



Research article

The compliance of the regional development strategies and funding with the sustainable development concept: The case of Ukraine

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Abstract: In accordance with international agreements, Ukraine has committed to transitioning to the principles of sustainable development and building a green economy. However, Ukraine's strategic regional planning and financing with the aim of achieving its sustainable development goals remain insufficiently analysed. This paper examines the compliance of Ukraine's regional development strategies against the declared sustainable development concept and goals to determine the amount of funding invested in the measures aimed at "greening" these regions' economies and to compare these investments with the declared measures in accordance with the sustainable development concept. To achieve these objectives, we analysed 24 regional strategies and one city's strategy (Kyiv) with respect to strategic and operational goals relating to sustainable development constituents and the achievement of sustainable development goals. To assess Ukraine's commitment to regional public policy in relation to the sustainable development concept, we analysed the revenues and expenditures of the regional budgets for 2018–2020 and defined the amount of investment in the field of environmental protection and ecology. Comparison of these indicators reveals the formal and subject-matter compliance of regional development strategies with the sustainable development concept as well as real financial support for the environmental development of Ukraine's regions. The main findings allowed us to define Ukraine's commitment to its regional public policy regarding sustainable development and the declarativeness of some regions' statements regarding their commitment to sustainable development, to determine which regions are most relevant to sustainable development strategies and expenditures within the regional budget and to develop recommendations for further research.

Keywords: strategy; region; sustainable development; sustainable development goals; strategic goal; compliance; expenditures; revenues

JEL Codes: H76, Q01, R11, R58

Abbreviations: EU: European Union; GIZ: German agency for international cooperation; GRP: gross regional product; MDG: Millennium Development Goals; SD: sustainable development; SDG: Sustainable Development Goals; UNDP: United Nations Development Programme; USAID: United States Agency for International Development; ACC: the American Chamber of Commerce

1. Introduction

Over the last decade, relations between Ukraine and the European Union (EU) have expanded and deepened. This interaction has prompted Ukraine's implementation of the necessary institutional, economic and legal reforms that would bring the country closer to the relevant EU standards. In 2014, the EU and Ukraine signed an Association Agreement (The official website of the Verkhovna Rada of Ukraine, 2014a), which foresees Ukraine's economic integration into the EU's internal market and intensifies the reform of Ukraine's energy sector, including introduction of the green economy and commitment to sustainable development principles.

The Concept of sustainable development as "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs" was introduced in 1987 at the World Commission on Environment and Development (United Nations, 1987). It spread widely across the globe, and different dimensions were added to the concept, which primarily cohered around three pillars: environmental, social and economic (Purvis et al., 2019). As a Concept, sustainable development foresaw the harmonious combination of these three pillars, which recently developed into the Millennium Development Goals (MDGs) (United Nations, 2022) and Sustainable Development Goals (SDGs) (United Nations, 2022), with specific targets and indicators.

Ukraine's first attempts to promote sustainable development of its territories were much later, between 1997 and 1999, when the National Commission for Sustainable Development of Ukraine was established under the Cabinet of Ministers of Ukraine (The official website of the Verkhovna Rada of Ukraine, 1997) and the Concept of Sustainable Development of Settlements was approved (The official website of the Verkhovna Rada of Ukraine, 1999). The National Commission for Sustainable Development had to become an advisory board and determine the national development strategy based on the balance of economic, social and environmental factors. However, the Commission was abolished in 2003, and no national sustainable development strategy emerged in the interim. As the first conceptual document of Ukraine relating to sustainable development principles, the Concept of Sustainable Development of Settlements defined the key directions for state policy to take to promote the sustainable development of settlements (cities and villages) and outlined legal and economic concerns with respect to the policy implementation. However, like most policy documents of that time, it was more formal and declarative than functional, as the model of regional governance in Ukraine, formed during the Soviet era, was inherited along with independence. This model anticipated centralised governance, based on the public authorities' dominance in addressing

local self-government and territorial development. Unfortunately, at that time, the issues associated with ensuring sustainable development within decentralisation processes had received little attention.

The first national strategic document relating to sustainable development principles appeared as late as 2015, after the Association Agreement between the EU and Ukraine had been signed. (The official website of the Verkhovna Rada of Ukraine, 2015). It was the Strategy for Sustainable Development “Ukraine 2020” that identified the four vectors for the implementation of 62 reforms and development programmes. The Strategy itself did not address the principles or pillars of sustainable development; however, the 62 reforms essentially targeted all spheres of the country’s development, including economic, social and environmental. Today, Ukraine, like the other United Nations Member States, has joined the global process of striving for sustainable development and approved the SDGs locally for the period up to 2030 (The official website of the Verkhovna Rada of Ukraine, 2019a). These Goals serve as guidelines for developing forecast projects, programme documents and draft regulations to ensure a balance between the economic, social and environmental dimensions (constituents) of sustainable development in Ukraine.

In accordance with the international agreements (such as the Association Agreement with the EU and the ratification of Ukraine’s Sustainable Development Goals up to 2030, etc. (The official website of the Verkhovna Rada of Ukraine, 2014a; The official website of the Verkhovna Rada of Ukraine, 2019a)), Ukraine has committed to transitioning to the principles of sustainable development and building a green economy. These are vital steps in the framework of European integration processes in the country’s progress toward sustainable development. According to the Razumkov Centre’s analytical note (Razumkov Centre, 2019), “greening” the economy is the basis for achieving sustainable development goals, and it requires the corresponding ‘reformatting’ of expenditures and investments. Fulfilling such tasks involves not only the implementation of the necessary reforms at the level of the real economy but also the radical restructuring of the financial system. Such a system should be ready to mobilise the necessary investment for “green purposes”, as “greening” the economy is a complex and expensive process, which requires investment in new energy-saving technologies and waste treatment facilities as well as reprofiling educational programmes and increasing businesses’ motivation to introduce these changes, etc.

Global trends indicate that the transition to sustainable development requires significant investments and funding (Mieila, 2017; McCollum et al., 2018; Jiang, 2016; Clark et al., 2018), which countries tend to lack. Recent publications emphasise the importance of good governance through proper functioning of the institutions and implementation of strong policies by the state, which is crucial for sustainable development: “It is imperative for the government to undertake the crucial function of providing essential services as well as coordinating the activities of economic agents to ensure alignment with strategies for achieving sustainable development” (Ibrahim, 2017). Therefore, to increase investments in the “green” economy and sustainable development, it is necessary to involve various actors and stakeholders, along with the state itself. At the same time, it is worth exploring how the governments and local administrations strive to achieve SDGs using their available resources. However, the state’s strategic planning and financing with the aim of achieving its SDGs remains underexplored.

Ukraine is a unitary state whose territory consists of 24 regions (*oblasts*), the Autonomous Republic of Crimea, and two cities, which have special status—Kyiv, which is the country’s capital, and Sevastopol, located in Crimea (The official website of the Verkhovna Rada of Ukraine, 1996). Since 2014, the Autonomous Republic of Crimea and parts of the territories of Donetsk and Luhansk

regions are temporarily not government-controlled areas. At present, Ukraine is on a path toward the decentralisation and transfer of authorities from the centre to individual territorial communities that completed the amalgamation process in late 2020 (The official website of the Verkhovna Rada of Ukraine, 2014b; The official website of the Verkhovna Rada of Ukraine, 2020; Halhash et al., 2020). All regions are divided into territorial communities and, as of 2021, Ukraine has 1,469 territorial communities (*hromadas*). However, the newly amalgamated territorial communities today focus primarily on socio-economic issues, relegating environmental issues to the middle distance or beyond. Rather, 24 of Ukraine's regions remained unchanged, and the authorities in the form of regional state administrations or civil-military administrations determined the direction of the development strategies for all communities in their territories. The declaration of commitment to sustainable development at the national and regional levels is indisputable (The official website of the Verkhovna Rada of Ukraine, 1999; The official website of the Verkhovna Rada of Ukraine, 2015; The official website of the Verkhovna Rada of Ukraine, 2019a). However, it is difficult to discern any tangible outcomes of such a commitment, particularly at the local and regional levels. Therefore, this article's goals are as follows:

- to examine the compliance of the development strategies of Ukraine's regions against the declared sustainable development goals;
- to determine the actual amount of funding allocated to measures aimed at 'greening' the economy of these regions; and
- to compare these investments with the declared measures in accordance with the sustainable development concept.

2. Materials and methods

For the purpose of this paper, we analysed Ukraine's 24 regions. The data presented in the paper exclude the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and portions of the temporarily occupied territories in the Donetsk and Luhansk regions. Table 1 presents overall information about these regions, including each region's gross regional product (GRP), population and place in the environmental ranking of the regions. According to the data in Table 1, it is possible to define each region's overall performance as well as determining which regions are more environmentally polluted—and thus more industrious—than others.

Six indicators were used to define the environmental ranking of Ukraine's regions: emissions of pollutants into the atmosphere; increase/decrease of emissions per capita into the atmosphere from mobile pollution sources; generation of waste of I-III hazard classes (for example, batteries and mercury devices); waste generation in general (I-IV hazard classes); volume of polluted wastewater; and the number of malignant neoplastic diseases (Baturyn et al., 2022). The first region in the ranking is considered the most environmentally clean. Thus, Ukraine's five cleanest regions include the Zhytomyr, Chernivtsi, Zakarpattia, Volyn and Rivne regions.

Table 1. Overall performance of 24 regions of Ukraine.

Region (oblast)	Environmental ranking of regions in 2020 (rank)	2015		Average annual population (persons)	2019		Average annual population (persons)
		GRP, mln UAH	GRP per capita, UAH		GRP, mln UAH	GRP per capita, UAH	
Vinnitsia	10	59,871	37,270	1,606,368	129,162	83,175	1,552,905
Lutsk (Volyn)	4	31,688	30,387	1,042,793	75,660	73,215	1,033,375
Dnipro	24	215,206	65,897	3,265,760	390,585	122,379	3,191,562
Donetsk	23	115,012	26,864	4,281,197	205,046	49,422	4,148,854
Zhytomyr	1	38,425	30,698	1,251,757	85,294	70,247	1,214,202
Uzhhorod (Zakarpatska)	3	28,952	22,989	1,259,364	61,335	48,861	1,255,296
Zaporizhzhia	19	89,061	50,609	1,759,784	155,235	91,498	1,696,618
Ivano- Frankivsk	14	45,854	33,170	1,382,452	86,702	63,254	1,370,674
Kyiv	16	104,030	60,109	1,730,734	218,737	123,267	1,774,492
Kirovohrad	12	38,447	39,356	976,865	73,093	77,816	939,329
Luhansk	13	23,849	10,778	2,212,770	40,300	18,798	2,143,873
Lviv	21	94,690	37,338	2,535,986	214,453	85,198	2,517,053
Mykolaiv	18	48,195	41,501	1,161,274	92,459	82,149	1,125,479
Odesa	8	99,761	41,682	2,393,366	197,209	82,903	2,378,769
Poltava	17	95,867	66,390	1,443,962	187,381	134,449	1,393,709
Rivne	5	35,252	30,350	1,161,481	67,379	58,332	1,155,131
Sumy	22	41,567	37,170	1,118,352	75,855	70,576	1,074,833
Ternopil	9	26,656	24,963	1,067,823	57,152	54,833	1,042,287
Kharkiv	20	124,843	45,816	2,724,959	247,667	92,864	2,667,030
Kherson	15	32,215	30,246	1,065,116	61,955	59,987	1,032,777
Khmelnysk	6	41,088	31,660	1,297,828	83,034	65,916	1,259,704
Cherkassy	11	50,843	40,759	1,247,391	103,514	86,319	1,199,244
Chernivtsi	2	18,506	20,338	909,929	41,661	46,136	903,003
Chernihiv	7	36,966	35,196	1,050,324	78,001	78,118	998,520
City of Kyiv	N/A	451,700	155,904	2,897,272	949,531	320,885	2,959,090

Note: This information was sourced from the official State Statistics Service of Ukraine, (State Statistics Service of Ukraine, 2021) and the presentation of a group of researchers on environmental ranking (Baturyn et al., 2022).

To analyse the regional development strategies' compliance with the sustainable development concepts and goals, we considered the 24 development strategies up to 2020 of all Ukraine's regions and the capital Kyiv's city development strategy. The strategies were accessed either through each region's official state administration website or through the official website of the Ministry for Communities and Territories Development of Ukraine (The official website of the Ministry for Communities and Territories Development of Ukraine, 2021). We applied morphological analysis and comparative methods to process the strategies' texts by defining the special word forms relating to "sustainability" and analysing the relevance of these words' meanings. The economic, social and

environmental constituents were selected to assess the strategies' commitment to sustainable development, as these constituents form the basic pillars of the concept, are known to the Ukrainian population and aggregate other indicators. Thus, the following elements were analysed within each of the 24 regional development strategies and Kyiv's city development strategy:

- References to the MDGs (*Millennium Development Goals*, 2022) or the SDGs (*Sustainable Development Goals*, 2022);
- References to the sustainable development concept and/or principles;
- Analysis of the strategies' strategic and operational goals and objectives for the presence of the "economic constituent" of sustainable development among them (that is presence of goals and objectives, which relate to economic growth, industrious development, increase of employment etc.);
- Analysis of the strategies' strategic and operational goals and objectives for the presence of the "social constituent" of sustainable development among them (that is presence of goals and objectives, which relate to overcoming poverty, provision of social services, solving urgent social problems etc.);
- Analysis of the strategies' strategic and operational goals and objectives for the presence of the "environmental constituent" of sustainable development among them (that is presence of goals and objectives, which relate to environmental protection, ecological stability, installation of waste treatment facilities etc.);
- Analysis of the strategies' strategic and operational goals and objectives for the presence of the energy-saving activities among them (as affordable and clean energy is one of the SDGs, energy efficiency is among the Association Agreement requirements and the government and local authorities allocate financial resources for energy efficiency programmes);
- Involvement of international organisations, programmes and/or projects in the strategic development process.

We hypothesise that the most polluted regions as well as those that contain "sustainable development constituents" among their strategies' operational and/or strategic goals should allocate more funds for measures relating to sustainable development and thus demonstrate their commitment to achieving the SDGs. As international organisations worldwide promote SDGs achievement, we believe that the involvement of international organisations in the strategy development process would orient the strategies towards sustainable development principles and ensure the presence of all three constituents (economic, social and environmental) among goals of these strategies.

The strategies were typically adopted a seven-year outlook and each strategy's development began a year prior to its approval. The Donetsk and Luhansk regions' strategies were updated in 2015–2016, as these regions have been directly involved in armed conflict since 2014. Owing to the significant changes in these areas' economies, the displacement of large numbers of people and institutions and infrastructural collapse, such changes were essential, as the development strategies include action plan development, budget planning and resource spending. Analysis of the strategies is relatively formal, since the objective was to evaluate the goals' formal compliance with the sustainable development constituents. Table 2 presents the results of the analysis.

In addition to analysing these strategies, the revenues and expenditures of the regional budgets for 2018–2020 were analysed (see Tables 3 and 4), including

- tax revenues (income) relating to the environmental constituent of sustainable development,
- expenditures on environmental protection.

Table 2. Results of the analysis of 24 regional development strategies and Kyiv’s city development strategy for compliance with sustainable development concept and goals.

Region (<i>oblast</i>)	Reference to MDGs or SDGs in the strategy	Referenc e to the SD concept and/or SD principles	Economic developmen t among the strategic goals	Social developmen t among the strategic goals	Environmenta l development among the strategic goals	Environmenta l development among the operational goals	Energy saving among the operationa l goals	Strategic environmenta l assessment of the strategy	Who assisted the strategy developmen t process?
Vinnitsia	SD Strategy “Ukraine 2020”	Yes	Yes	Yes	Yes	No	Yes	No	
Lutsk (Volyn)	Developed in accordanc e with the SDGS	No	Yes (SD)	Yes	No	Yes	Yes	No	
Dnipro	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Donetsk	No	No	Yes	Yes	No	Yes	No	No	UNDP
Zhytomyr	No	No	Yes	Yes	No	Yes	Yes	No	
Uzhhorod (Zakarpatska)	No	Yes	Yes	Yes	Yes	Yes	Yes	No	
Zaporizhzhia	SD Strategy “Ukraine 2020”	No	Yes	Yes	Yes	Yes	Yes	No	
Ivano- Frankivsk	No	Yes	Yes	Yes	No	Yes	Yes	No	
Kyiv	No	No	Yes	Yes	No	Yes	Yes	No	
Kirovohrad	No	No	Yes	Yes	No	Yes	Yes	No	
Luhansk	SDGs	No	Yes (SD)	Yes	No	Yes	Yes	No	UNDP
Lviv	SD Strategy “Ukraine 2020”	Yes	Yes	Yes	No	Yes	Yes	Yes	
Mykolaiv	No	Yes	Yes	Yes	No	Yes	Yes	No	EU project
Odesa	SD Strategy “Ukraine 2020”	Yes	Yes	Yes	Yes	No	Yes	No	
Poltava	No	Yes	Yes	Yes	No	No	Yes	No	EU project

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Region (<i>oblast</i>)	Reference to MDGs or SDGs in the strategy	Reference to the SD concept and/or SD principles	Economic development among the strategic goals	Social development among the strategic goals	Environmental development among the strategic goals	Environmental development among the operational goals	Energy saving among the operational goals	Strategic environmental assessment of the strategy	Who assisted the strategy development process?
Rivne	No	Yes	Yes (SD)	Yes	No	Yes	Yes	No	
Sumy	No	No	Yes (SD)	Yes	No	Yes	Yes	No	
Ternopil	No	No	Yes	Yes	No	Yes	Yes	No	
Kharkiv	SD Strategy “Ukraine 2020”	No	Yes	Yes	No	Yes	Yes	No	
Kherson	No	Yes	Yes	Yes	Yes	No	Yes	No	EU project
Khmelnysk	No	Yes	Yes	Yes	No	Yes	Yes	No	EU project
Cherkassy	SD Strategy “Ukraine 2020”	Yes	Yes	Yes	Yes	Yes	Yes	No	
Chernivtsi	SD Strategy “Ukraine 2020”	No	Yes (SD)	Yes	Yes	Yes	Yes	No	
Chernihiv	No	Yes	Yes	Yes	No	Yes	Yes	No	EU project
City of Kyiv	No	Yes	Yes	Yes	Yes	Yes	Yes	No	GIZ, USAID, ACC, UNDP, Razumkov Centre etc.

Note: These data were obtained from 25 strategies: those of 24 regions of Ukraine and the city of Kyiv, which are available from the official website of the Ministry for Communities and Territories Development of Ukraine (The official website of the Ministry for Communities and Territories Development of Ukraine, 2021).

Table 3. Budget revenues relating to the environmental constituent of sustainable development.

Region	2018			2019			2020		
	Budget revenues total, mln UAH	Income in the field of environmental protection and ecology		Budget revenues total, mln UAH	Income in the field of environmental protection and ecology		Budget revenues total, mln UAH	Income in the field of environmental protection and ecology	
		Total	% from total revenue		Total	% from total revenue		Total	% from total revenue
Vinnitsia	10,866.25	107.09	0.99%	8,795.59	92.49	1.05%	4,808.95	68.76	1.43%
Lutsk (Volyn)	7,561.06	33.32	0.44%	6,329.65	10.90	0.17%	3,207.09	10.11	0.32%
Dnipro	21,283.30	965.18	4.53%	17,590.58	1 000.78	5.69%	10,800.62	1,004.43	9.30%
Donetsk	12,453.18	453.87	3.64%	10,613.16	462.75	4.36%	6,171.21	589.30	9.55%
Zhytomyr	8,798.23	116.31	1.32%	7,188.28	52.28	0.73%	3,906.78	54.02	1.38%
Uzhhorod	7,334.16	36.32	0.50%	6,651.18	17.11	0.26%	3,137.95	17.89	0.57%
(Zakarpatska)									
Zaporizhzhia	10,937.54	329.69	3.01%	9,011.28	365.94	4.06%	5,156.97	341.34	6.62%
Ivano-Frankivsk	9,447.97	211.90	2.24%	7,726.07	200.31	2.59%	3,349.02	130.80	3.91%
Kyiv	11,621.78	125.44	1.08%	10,092.44	104.40	1.03%	5,906.55	53.35	0.90%
Kirovohrad	6,511.52	136.60	2.10%	5,414.22	144.35	2.67%	2,979.35	149.61	5.02%
Luhansk	4,657.58	44.32	0.95%	4,011.42	38.85	0.97%	2,382.79	36.18	1.52%
Lviv	16,021.04	152.73	0.95%	12,632.24	124.94	0.99%	7,043.70	101.80	1.45%
Mykolaiv	6,440.19	61.92	0.96%	5,965.43	67.59	1.13%	3,487.86	64.90	1.86%
Odesa	12,225.16	32.06	0.26%	11,230.90	30.77	0.27%	6,080.52	30.74	0.51%
Poltava	10,815.44	498.38	4.61%	8,693.59	560.40	6.45%	5,349.95	449.68	8.41%
Rivne	8,584.64	63.64	0.74%	7,032.34	43.42	0.62%	3,177.57	44.97	1.42%
Sumy	7,797.44	131.26	1.68%	5,898.56	92.97	1.58%	3,185.59	73.72	2.31%
Ternopil	7,250.88	15.72	0.22%	5,653.37	10.97	0.19%	2,686.46	11.06	0.41%
Kharkiv	15,352.05	421.50	2.75%	13,038.85	407.53	3.13%	7,259.73	259.64	3.58%
Kherson	6,267.56	38.63	0.62%	5,355.39	28.90	0.54%	3,180.25	27.66	0.87%
Khmelnysk	8,582.19	55.91	0.65%	6,987.62	32.15	0.46%	3,579.74	35.49	0.99%
Cherkassy	8,554.12	82.40	0.96%	6,723.60	51.42	0.76%	3,519.44	50.03	1.42%
Chernivtsi	5,784.67	29.08	0.50%	4,879.02	10.09	0.21%	2,200.53	9.47	0.43%
Chernihiv	7,279.17	104.27	1.43%	5,580.55	50.48	0.90%	3,079.96	41.05	1.33%
City of Kyiv	57,130.81	98.14	0.17%	62,217.74	83.80	0.13%	58,121.73	64.38	0.11%

Note: The data presented in this table were taken from the State web portal of the budget for citizens, as a governmental resource that accumulates official data on all budgets (including budget revenues information) at all levels of Ukraine's administrative-territorial units (State web portal of the budget for citizens, 2021).

Table 4. Budgets expenditures on environmental protection.

Region	2018			2019			2020		
	Budget expenditures total, mln UAH	Expenditures in the field of environmental protection and ecology		Budget expenditures total, mln UAH	Expenditures in the field of environmental protection and ecology		Budget expenditures total, mln UAH	Expenditures in the field of environmental protection and ecology	
mln UAH	Total	% from total expenditures	Total	% from total expenditures	Total	% from total expenditures	Total	% from total expenditures	
Vinnitsia	10,877.02	22.98	0.21%	8,871.15	39.64	0.45%	5,013.93	4.20	0.08%
Lutsk									
(Volyn)	7,764.31	0.43	0.01%	6,302.95	0.30	0.005%	3,314.30	1.00	0.03%
Dnipro	22,290.37	240.48	1.08%	17,707.44	252.46	1.43%	10,724.13	250.02	2.33%
Donetsk	14,113.32	477.35	3.38%	11,373.14	465.06	4.09%	8,630.41	365.57	4.24%
Zhytomyr	8,812.01	7.79	0.09%	7,119.68	2.36	0.03%	4,126.72	7.23	0.18%
Uzhhorod									
(Zakarpatska)	7,436.93	0.34	0.00%	6,773.08	0.27	0.00%	2,872.08	0.10	0.00%
Zaporizhzhia	11,278.22	120.87	1.07%	9,114.60	30.61	0.34%	5,274.32	19.05	0.36%
Ivano-									
Frankivsk	9,372.22	20.10	0.21%	7,912.00	30.98	0.39%	3,515.83	9.63	0.27%
Kyiv	12,770.90	44.78	0.35%	9,983.81	24.80	0.25%	6,013.12	82.99	1.38%
Kirovohrad	6,491.37	31.26	0.48%	5,358.83	60.01	1.12%	3,097.14	14.26	0.46%
Luhansk	4,723.36	15.73	0.33%	4,417.73	113.17	2.56%	2,820.90	117.19	4.15%
Lviv	16,237.21	17.84	0.11%	12,703.22	12.58	0.10%	7,102.01	6.15	0.09%
Mykolaiv	6,437.42	12.00	0.19%	5,885.47	16.89	0.29%	3,261.22	16.54	0.51%
Odesa	12,391.60	20.36	0.16%	11,272.26	9.97	0.09%	6,206.47	18.98	0.31%
Poltava	10,600.50	62.80	0.59%	8,601.19	46.85	0.54%	5,841.53	20.93	0.36%
Rivne	8,695.60	7.76	0.09%	7,172.70	11.39	0.16%	3,204.76	10.56	0.33%
Sumy	7,892.24	7.78	0.10%	5,990.47	10.43	0.17%	3,217.23	7.05	0.22%
Ternopil	7,223.05	3.23	0.04%	5,772.47	0.40	0.01%	2,638.19	1.31	0.05%
Kharkiv	15,352.55	17.95	0.12%	13,077.76	36.10	0.28%	7,115.77	40.99	0.58%
Kherson	6,211.55	7.26	0.12%	5,352.18	6.91	0.13%	3,325.24	0.28	0.01%
Khmelnysk	8,705.94	16.85	0.19%	7,118.87	10.20	0.14%	3,579.61	7.32	0.20%
Cherkassy	8,399.17	5.46	0.07%	6,715.70	1.93	0.03%	3,539.36	16.19	0.46%
Chernivtsi	5,692.21	1.43	0.03%	5,111.86	0.43	0.01%	2,241.10	0.00	0.00%
Chernihiv	7,222.45	10.57	0.15%	5,650.68	15.65	0.28%	3,070.01	7.49	0.24%
City of Kyiv	58,124.03	124.91	0.21%	61,120.50	160.36	0.26%	57,948.51	85.67	0.15%

Note: The data for this table was taken from State web portal of the budget for citizens, which is a governmental resource, which accumulates official data on all budgets (including budget expenditures information) of all levels' administrative-territorial units of Ukraine (State web portal of the budget for citizens, 2021).

Budget revenues include tax revenues, other taxes and fees and other non-tax revenues. Tax revenues relating to the environmental constituent of sustainable development include rent and other natural resource charges. Other taxes and fees include environmental tax and environmental pollution charges. Non-tax revenues include monetary penalties for damage caused by violations of

environmental legislation. Expenditures in the field of environmental protection include the prevention and elimination of environmental pollution, preservation of the nature reserve fund and other activities in the field of environmental protection. These indicators were selected because, according to the budget revenues and expenditures, all available data is distributed among these areas.

Data on regional budgets with their detailed breakdown was selected from the State Budget Web Portal for Citizens for each of the analysed regions and the city of Kyiv (Derzhavnyi web portal *biudzhetu dlia hromadian*, 2021). The three-year limitation is due to the limited open and detailed data on this and other resources. Analysis of the strategies and budgets first considered the environmental constituent and revenues and expenditures related to the environment, as all strategies include areas of economic development and social security.

At the end of 2020, new strategies for the development of all regions up to 2027 were developed and adopted. The availability and accessibility of regional strategies make it possible to analyse the strategic and operational goals' compliance with the sustainable development concept and goals. However, the budget data are not yet available. Following the amalgamation of territorial communities, it is recommended that individual communities be analysed for investments into sustainable development at the level of smaller administrative units. Unfortunately, the statistics relating to individual territorial communities are currently unavailable. Moreover, the number of territorial communities in Ukraine is relatively large, and thus the relationship between their strategies' focus on sustainable development and the relevant investments should be investigated separately.

It should also be noted that the city of Kyiv is not part of the Kyiv region, and thus its data are presented separately from those of the region. Kyiv is a city with a special status, and its revenues and expenditures are incomparable with several of Ukraine's regions.

3. Results

The overall results of the analyses of the development strategies are presented in Table 5.

Table 5. Overall results of the analyses of the regional development strategies.

Indicator	Number of regions
Mentioning MDGs or SDGs in the strategy	9
Mentioning the SD concept and/or SD principles	14
Economic development among the strategic goals	25
Social development among the strategic goals	25
Environmental development among the strategic goals	9
Environmental development among the operational goals	21
Energy saving among the operational goals	24
Strategic environmental assessment of the Strategy	2
Assistance of international organisations to the strategy development process	8

3.1. Compliance of the regional development strategies with sustainable development

References to “sustainable development” or use of the term “sustainable” were found in all analysed strategies. To a considerable degree, the focus is on ensuring the “sustainability” of the outcome when a particular strategic goal is achieved. However, few regional development strategies

referred specifically to official world and/or national documents on achieving the SDGs, although these references would be highly appropriate, as the regional development strategies belong to the strategic official document category. Only seven regions (Vinnytsia, Zaporizhzhia, Lviv, Odesa, Kharkiv, Cherkasy and Chernivtsi) indicated that when developing their strategies up to 2020 they consulted the official document—the Strategy for Sustainable Development of Ukraine until 2020. The Volyn and Luhansk regions’ strategies state that in the process of development they took into account the SDGs.

Regarding the sustainable development concept and/or sustainable development principles, 11 regions make no mention whatsoever of such terms (see Table 2). At the same time, five (Volyn, Zaporizhzhia, Luhansk, Kharkiv and Chernivtsi) of these 11 regions closely based the development of their strategies on official documents relating to sustainable development. This may indicate inconsistency in the actions of developers of regional development strategies or insufficient attention to the necessity of linking the conceptual principles of sustainable development identified in the strategies with the terminology used in official documents. Four regions (Vinnytsia, Lviv, Odesa and Cherkasy) mention the Strategy for Sustainable Development of Ukraine until 2020 (The official website of the Verkhovna Rada of Ukraine, 2015), as well as the sustainable development concept and principles.

No mention of the SDGs, MDGs and/or the sustainable development concept and principles was found in the development strategies of the Donetsk, Zhytomyr, Kyiv, Kirovohrad, Sumy and Ternopil regions. This may be due to the period during which these regions’ strategies were developed and updated (before 2015, which is before the approval of the Strategy for Sustainable Development of Ukraine until 2020), but no relevant changes were made in subsequent years.

3.2. Subject-matter compliance of the regional development strategies with sustainable development

Regarding the regional development strategies’ subject-matter compliance with the sustainable development concept, it is necessary to analyse each strategy’s strategic and operational goals with respect to their compliance with the main constituents of the sustainable development concept—economic, social and environmental.

Within the sustainable development concept, regional development oversees the optimal combination of interests of the population and business together with solutions to environmental problems. Businesses should continue to ensure the rational use of limited resources and implement environmentally friendly production methods and technologies. It should be noted that all regional development strategies include an economic constituent among their strategic goals. The majority of Ukraine’s regions adopted strategies in which the strategic goals relating to economic development include such directions as “forming competitive and innovative economy” (Vinnytsia, Zakarpatska, Kyiv, Lviv, etc.), “investment attractiveness” (Zaporizhzhya), “reduction of economic imbalances” (Dnipro) and “improving the efficiency of using the region’s economic capacity” (Kirovohrad, Poltava). Meanwhile, only five regions (Volyn, Luhansk, Rivne, Sumy and Chernivtsi) focused on the “sustainable” economic development of the respective region (The official website of the Ministry for Communities and Territories Development of Ukraine, 2021) (see Table 2).

In turn, the social constituent of sustainable development focuses on the community and its people, maintaining the stability of social and cultural subsystems, minimising social conflict, improving public social services and promoting social inclusivity and equality. Table 2 demonstrates that all regional development strategies include strategic goals relating to social development. However, deeper analysis

revealed that the strategies' developers focused mainly on such aspects as "high quality of human life" (Zaporizhzhia, Kyiv, Lviv, Mykolaiv, Kharkiv), "human capital development" (Dnipro, Zhytomyr, Zakarpatska, Ivano-Frankivsk, Poltava, etc.), "raising living standards" (Ternopil) (The official website of the Ministry for Communities and Territories Development of Ukraine, 2021). In our opinion, such areas of social development by themselves are not wholly relevant to sustainable development, as they do not indicate sustainability, inclusiveness and fair distribution of benefits.

These directions, which relate to the strategies' economic and social constituents, clearly address the specific socio-economic problems that affect each region. For example, the Donetsk "economic development and increased employment" and "human development, provision of quality social services and resolution of problems of internally displaced persons" among its strategic goals. The Luhansk region's (also under conflict) development strategy includes among its social strategic goals the "restoration of critical infrastructure and services". However, another of its strategic goals defines sustainable development as a landmark: "economic recovery and transition to sustainable development".

In the context of our research, we also consider the environmental constituent among the strategic and operational goals of the approved regional development strategies. In the environmental context, sustainable development should ensure the stability, integrity and viability of ecosystems, maintaining their capacity for self-renewal and dynamic adaptation to changes. Taking this into account, the goals and objectives relevant to the environmental constituents of sustainable development should be also strategic. At the same time, ecological or environmental development was indicated as a strategic goal in the strategies of only nine regions (Vinnytsia, Dnipro, Zakarpatska, Zaporizhzhia, Odesa, Kherson, Cherkasy and Chernivtsi) (see Tables 2 and 5). The formulation of strategic goals relevant to environmental constituent of sustainable development relates to "environmental security", "environmental and energy security" and "environmental security and environmental protection" (The official website of the Ministry for Communities and Territories Development of Ukraine, 2021). The majority of Ukraine's regions include environmental development among the operational goals in their development strategies. Such operational goals were typically set within the strategic goals, which do not always directly relate to the environmental constituent, but to economic constituent. The Poltava region's development strategy does not specify environmental development among its main goals, but its preamble states, "The stage of designing strategic and operational goals is also accompanied by work to achieve the environmental balance of the Strategy. Thus, the sustainable development principles become the basis for the Strategy..." (The official website of the Ministry for Communities and Territories Development of Ukraine, 2021). However, this approach is not an example of due attention to environmental issues for the further sustainable development of the region.

Energy saving and efficiency are among the most relevant goals to the environmental constituent of sustainable development and are among Ukraine's key strategic goals in implementing decentralisation reform as a means of bringing the country closer to EU energy standards in accordance with the Association Agreement (The official website of the Verkhovna Rada of Ukraine, 2014a). According to the Strategy of National Environmental Policy of Ukraine for the period up to 2030 (The official website of the Verkhovna Rada of Ukraine, 2019b) adopted in 2019, Ukraine should introduce environmentally friendly, resource- and energy-saving technologies, and contribute to the development of renewable energy sources. According to Table 2, energy saving is indicated among the operational development goals in the strategies of almost all Ukraine's regions (with the exception of the Donetsk region).

Another observation shows that whenever international organisations have been involved in the strategy development process, an environmental constituent is present among the strategic and/or

operational goals. For example, the UNDP assisted the development of strategies in the Donetsk and Luhansk regions and the EU project assisted the development of strategies in the Mykolaiv, Poltava, Kherson, Khmelnytsky and Chernihiv regions. Thus, it is possible to assume correlation between the involvement of international experts in the process of developing strategies and in these strategies' compliance with the sustainable development concept.

In 2013–2014, the strategic environmental assessment for the regional development strategies of Dnipro and Lviv regions was conducted for the first time in Ukraine (see Table 2). This procedure was supported by the International Assistance Projects “Building Capacity in Evidence-Based Economic Development Planning in Ukrainian Oblasts and Municipalities Project” (EBED Project) and “Local Economic Development of Ukrainian Cities”, implemented by the Conference Board of Canada and the Federation of Canadian Municipalities under support from the Government of Canada (PLEDDG project, 2019). The strategic environmental assessment of state planning documents facilitates the comprehensive analysis of the potential impacts of planned activities on the environment and the prevention or mitigation of potential negative environmental consequences. Such assessment is a new tool used to implement state environmental policy based on a simple principle: it is easier to prevent negative effects on the environment at the planning stage than to identify and correct them at the stage of implementing strategic initiatives. Thus, implementation of the strategic environmental assessment during the regional strategy development stage will contribute to the achievement of SDGs.

3.3. Financial support to environmental activities of regions in Ukraine

We analysed the budgets of each of the 24 regions and the city of Kyiv for revenues relating to the use of natural resources, environmental pollution and ecology (see Table 3). The budget volumes across different regions generally show clear and significant differences depending on the level of industrial development and the economy of each region. According to budget revenues, the most profitable regions are the city of Kyiv and the Dnipro, Kharkiv, Lviv, Donetsk and Odesa regions. However, all regions' revenues declined during the last three years, primarily as a result of the decentralisation reform that took place in Ukraine and the direct redistribution of revenues to the budgets of the newly amalgamated territorial communities.

Several regions also experienced changes in revenues relating to the use of natural resources and/or to environmental pollution. Such changes are ambiguous: a significant decrease occurred in the revenues from environmental tax or other fees in such regions as Volyn, Cherkasy, Chernihiv, Kyiv etc., while there is an increase in such revenues in other regions (Zaporizhzhia, Kirovohrad, Mykolaiv). The leaders among the regions with the largest share of the income in the field of environmental protection and ecology in the total budget revenues in 2020 were Donetsk (9.55%), “environmental” income in the total budget has increased over the last three years. The Poltava region is one of Ukraine's agro-industrial regions in which large agricultural companies that cause significant pesticide contamination operate. In turn, the Donetsk, Zaporizhzhia and Dnipro regions are among the most industrial, with high levels of environmental pollution as large industrial enterprises operate in their territories, leading to pollution and budget revenues from environmental taxes and fees.

Regarding expenditures in the fields of environmental protection and ecology, changes in these are also different across different regions. For example, the Chernivtsi region lacked any expenditure on environmental protection in 2020. However, as Table 2 illustrates, the Chernivtsi region's development strategy includes an environmental constituent among both its strategic and operational

goals. A significant decrease in environmental protection expenditures is evident in 2020 compared to 2018 in regions including Vinnytsia, Zaporizhzhia, Kherson, Zakarpatska, and Lviv. At the same time, the Vinnytsia, Zaporizhzhia, Kherson, and Zakarpatska regions included the preservation of the environment among their strategic goals (see Table 2), and reductions in funding for environmental protection measures can significantly hinder their achievement.

Several regions show a significant or moderate expenditure increase in the field of environmental protection: the Luhansk, Cherkasy, Kharkiv, Kyiv, Mykolaiv, Rivne regions (see Table 4). The “leader” in terms of expenditures on environmental protection and ecology over the last three years was the Donetsk region (with a share of 3.38–4.24% of total expenditure in 2018–2020). This was followed by the Luhansk region, which significantly increased this share from 0.33% in 2018 to 4.15% in 2020. The share of ‘environmental’ expenditures also exceeds 1% in the Dnipro and Kyiv regions. The remaining regions spent less than 1% on environmental protection and relevant measures.

Comparison of the absolute values of expenditures in the field of environmental protection with the revenues received from the use of natural resources and environmental pollution identifies only a few regions in which expenditures outweigh revenues: the Donetsk region in 2018, the Kyiv region in 2020, the Luhansk region in 2019 and 2020 and the city of Kyiv in 2018–2020 (see Tables 3 and 4). As conflict-affected regions, the Donetsk and Luhansk regions suffer from the negative impact of hostilities on the environment, and may incur additional costs relating to environmental protection aside from the resolution of industrial pollution issues.

4. Discussion

In accordance with international agreements, Ukraine has committed to building a “green” economy. However, this task involves not only the implementation of the necessary reforms at the level of the real economy but also the radical restructuring of the financial system. Ukraine demonstrates a strong desire to increase its global competitiveness and has introduced the decentralisation reform and transformed its approaches to developing various programmes and strategies. However, analysis of the development strategies of all Ukraine’s regions revealed that the vast majority of strategy developers understand the term “sustainable development” as merely denoting the steady growth of the regions’ economic and social indicators. This is sometimes accompanied by the implementation of unsystematic measures to preserve the environment and improve energy efficiency.

Herein, we have analysed the strategic and operational goals of the strategies with respect to their compliance with the economic, social and environmental constituents of the sustainable development concept. The results demonstrate that all strategies have economic and social constituents among their strategic goals but that only nine of Ukraine’s 24 regions of Ukraine indicated the environmental constituent among the strategic goals in their strategies. At the same time, it is clear that the involvement of international organisations in the strategy development process contributes to the regional development strategies’ compliance with the sustainable development concept and thereby to the achievement of the SDGs. It should be noted that neither a region’s position in terms of environmental pollution ranking nor the presence of environmental development goals among its strategic goals (Table 6) have any significant impact on that region’s environmental expenditures. Not all of the five most polluted regions mention environmental preservation or restoration among their strategic goals, and nor do they have the highest “environmental” expenditure percentages.

Table 6. The overall rankings of each region.

Region (oblast)	Ranking of each region				Presence of indicator in the strategy development process		
	Environment al rank	Environmenta l pollution ranking (reverse to environmental rank)	GR P	% of environment al income from total revenue	% of “environmenta l” expenditures from total expenditures	Environment al development among the strategic goals	Assistance of internationa l organisations
Vinnitsia	10	15	10	12	20	1	
Lutsk (Volyn)	4	21	18	24	22		
Dnipro	24	1	2	2	3	1	
Donetsk	23	2	6	1	1		1
Zhytomyr	1	24	14	15	17		
Uzhhorod (Zakarpatska)	3	22	22	20	24	1	
Zaporizhzhia	19	6	9	4	9	1	
Ivano- Frankivsk	14	11	13	6	13		
Kyiv	16	9	4	18	4		
Kirovohrad	12	13	19	5	7		
Luhansk	13	12	25	10	2		1
Lviv	21	4	5	11	19		
Mykolaiv	18	7	12	9	6		1
Odesa	8	17	7	21	12	1	
Poltava	17	8	8	3	9		1
Rivne	5	20	20	13	11		
Sumy	22	3	17	8	15		
Ternopil	9	16	23	23	21		
Kharkiv	20	5	3	7	5		
Kherson	15	10	21	19	23	1	1
Khmelnysk	6	19	15	17	16		1
Cherkassy	11	14	11	13	7	1	
Chernivtsi	2	23	24	22	24	1	
Chernihiv	7	18	16	16	14		1
City of Kyiv	16	9	1	25	18	1	1

Note: The ranking is based on indicators from Tables 1–4. The environmental rank assigned to the city of Kyiv is the same as that assigned to the Kyiv region.

Analysis of the financial support available for the environmental development of Ukraine’s regions indicates different changes in incomes and expenditures relating to these issues. On the one hand, the development strategies of certain regions (Chernivtsi, Vinnitsia, Zaporizhzhia, Kherson, Zakarpatska) include the preservation of the environment among their strategic goals, but the funding of the activities either does not occur, or shows negative dynamics. On the other hand, some

industrial regions (Dnipro, Donetsk and Luhansk) show moderately positive dynamics in the increasing “environmental” expenditures. However, the vast majority of Ukraine’s regions allocate less than 1% of their budgets to environmental protection.

A map of Ukraine’s regions that visualises the results of the analysis is provided below (Figure 1).

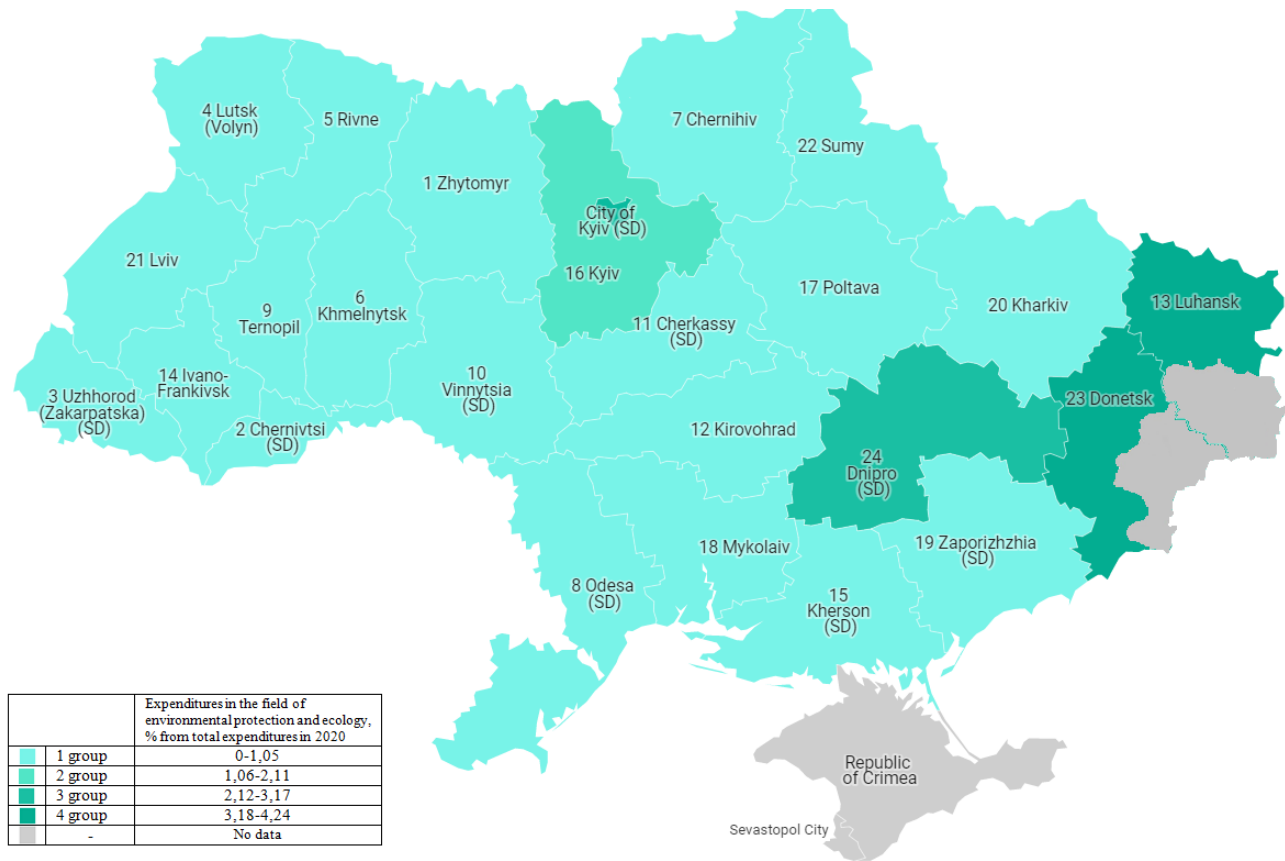


Figure 1. Visualisation of the analysis results of regions in Ukraine.

The regions may be categorised into four groups according to the percentage of expenditure on environmental protection and ecology: the regions’ colours in the map represent the groups. Thus, it is clear that the majority of regions spend less than 1% of their overall expenditure on environmental activities. The number before the name indicates each region’s environmental ranking. The ‘SD’ mark indicates the presence of ‘environmental development’ among each regional strategy’s strategic goals. The grey colour indicates the temporarily occupied territories of the Donetsk and Luhansk regions and the Republic of Crimea, the data for which were unavailable.

5. Conclusions

Analysis of the regional development strategies’ formal compliance with sustainable development concept reveals the fragmentary and inconsistent use of the concepts. In particular, for some of Ukraine’s regions, this is reflected in the strategies’ lack of references to the official documents on sustainable development as well as failure to use key terms pertaining to the concept and/or principles of sustainable development. Analysis of the regional development strategies’

subject-matter compliance with the sustainable development concept showed that the strategies focus primarily on the economic and social constituents, while the environmental constituent was identified among the strategic goals of only nine regions. Some regional development strategies include environmental constituents among their operational goals, however, they belong to the strategic goals that are not directly related to the environment. At the same time, the involvement of international experts in the strategy development process development contributes to increased subject-matter compliance and further potential achievement of the SDGs.

The article's hypothesis was not confirmed, as not all of Ukraine's most polluted regions and those that emphasise "sustainability" in their strategies are leaders with respect to investment in measures related to sustainable development. Analysis of the regional development strategies' compliance with the declared SDGs and the budget expenditures' alignment with the declared goals related to sustainable development concept reveals declarative commitment rather than the actual measures of the transition to a sustainable development path. Changing the development trajectory of regions in Ukraine and the country as a whole in accordance with the sustainable development concept requires not only that the government, public authorities and local governments have a declarative desire to transition to the sustainable development path. In addition to the need for significant 'green' investments, information and expert support are required as well as raised awareness among community members and local government representatives. Such awareness and availability of information will contribute to advocacy of the SDGs, the incorporation of sustainable development principles into strategic documents, the indication of environmental development among the strategic development goals of Ukraine's regions and the allocation of funds to specific measures.

The findings highlight the need to further

- analyse the strategic documents of the amalgamated communities in the regions and their compliance with the regional development strategies in terms of relevance to sustainable development actions;
- analyse the new regional development strategies with respect to their compliance with the sustainable development concept and goals and develop recommendations for updating the strategies;
- determine the key aggregate directions for environmental development expenditure based on each region's specific environmental problems and needs;
- develop key recommendations for raising awareness among local and regional authorities' representatives as well as communities' members.

Conflict of interest

All authors declare no conflicts of interest in this paper.

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