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Research Article

Trends in regional development in Slovenia in the light of the goals of sustainable development

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*Sustainable regional development,
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Abstract

Applying sustainable development into practice is an important national and regional policy goal in Slovenia; in addition, the country's membership in the European Union further commits it to the goals of sustainable development. The research presented in this article is based on the use of a set of 32 economic, social and environmental indicators of sustainable development and the calculation of a synthetic indicator of sustainable regional development for all twelve Slovenian NUTS-3 regions in the period 2015–2019. In the final step, a synthetic assessment of the possibilities for implementing sustainable development in individual Slovenian regions is given, in which regions are classified into four different types. A comparison with the previous five-year period showed that Slovenia achieved progress in most of the socio-economic aspects of sustainable development analyzed, while the situation deteriorated with respect to environmental aspects. The largest differences among Slovenian regions were calculated in the economic area, and the smallest in the environmental area, which is also in line with the findings of previous research. There continues to be a development divide between the more prosperous western part of the country and the eastern part, which lags behind and for the most part also has poorer prospects for sustainable development. This trend is unfavorable for the balanced as well as sustainable development of Slovenian regions.



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1. INTRODUCTION

For Europe, the second decade of the 21st century was a time of instability. We entered it still experiencing the impact of the global financial and economic crisis, which shook economic and social systems alike, and ended it with the COVID-19 pandemic, which reminded us that our health and prosperity depend on environmental processes. We are also witnessing increasingly frequent extreme weather events related to the coming climate crisis. Among the processes that marked the European focus in the middle of the decade, it is also worth mentioning the migration crisis and the changed geopolitical relations in the world. On the other hand, we are also seeing an intensification of efforts to achieve sustainable development over the past decade, which provides some hope that we may succeed, at least partially, in addressing the challenges described.

Institutional support for sustainable development in the world has been strengthened mainly through the 2030 Agenda (Transforming Our World, 2015), in which the United Nations has reached a consensus on seventeen goals and 169 targets of sustainable development by 2030. The European Union built further on this through the European Green Deal (2019), an action plan for a circular economy on the path to a sustainable European Union economy. The preliminary process was lengthy and fraught with many obstacles, reaching back to the United Nations Conference in Rio de Janeiro and the adoption of Agenda 21 (1992) and the first definition of sustainable development by the Brundtland Commission (Our Common Future, 1987), as well as to the first environmental conference in Stockholm in 1972, where discussions on the interaction of developmental and environmental aspects were still very limited, but this was a key event for the emergence of a discourse on sustainable development and for the promotion of environmental issues in international politics (Elliot, 2013). Nowadays, sustainable development with set goals is also normative, as it dictates a comprehensive view of a good society that is economically successful while also being socially inclusive, environmentally sustainable and well-governed (Sachs, 2015, p. 12).

With Slovenia's accession to the European Union in 2004, the 2001 sustainable development strategy of the European Union (A Sustainable Europe for a Better World, 2001) and its updated version in 2006 (Renewed EU Sustainable Development Strategy, 2006) became binding for Slovenia. The commitment to sustainable development was emphasized by the members of the European Union in the Europe 2020 (2010) umbrella strategy. Slovenia has not adopted a specific national strategy for sustainable development, but both Slovenia's Development Strategy (2005) and its successor, the Slovenian Development Strategy 2030 (2017), were based on sustainable development. The latter provides as a central goal a high quality of life for all inhabitants and sets selected indicators to monitor the achievement of sustainable development goals at the national level, for which progress is monitored by special reports and indicators (IMAD, 2021). The main shortcoming of the existing system is the lack of systematic monitoring of progress at the regional level. Sustainability according to Galvani et al. (2020) is an adaptable and flexible concept that differs depending on the space and circumstances in which we live. Therefore, it makes sense to monitor and assess the achievement of sustainable development goals in the country and its regions, also taking into account their specific development characteristics and circumstances.

In Slovenia, statistical regions (so-called NUTS-3 regions, hereinafter: regions) are not administrative units, but as so-called development regions they are the spatial unit used for regional policy planning and implementation of regional development tasks in Slovenia (ZSRR-2, 2011). In general, regions are considered to be intermediaries

between the national and local levels (Clement et al., 2003; Jovovic et al., 2017), and sustainable regional development is considered to be “integration of sustainable development principles into regional development practice” (Clement et al., 2003, p. 9). Successful regional development requires efficient socio-economic processes and the use of environmental resources to continuously improve the quality of life (Razskowski & Bartniczak, 2018). Sustainable regional development thus provides the population with an acceptable level of well-being in the long run (Davidescu et al., 2020) and is based on economic, social, and environmental dimensions (The Future We Want, 2012; Elliot, 2013; Sachs, 2015; Arrebola & Martínez-Medina, 2018; Mensah, 2019). A prerequisite for a sustainable system is balancing the forces acting on it, which requires the adaptation of human activities to the carrying capacity of the environment (Babu & Datta, 2015; Brkić-Vejmelka et al., 2018).

More balanced regional development is being promoted in Slovenia, to reduce development disparities among regions and improve the quality of life in them “through balanced economic, social and environmental development based on the principles of sustainable development” (Operativni načrt, 2019, p. 34). This article presents research that examines the degree to which Slovenian regions approach the goals of sustainable development and hence the success in achieving the two Slovenian regional policy goals mentioned. Based on previous research (Vintar, 2003; Vintar Mally 2009; Vintar Mally, 2018), we proceed from the assumption that development differences among Slovenian regions persist and are relatively largest in the economic area and smallest in the environmental area.

2. METHODS

This study was conducted for the whole of Slovenia, i.e., for all twelve statistical regions. Of central interest was the question of whether Slovenian regions are making long-term progress towards the goals of sustainable development, or whether they may even be backsliding relative to their starting position. The relative positions of Slovenian regions were investigated at three levels. On the first level, the positions of the regions are assessed in relation to the national average, based on particular aspects of development, which are covered by the selected 32 indicators of sustainable development in the economic, social and environmental areas. At the next level, the regions are compared based on their results in three main areas of sustainable development (environmental, social and economic), and in the last step based on calculations of a synthetic indicator of sustainable regional development, which covers all three included areas and all indicators. In all cases, it is therefore desirable to approach the goals of sustainable development through development that is as balanced as possible across the country as a whole, which over time reduces development disparities among regions.

The study is based on the application of a set of 32 sustainable development indicators (Table 1), calculated for each region separately, and includes six economic, twelve social and fourteen environmental indicators. These indicators were selected as representative for particular development areas and afford a comparison of regions in the selected time period. As similar research has already been conducted in previous periods (Vintar, 2003; Vintar Mally 2009; Vintar Mally, 2018), we can monitor trends in approaching or moving away from the goals of sustainable development in Slovenia and its regions even though a few indicators have been changed in this time. Based on the method used, it is possible to monitor trends at each spatial level for particular indicators as well as separately for the three main areas of sustainable development. We can also

see whether the range of development differences among regions decreases or increases over time.

This article presents the latest calculations for the period 2015–2019 and their comparison with the results for the previous five-year period (2010–2014). Individual synthetic findings also emerge from a comparison of calculations for the last twenty years, from the second half of the 1990s onward. Most calculations were performed using data for the last year of the selected period or the last year with available data; data for several consecutive years were used in the case of indicators with greater fluctuations from year to year and for the calculation of growth indices. The comparison of the two periods is limited in part, as two social and two environmental indicators have been replaced due to the unavailability of data or changes in calculations in national statistics (e.g., risk of social exclusion, share of households using computers, share of households reporting pollution problems and the share of treated wastewater discharged into the public sewer system).

Each of the 32 indicators included was selected based on the experience of international studies and quality criteria (as presented in Vintar Mally, 2018) to illustrate an aspect of the implementation of sustainable development in Slovenian regions. Calculations for the vast majority of indicators were performed with data monitored and published by the Statistical Office of the Republic of Slovenia (SURS, 2021), except for indicators relating to unemployment of particular population groups, for which we used data from the Employment Service of Slovenia (ZRSZ, 2021). Additionally, for the calculation of particular indicators (wooded areas, intensively farmed land, built-up areas, organically farmed land), we needed data from the records of actual use of agricultural and forest land and the register of agricultural holdings of the Ministry of Agriculture, Forestry and Food (MKGP, 2019; MKGP, 2020).

All indicators were calculated for each of the Slovenian regions, and their values were classified into four classes according to the range of data and the performance in terms of achieving the goals of sustainable development, to which the scores —, —, + and ++ were assigned. Since we do not have specific reference or target values for most indicators at the level of the country and statistical regions, a method for determining classes was selected in which it is sufficient to decide on the desired direction of movement of the value for each individual indicator. For the majority of indicators, a higher value means a closer approximation to sustainable development goals. In these cases, regions with above-average values were assigned positive ratings, and regions with below-average results were assigned negative ratings. The boundary between the second and third classes (scores of — and +) was determined by the average of Slovenian regions for each indicator, and the boundary between the first and second (+ and ++) as well as between the third and fourth classes (— and — —) was determined based on one standard deviation from the mean. For indicators where the relationships are reversed, and a lowered value is desirable for sustainable development, the ratings were reversed accordingly.

The calculation of indicators and the assignment of scores was followed in the next step by the calculation of the total scores (sum), average scores and rankings of particular regions in the economic, social and environmental area (Tables 2, 3 and 4). In the final phase, for each region, an Indicator of Sustainable Regional Development (ISRDR) was calculated, which is an average score covering all three areas of sustainable development. With respect to how the ISRDR is calculated, each indicator has the same weight on the final value for the area, and each area has a one-third influence on the final value of the ISRDR. In the absence of a broad consensus in Slovenia (and elsewhere

– see, for example, Gan et al., 2017) on more or less important development goals, equal weights were used. Although composite indicators have strong communicative power, regional development policies should be guided by individual indicators to avoid oversimplification. As the classes and scores in each study period are based on the average of the regions for that period, the ISRD values are not directly comparable between periods.

Table 1: Set of sustainable development indicators.

<p>Economic indicators:</p> <ul style="list-style-type: none"> - Gross domestic product, 2019 (€/capita) - Gross value added, 2019 (€/capita) - Expenditure on fixed assets, 2019 (€/capita) - Average R&D expenditure, 2017–2019 (% GDP) - Disposable income, 2019 (€/capita) - Service sector employees, 2019 (%)
<p>Social indicators:</p> <ul style="list-style-type: none"> - Unemployed with uncompleted or completed primary school, 2019 (%) - Share of unemployed women, 2019 (%) - Population density, 2019 (people/km²) - Population growth index, 2015–2019 - Aging index, 2019 - Average age at death, 2019 (years) - At-risk-of-poverty or social exclusion rate, 2019 (%) - Usable floor area, 2018 (m²/capita) - Registered unemployment rate, 2019 (%) - Students, 2018/2019 (no. of students/1,000 people) - PC users, 2019 (% of households) - College degree holders (25–64 yrs), 2019 (%)
<p>Environmental indicators:</p> <ul style="list-style-type: none"> - Organically farmed land, 2020 (%) - Wooded areas, 2019 (m²/capita) - Road freight transport growth index, 2010–2019 - Intensively farmed land, 2019 (m²/capita) - Households in polluted environment, 2019 (% , self-assessment) - Municipal waste, 2019 (kg/capita) - Natura 2000 sites, 2019 (%) - Water consumption, 2019 (m³/capita) - Average expenditure on environmental protection, 2017–2019 (% GDP) - Built-up areas, 2019 (%) - Treated wastewater, 2019 (%) - Housing with district heating in place, 2018 (%) - Motorization rate, 2019 (cars/1,000 people) - Livestock density index, 2016 (LSU/ha)

Source: Author elaboration

Taking into account the value of the ISRD for the region and the average scores of particular development areas, the conclusion section of the article also provides a synthetic assessment of the prospects for implementing sustainable development for each particular Slovenian region.

3. RESULTS AND DISCUSSION

To study the economic aspect of sustainable development in Slovenian regions, six indicators were selected (as presented in Vintar, 2003; Vintar Mally 2009; Vintar Mally, 2018) that enable monitoring of the prospects for ensuring the material well-being of the population in the present and in the future. Thus, indicators are included (Table 2) that illustrate the size and performance of the region's economy, the income of the region's population, and investments in the region's economy to increase its long-term performance and competitiveness. An analysis of indicators in the two periods compared shows favorable economic trends, as the country's gross domestic product per capita, gross value added per capita, and disposable income per capita all increased, as did the share of service sector employees and expenditure on fixed assets. Long term, there is a reduction in R&D expenditure in the country, from an average of 2.40% of GDP in the first period to 1.97% of GDP (SURs, 2021) in the second period under study, which is highly unfavorable for the development.

Table 2: Economic indicators for Slovenian statistical regions.

Indicator	Pomurska	Podravska	Koroška	Savinjska	Zasavska	Posavska	Jugovzhodna Slovenija	Osrednjeslovenska	Gorenjska	Primorsko-notranjska	Goriška	Obalno-kraška
Gross domestic product, 2019 (€/capita) $\bar{x} = 20,187; \sigma = 4,785$	-	-	-	+	--	-	+	++	+	-	+	+
Gross value added, 2019 (€/capita) $\bar{x} = 17,727; \sigma = 4,224$	-	-	-	+	--	-	+	++	+	-	+	+
Expenditure on fixed assets, 2019 (€/capita) $\bar{x} = 2,643; \sigma = 1,021$	-	-	-	-	--	+	+	++	+	-	-	+
Average R&D expenditure, 2017–2019 (% GDP) $\bar{x} = 1.48; \sigma = 1.09$	-	-	-	+	+	-	++	++	-	-	+	-
Disposable income, 2019 (€/capita) $\bar{x} = 12,532; \sigma = 486$	--	--	++	-	-	-	++	+	+	+	+	-
Service sector employees, 2019 (%) $\bar{x} = 58.9; \sigma = 9.4$	-	+	--	-	-	-	--	++	-	-	-	++
Total score (sum)	-7	-5	-4	0	-7	-4	+5	+11	2	-4	+2	+3
Average score	-1.17	-0.83	-0.67	0.00	-1.17	-0.67	0.83	1.83	0.33	-0.67	0.33	0.50
Ranking	11–12	10	7–9	6	11–12	7–9	2	1	4–5	7–9	4–5	3

Source: Author elaboration

The relative positions of the regions did not change significantly between the two periods under review, since any changes in ranking were by at most two places. The Osrednjeslovenska region remained well above the average, followed by Jugovzhodna Slovenija and the Obalno-kraška region in the upper third of the regions. Five regions in the western part of the country had a positive average score in the economic area,

where only the Primorsko-Notranjska region had a negative average score. The last place was shared by the Pomurska region in the far east, which was the only one with a negative score for all economic indicators, and the Zasavska region in the central part of the country. In the period 2015–2019, the difference in the average score between the best ranked Osrednjeslovenska and the worst ranked Pomurska region was 3.00, which was less than in the previous period 2010–2014 (3.17) and in the second half of the 1990s (3.5). Based on these data, we can conclude that there has been a reduction in interregional economic disparities, which is favorable both in terms of sustainable development and in ensuring more balanced regional development across the country.

To reflect the situation and trends in the social area, a set of twelve social indicators (as presented in Vintar, 2003; Vintar Mally 2009; Vintar Mally, 2018) was developed (Table 3), which provide insight into the education, health, housing and infrastructure in the regions, as well as the risk of poverty and social exclusion and the use of human resources. Social indicators also include demographic ones, which evaluate population growth trends, population density and the age structure of the population of regions. A comparison of indicators over the last decade shows prevailing favorable trends, as, for example, unemployment has fallen, life expectancy has risen, the average level of education has risen and housing has improved. Nevertheless, one third of the indicators also reveal trends that diverge from sustainable development for Slovenia and its regions. The unfavorable age structure of the population with noticeable aging of the population and a decrease in the share of the young population and consequently also the student population are of particular note. Although it is favorable from the point of view of environmental pressures that population densities in a region and the country are not high (the average population density in Slovenia in 2019 was 103 inhabitants per km²), declining population trends in individual regions (e.g., Pomurska and Zasavska) indicate the unattractiveness of these areas for work and residence, while the population is most concentrated in the Osrednjeslovenska region with the capital of Ljubljana, which is also the only predominantly urban Slovenian NUTS-3 region (Eurostat, 2018).

In the social area, the relative positions of the regions changed to a lesser extent between the two periods under study than in the economic area, as most regions remained in the same place, while others moved up or down by at most one place. Here, too, there is a noticeable divide between the six regions in the eastern part of the country, which have negative average scores in the social area, and the six regions in the western part of the country, with positive average scores. In the period 2015–2019, the difference in the average score between the highest ranked Gorenjska region and the lowest ranked Pomurska region was 2.25, which was the same as the difference between the same regions in the previous period (2010–2014) and slightly more than in the second half of the 1990s, when the difference between Gorenjska and the then worst-ranked Zasavska and Posavska regions was 1.83. We can therefore conclude that in the social area, the disparities among regions are the most persistent, which is particularly unfavorable from the standpoint of more balanced regional development.

In the absence of synthetic indicators, a more comprehensive overview of regions in the environmental area can only be carried out by using a larger number of individual indicators, similarly as in the social area. Data is not even available at the regional level for much of the desired content, so it is often necessary to make do with substitute indicators. The selected fourteen environmental indicators (as presented in Vintar, 2003; Vintar Mally 2009; Vintar Mally, 2018) thus assess the advantageousness of different types of land use, water consumption and wastewater treatment, waste generation and

other types of environmental pressures from settlement and economic activities (e.g., transport and agriculture). Several indicators (Table 4) also reveal the specific responses of regions to environmental problems, such as the expansion of the network of protected areas, investments in environmental protection, the expansion of organic food production, etc.

Table 3: Social indicators for Slovenian statistical regions.

Indicator	Statistical region	Pomurska	Podravska	Koroška	Savinjska	Zasavska	Posavska	Jugovzhodn a Slovenija	Osrednje-slovenska	Gorenjska	Primorsko-notranjska	Goriška	Obalno-kraška
Unemployed with uncompleted or completed primary school, 2019 (%)* $\bar{x} = 32.8; \sigma = 5.1$		-	+	++	+	-	-	--	+	+	+	+	+
Share of unemployed women, 2019 (%)* $\bar{x} = 49.5; \sigma = 2.3$		-	-	--	-	+	+	+	++	++	-	-	+
Population density, 2019 (people/km ²)* $\bar{x} = 99.7; \sigma = 51.7$		+	-	+	-	-	+	+	--	+	++	+	-
Population growth index, 2015–2019 $\bar{x} = 100.2; \sigma = 1.3$		--	+	-	+	--	-	+	++	+	-	-	++
Aging index, 2019* $\bar{x} = 138.0; \sigma = 15.0$		--	-	-	+	-	-	++	++	+	+	-	-
Average age at death, 2019 (yrs) $\bar{x} = 78.2; \sigma = 0.8$		-	--	--	-	+	--	+	+	+	++	++	-
At-risk-of-poverty or social exclusion rate, 2019 (%)* $\bar{x} = 14.8; \sigma = 3.5$		-	--	--	-	--	+	+	+	++	+	+	+
Usable floor area, 2018 (m ² /capita) $\bar{x} = 29.2; \sigma = 1.1$		++	+	+	--	--	+	-	-	+	+	++	+
Registered unemployment rate, 2019 (%)* $\bar{x} = 7.7; \sigma = 1.9$		--	-	+	-	-	-	+	+	++	+	++	+
Students, 2018/2019 (no. of students/1,000 people) $\bar{x} = 33.8; \sigma = 2.8$		--	-	+	+	+	-	+	+	+	+	++	--
PC users, 2019 (% of households) $\bar{x} = 79.0; \sigma = 3.9$		-	+	+	-	--	-	--	++	+	-	++	+
College degree holders (25–64 yrs), 2019 (%) $\bar{x} = 28.5; \sigma = 4.0$		--	-	-	-	-	-	-	++	+	+	+	+
Total score (sum)		-12	-6	-2	-5	-10	-5	+3	+12	+15	+8	+11	+4

Average score	-1.00	-0.50	-0.17	-0.42	-0.83	-0.42	0.25	1.00	1.25	0.67	0.92	0.33
Ranking	12	10	7	8-9	11	8-9	6	2	1	4	3	5

Source: Author elaboration

Table 4: Environmental indicators for Slovenian statistical regions.

Indicator	Statistical region	Pomurska	Podravska	Koroška	Savinjska	Zasavska	Posavska	Jugovzhodna Slovenija	Ostrednje-slovenska	Gorenjska	Primorsko-notranjska	Goriška	Obalno-kraška
Organically farmed land, 2020 (%) $\bar{x} = 13.18$; $\sigma = 8.73$		--	-	+	-	+	-	-	-	-	++	+	++
Wooded areas, 2019 (m ² /capita) $\bar{x} = 8,076$; $\sigma = 5,076$		-	--	+	-	-	-	++	--	-	++	++	-
Road freight transport growth index, 2010–2019* $\bar{x} = 114.9$; $\sigma = 17.4$		+	+	+	+	+	+	++	-	-	--	+	--
Intensively farmed land, 2019 (m ² /capita)* $\bar{x} = 1,288$; $\sigma = 1,367$		--	-	+	+	+	-	-	+	+	+	+	+
Households in polluted environment, 2019 (%; self-assessment) $\bar{x} = 15.5$; $\sigma = 3.4$		--	+	+	--	--	++	-	-	++	++	+	-
Municipal waste, 2019 (kg/capita)* $\bar{x} = 348$; $\sigma = 42$		+	-	++	+	+	+	++	-	-	+	-	--
Natura 2000 sites, 2019 (%) $\bar{x} = 36.7$; $\sigma = 15.5$		+	-	-	--	--	-	+	-	+	++	+	++
Water consumption, 2019 (m ³ /capita)* $\bar{x} = 79.4$; $\sigma = 16.3$		-	+	++	-	++	+	+	-	-	-	--	--
Average expenditure on environmental protection, 2017–2019 (% GDP) $\bar{x} = 0.7$; $\sigma = 0.9$		-	-	-	-	++	++	-	-	-	-	-	-
Built-up areas, 2019 (%)* $\bar{x} = 5.60$; $\sigma = 1.91$		-	--	+	-	+	-	+	--	+	++	++	-
Treated wastewater, 2019 (%) $\bar{x} = 78.7$; $\sigma = 13.6$		++	+	-	--	++	-	+	--	-	++	--	+
Housing with district heating in place, 2018 (%) $\bar{x} = 11.6$; $\sigma = 7.3$		--	-	++	+	++	-	-	++	+	--	-	-
Motorization rate, 2019 (cars/1,000 people)* $\bar{x} = 566$; $\sigma = 28$		+	+	+	+	++	-	-	++	+	--	--	-

Livestock density index, 2016 (LSU/ha)* $\bar{x} = 0.86; \sigma = 0.26$	++	-	--	-	-	+	+	-	--	+	+	++
Total score (sum)	-4	-6	+8	-7	9	0	+5	-9	-2	+7	+1	-4
Average score	-0.29	-0.43	0.57	-0.50	0.64	0.00	0.36	-0.64	-0.14	0.50	0.07	-0.29
Ranking	8-9	10	2	11	1	6	4	12	7	3	5	8-9

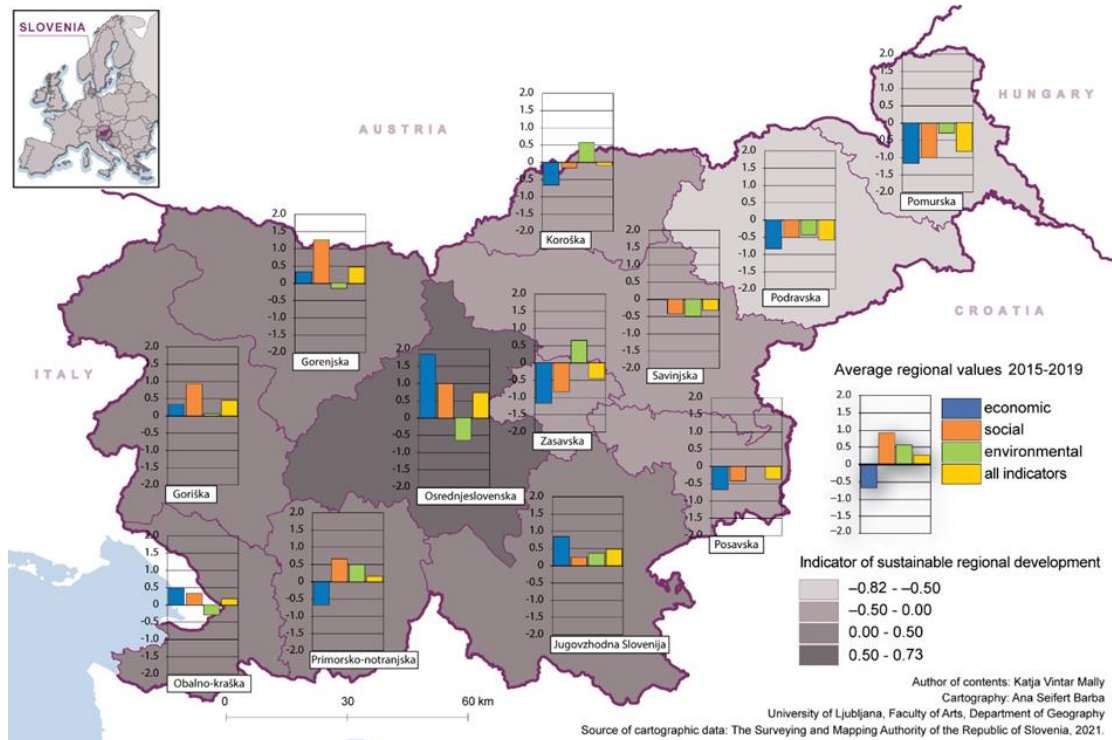
Source: Author elaboration

A comparison of the situation and trends over the past decade shows that Slovenian regions have mostly moved away from the environmental goals of sustainable development. With the exception of the reduction of environmental impacts by agriculture (i.e., a steady increase in the share of organically farmed land, a slight decline in intensively farmed land and livestock density) and household heating (an increase in the share of district heating), other indicators with data for both periods mostly indicate an increase in environmental pressures. These are caused by traffic (increase in the motorization rate, growth in road freight transport) and other economic activities as well as households (increases in water consumption, built-up areas, and amount of municipal waste), while the ecologically important areas (wooded areas per capita, Natura 2000 sites) have remained largely unchanged in recent years, and investment in environmental protection as a share of GDP has even declined on average. The increase in environmental pressures described is also confirmed by calculations of the ecological footprint for Slovenia, which show its decline in the first half of the decade (also as a result of the global financial and economic crisis, which reduced incomes and consumption) whereas in the second half of the decade it was once again increasing (Global Footprint Network, 2021). At the same time, Slovenia ranked among those countries in which, after 1990, environmental pressures grew faster than per capita income (Vintar Mally, 2020), which shows that there hasn't been decoupling of economic growth and environmental impacts.

The relative positions of the regions changed the most between both five-year periods in the environmental area, as some regions moved up by as much as four or five places in the rankings. The Zasavska region, which ranked first in the recent period (fifth to sixth in the previous period), and the Posavska region, which ranked sixth (and tenth to eleventh in the previous period), improved their positions in the environmental area the most. The Obalno-kraška and Savinjska regions fell the most, having been in fourth and fifth to sixth place, respectively, in the previous period. There is no recognizable spatial pattern in the distribution of positive and negative scores in the environmental area, and the range of differences in the average score between the best and worst ranked region was the smallest among all development areas in the environmental area for all study periods; moreover, the first and last places changed constantly among the regions. In the period 2015–2019, the difference between the Zasavska and Osrednjeslovenska regions was 1.28, which is slightly less than the difference in the previous period (1.36) between the Jugovzhodna Slovenija and Podravska regions, and that in the second half of the 1990s (1.64) between the Pomurska and Goriška regions. Given the variability described and the small differences

in the environmental area in general, it would be difficult to claim that there has been any significant reduction in interregional disparities over the last two decades.

Figure 1: Indicator of sustainable regional development of Slovenian statistical regions, 2015–2019.



Source: Author elaboration

In the final step, we calculated the ISRD for each region, which is the average of regional scores in the economic, social and environmental areas. The relative positions of the regions in relation to the value of the ISRD have changed very little in the last decade, as only the order of Jugovzhodna Slovenija, Gorenjska and Goriška regions has changed, while all other regions have retained their places. However, the deviations are significantly larger compared to the situation in the second half of the 1990s (Table 5). Over the past twenty years, a marked developmental divide has been maintained, as the ISRD has remained negative for the eastern half of the regions and positive for the western half of the regions, due mainly to greater socio-economic disparities between the eastern and western parts of the country, while this gap in the environmental area was not discernible.

Based on the results presented by development areas and the values of the ISRD, we can conclude that each region is in a slightly different situation, so their long-term opportunities for the implementation of sustainable development also differ. Regions can be classified into types based on the combination of average scores in individual development areas and the ISRD value achieved. Taking these two criteria into account, we have identified four types of regions regarding their prospects for implementing sustainable development: very good, good, limited or very limited opportunities, taking into account their current situation as a starting point (Figure 2).

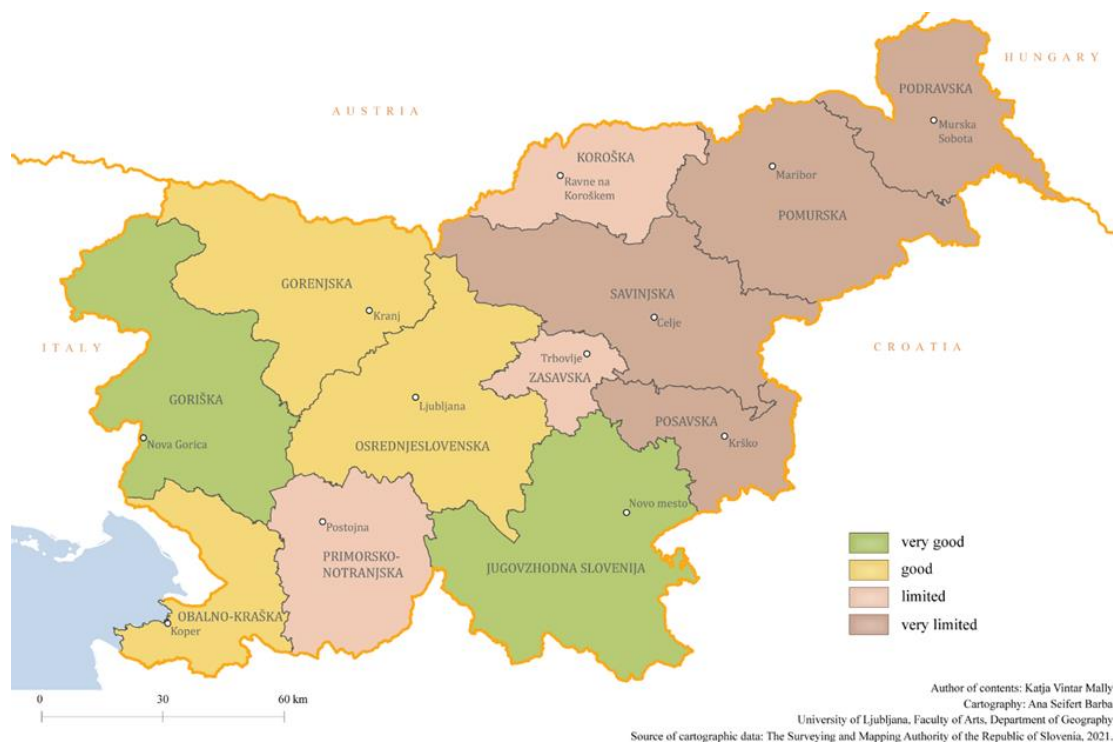
Table 5: Indicator of sustainable regional development of Slovenian statistical regions.

	1996–2002		2010–2014		2015–2019	
	Score	Ranking	Score	Ranking	Score	Ranking
<i>Osrednjeslovenska</i>	0.74	1	0.85	1	0.73	1
<i>Jugovzhodna Slovenija</i>	0.28	5	0.44	3	0.48	2–3
<i>Gorenjska</i>	0.67	2	0.32	4	0.48	2–3
<i>Goriška</i>	0.57	3	0.45	2	0.44	4
<i>Obalno-kraška</i>	0.42	4	0.30	5	0.18	5
<i>Primorsko-notranjska</i>	0.07	6	0.27	6	0.17	6
<i>Koroška</i>	–0.30	8	–0.14	7	–0.09	7
<i>Savinjska</i>	–0.19	7	–0.17	8	–0.31	8
<i>Posavska</i>	–0.70	10	–0.54	9	–0.36	9
<i>Zasavska</i>	–0.82	11	–0.70	10	–0.45	10
<i>Podravska</i>	–0.70	9	–0.76	11	–0.59	11
<i>Pomurska</i>	–1.12	12	–0.77	12	–0.82	12

Sources: Vintar, 2003; Vintar Mally, 2018; own calculations.

Only Goriška and Jugovzhodna Slovenija are in the type of regions with very good opportunities, with positive values in all three included areas and consequently also a positive (though not the highest) value of ISRD and thus the best starting point for future balanced progress in achieving sustainable development goals. Such opportunities are assessed lower in the Osrednjeslovenska, Gorenjska and Obalno-kraška regions, which have markedly positive ISRD values as a result of positive average scores in the economic and social areas, while in the environmental area they have a negative average score. Particularly in the Osrednjeslovenska region, which is the first in the economic, the second in the social, and the last in the environmental area, such relations suggest disproportionately large pressures of the socio-economic development of the region on the local and wider environment. Conversely, we observe in the type of regions with limited possibilities, such as the Koroška, Zasavska and Primorsko-Notranjska regions, that they have a negative average score in the economic area and a positive average score in the environmental area, as well as a modestly positive or negative ISRD value. A development pattern that seeks to increase socio-economic well-being and does not pay enough attention to environmental protection would significantly limit the opportunities for such regions to achieve sustainable development, and even more so for the type of region that already has a negative environmental score. These are the Pomurska, Podravska, Posavska and Savinjska regions, which in the period 2015–2019 had negative average scores in all areas and consequently also a high negative ISRD value. There are still many challenges ahead for all Slovenian regions in achieving sustainable development goals, but for regions that are lagging behind economically, this may be an even greater challenge.

Figure 2: Assessment of opportunities for sustainable development implementation in Slovenian regions.



Source: Author elaboration

There is a lack of similar synthetic studies at the regional level, and the required reporting on the implementation of the Slovenian Development Strategy currently takes place only at the national level, so it is difficult to compare the results of our research. The exception is the results of studies of the development risk index (DRI), which are based on the provisions of the Promotion of Balanced Regional Development Act (ZSRR-2, 2011) and related regulations (Rules on the Classification of Development Regions, 2014), and are intended to monitor regional development in Slovenia. Although the studies include a smaller set of indicators (14) and use a different method of standardization, they also find that the DRI is higher in the regions of eastern Slovenia (Pečar, 2018). A comparison of the calculations of the DRI for 2014 and 2019 showed that although the differences among the regions are relatively small, they have increased slightly (Pečar, 2020). According to the DRI, the regions are similarly classified based on our calculations: a comparison of the ranks of the two synthetic indicators for 2019 shows that they differed by a maximum of one place in eight regions and by two places in two regions. According to the DRI, only the Savinjska region showed a higher ranking by three places than the ISRD, while the Primorsko-Notranjska region showed a lower ranking by five places. Differences are expected from a methodological point of view, as the DRI includes as many as eleven socio-economic indicators and only three environmental ones (share of protected areas, estimated damage due to natural disasters in % of GDP and share of treated wastewater with secondary and tertiary treatment) (Pečar, 2018). This further confirms that the use of environmental indicators in the concept of sustainable development greatly alters the established understanding of development (of regions), which usually places the greatest emphasis on socio-economic progress.

4. CONCLUSIONS

Efforts to achieve the goals of sustainable development are essential at all spatial levels, so it is important to monitor performance not only at the global, European and national levels, but also in smaller spatial units. Since statistical or developmental regions in Slovenia are responsible for planning and implementing regional policy, the overarching purpose of which is to promote balanced regional development in the country based on sustainable development, ascertaining the strengths and weaknesses of regional, economic, social, and environmental development can represent key information for stakeholders to guide future development. The research presented in the article was designed with this in mind and shows that based on changes in the values of individual indicators found, there has been an improvement in most of the studied socio-economic aspects of sustainable development in Slovenia in the last decade, but at the same time a worsening in most of the environmental aspects analyzed. This is yet another indicator that the socio-economic development of the country continues to take place at the expense of the environment: depletion of its resources and pollution. This worsens the long-term development prospects of the regions; hence the country will need to systematically address the problems exposed through well-thought-out measures.

As in previous periods, the assumption that in 2015–2019 the largest differences among the Slovenian regions are in the economic area and the smallest in the environmental area was confirmed. Compared to the period 2010–2014, the extent of interregional differences in the economic area has slightly decreased, while this cannot be quantifiably confirmed for differences in the environmental and social areas. The development divide between the more prosperous western part of the country and the lagging eastern part is also maintained; for the most part, the latter also has poorer prospects for implementing sustainable development in the future. These findings are therefore unfavorable both from the standpoint of achieving more balanced regional development and from the standpoint of achieving the goals of sustainable development, both of which are among Slovenia's strategic goals.

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