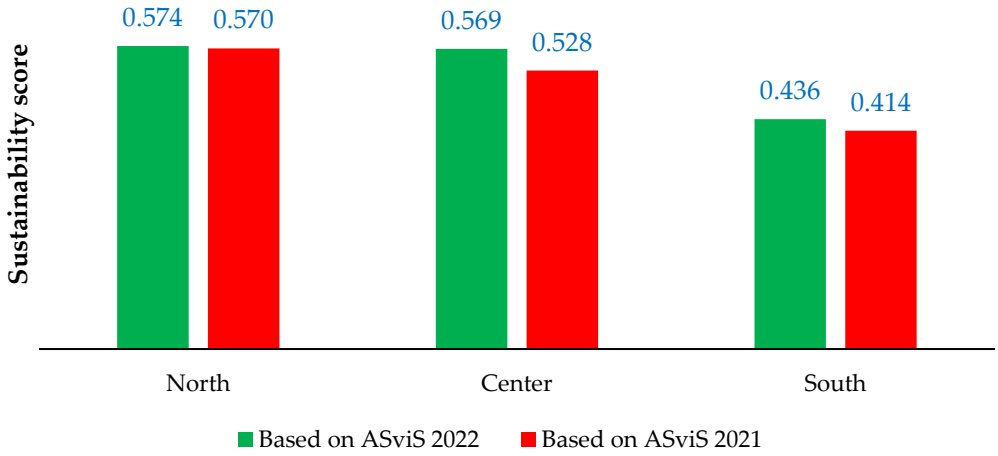

Figure 5. Sustainability score in EWI scenario—a comparison among macro-areas.

3.4. Sustainability Score for Italian Regions—Alternative Scenario

Finally, in order to give robustness to the results obtained, we proceeded to consider an alternative scenario. Specifically, the EWG scenario was chosen, in which the same criteria values were considered, but we evaluated the aggregation of targets within the SDGs. This inevitably tended to mediate the effects for targets that were a larger sample within the SDGs (Table 9 and Figure 6). For the six regions that do not consider target 14.5, the contribution from 15 SDGs is assessed.

Table 9. Delta sustainability score in EWG scenario in 2022.

	EWG Scenario	Delta EWG-EWI	Delta Ranking EWG-EWI
Province of Trento	0.784	0.059	0
Province of Bolzano	0.712	0.091	+1
Valle d'Aosta	0.704	0.062	−1
Toscana	0.661	0.060	0
Marche	0.642	0.053	0
Piemonte	0.607	0.052	+1
Lombardia	0.602	0.064	+2
Friuli Venezia Giulia	0.593	0.050	0
Lazio	0.590	0.033	−3
Liguria	0.581	0.043	0
Umbria	0.580	0.050	0
Abruzzo	0.557	0.050	+1
Italia	0.545	0.040	
Emilia Romagna	0.530	0.010	−1
Basilicata	0.526	0.049	+1
Calabria	0.518	0.054	+1
Veneto	0.516	0.031	−2
Sardegna	0.497	0.040	0
Molise	0.476	0.035	0
Campania	0.437	0.043	0
Sicilia	0.434	0.056	0
Puglia	0.413	0.047	0

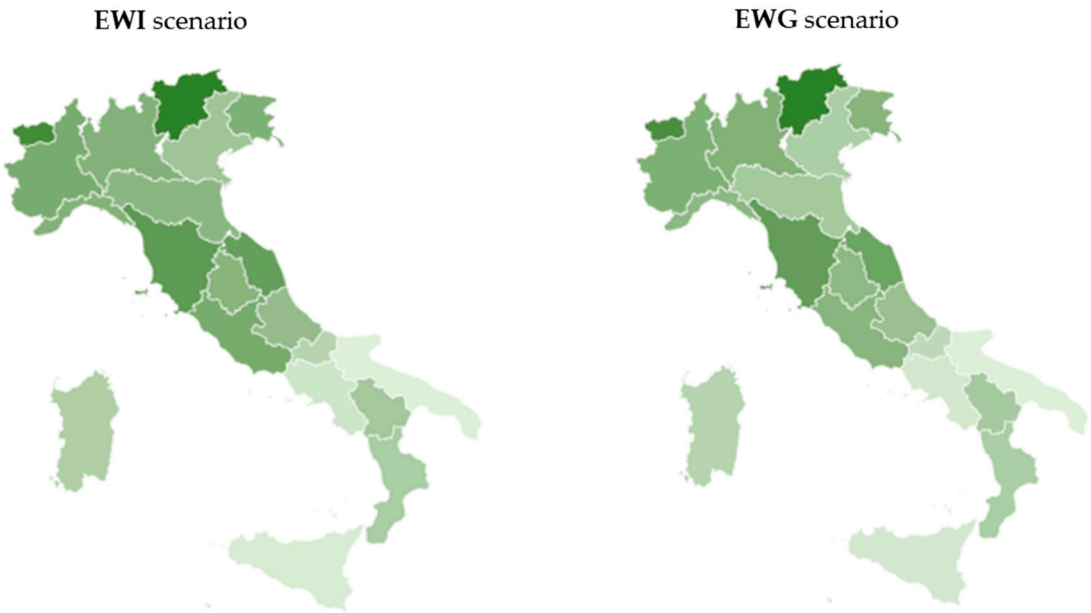

Figure 6. A comparison of the sustainability score between EWI and EWG scenarios.

It can be seen that EWG values are higher than EWI values due to the different normalization approaches to criteria. This alternative scenario demonstrates how much a chosen method influences the results obtained in this paper. The EWG scenario, which tends to be more synthetic than EWI, leads to different measurements. The results of this EWG scenario sees several ranking positions change, and 11 alternatives keep the same position. In the top part of the ranking, the province of Bolzano overtakes Valle d'Aosta, and Lombardia gains two positions, while Lazio loses three. As for the final part of the ranking, no changes are noted. Further relevant data include that twelve of the thirteen alternatives maintain a value above the national average; Emilia Romagna is the exception.

Furthermore, we proceed to aggregate the data at the macro-area level (Figure 7), and since the value of the national average in the EWG scenario is greater than that in the EWI scenario (0.545 vs. 0.505), the three individual values turn out to be greater. The difference between the areas does not tend to change significantly, as the values vary in the range of 0.047–0.053. The northern regions are slightly ahead of the central regions (0.627 vs. 0.618), while the difference is much more pronounced than in the southern regions (0.482).

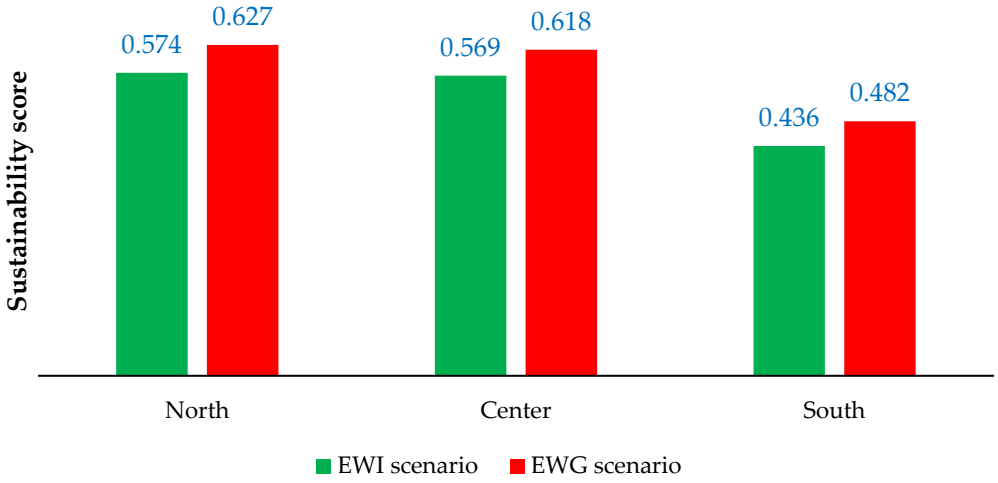

Figure 7. Sustainability score in both EWI and EWG scenarios—a comparison among macro-areas.

4. Discussion

The issue of sustainability has entered the agenda of many governments [28], and many citizens are involved and interested in applying a social welfare model. The challenge is complex and takes time to meet. This does not imply that there is no urgency, but a goal must be set. Some authors have pointed out that any paper that talks about the SDGs must specify what goal it aims to achieve [4]. Academic works must be projected to real problems in order to support policy-makers. This paper aims to focus its attention on the strategic role of monitoring the SDGs. A key step is to highlight critical issues that emerge over time in order to implement possible corrective measures.

This paper has limitations related to the number of criteria that are available, but first and foremost we need to be grateful to those who make it possible to have this data available. In this context, ASviS supports the monitoring of SDGs [30,31]. This research proposes not only to compare individual alternatives with the national benchmark but also to make comparisons, since the normalized 0–1 method determines that the value achieved does not depend only on one's own performance. However, it is desirable to invest in obtaining more available data and that these data are updated. In fact, the other limitation of the research is that not all data are available for 2021. In addition, the same literature proposes several approaches to managing data related to the SDGs [39,40].

This paper confirms the north–south divide in Italy already proposed in the literature [24], and its comparison with the existing literature makes it possible to highlight the decisive role of monitoring. Where the number of targets is greater, more information can be extrapolated [19]. Nonetheless, this paper provides managerial and policy implications. It shows how sustainability can succeed where different strategic choices and funding policies have failed to close the gap between different areas of Italy. The Next Generation EU (NGEU) in Italy was changed because some projects would not be completed on time. Sustainability suggests not using approaches in which investments are concentrated in a limited period, but are spread out over time and allow for the diffusion of skills and resources [41].

This paper considers 16 of the 17 SDGs (SDG 17 (Partnerships to achieve the SDG) is not considered), and so the approaches used obviously change according to specific contexts. The basic idea would be to invest in the sectors that will drive the economy of the future, where there will be demand, in order to have adequate supply. Likewise, this supply must have a strong national character in order not to be subjected to geopolitical risks and foreign dependence. In this direction, the new name of the Ministry of Enterprises and Made in Italy clearly indicates this direction. Thus, the choices of the future are based on a policy direction in which there is a tendency to produce within one's own country, in which research and innovation occur, in which health skills are valued, and in which social approaches that counter forms of selfishness are developed.

Stakeholder engagement is therefore essential, with input also required from all citizens, and in particular there is a need to invest in the youngest of them, the target audience of the NGEU [29]. Businesses are called upon to revise their strategies and public administrations to change to be able to capture the dynamic aspects coming from the external context [4].

The basic question is as follows. Economic theories have taught us that a euro today is worth more than a euro tomorrow, but how do we quantify this tomorrow; how much is the opportunity cost of capital for projects that are different from each other and affect not only the Italian context but have a global vocation? The challenge, therefore, calls not only for germinating national resources but also for building bridges of freedom and democracy with other countries to move toward a common goal. Is this the hope with which Europe was born? Sustainability is, thus, not only the 2050 goal for climate neutrality but requires a pragmatic approach in which solutions are explored that give opportunities to future generations and create a brotherhood among peoples [29].

Green and circular resources call for thinking with a perspective that is not only focused on the short term but looks to the future, in which citizens will be involved to make

them feel part of the change. Likewise, there is a need to overcome parochialism in order to bring out collaborations between territorial realities, since in the struggle between the small ones, in the end, those who emerge and win are not them, but they instead come out even weaker. Finally, where young people are trained in the different trades, it is necessary to retain these backgrounds. However, their demands are modified, as the abandonment of stress, the idea of being part of a group, and the possibility of having recognition for achievements determine insights that all public and private actors should reflect on.

Achieving the SDGs is done by giving confidence to young people, creating partnerships with more experienced profiles, fostering an opening of the university world to the real world, and allowing younger people to be directed to the profiles required by the market. However, it is also crucial to create and foster the concept of a community that does not only look at its own backyard but shares it with its neighbors in order to be globally competitive and attractive.

5. Conclusions

This paper makes a contribution to the pragmatic view of sustainability since, starting from an objective dataset, it tries to aggregate the data to provide different information to stakeholders. This research aims at the achievement of the different proposed targets and, thus, overall, pays attention to all SDGs, with the exception of SDG 17, which was not included in the source database.

The methodological contribution of this paper is about a very established methodology such as MCDA, in which insights are provided to be applied to the attribution of values and weights. It emerges that the range 0–1 is considered correct in order to bias the strongest and weakest performances of the examined alternatives. Moreover, in a context where the number of criteria is small, the EWI method appears to be more appropriate than the EWG method. The motivation is mathematical since where there is already a contained data availability, the additional aggregation step risks losing some of the information that emerges from the individual criteria.

The pragmatic contribution of this paper confirms the north–south divide in Italy, in which northern regions excel in the sustainability indicator, while seven of the southern ones close the ranking list. In this direction, the result of Abruzzo is very important, which aspires to have a performance equal to that of the central regions. It is precisely these regions, and in particular, Toscana, Lazio and Marche, that are on the edge of the podium occupied by three alternatives belonging to northern Italy. The province of Trento, confirming its leadership, is followed by Valle d'Aosta and the province of Bolzano. On the other hand, if these regions travel with a green card toward sustainability goals, Campania, Sicilia and Puglia take a red card.

This paper has two limitations, namely the number of criteria examined and the time period covered, which highlight how useful it is for public decision-makers to invest in this aspect. In addition, it would also be useful to analyze the impact that could be exerted by stakeholder engagement from the perspective of territorial collaboration between different regions. However, in order to make the right choices, it is necessary to have data and to assess their trends over time through appropriate monitoring of the SDGs.

It is the time for action, for proposing ideas and solutions, and not the time to stop at sterile no's and maintain one's own interests, in order to build the Europe of the future with a key role played by the realities of the Mediterranean, which will play a key role in a global economy oriented toward sustainability.

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