

Human capital and well-being in Romania's strategic documents: from catching-up to reactive positioning

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Abstract: This paper examines how human capital and well-being are conceptualised and articulated within Romania's national strategic documents, and how this articulation changed before and after 2020. Drawing on a qualitative analysis of 14 national strategies, amounting to more than 1,500 pages, the study uses the OECD well-being framework as an analytical lens to assess the integration of human capital into Romanian policy discourse. The documents were divided into two strategic periods, marking the shift between two MFFs, and the pre- and post-pandemic period, and coded using MAXQDA 24, with particular attention to causal relations between human capital, education, skills, well-being, disparities, digitalisation, and the green transition. The findings reveal that disparities remain a central node in both periods, reflecting a persistent concern with territorial, social, educational, and digital inequalities. However, after 2020, Romanian strategies display a visible reorientation towards resilience, competitiveness, and preparedness, especially in relation to the green and digital transitions. Education remains the dominant pillar of human capital, while health, well-being, civic engagement, and social cohesion are less explicitly integrated. The paper argues that Romania's strategic discourse is moving from a catching-up logic towards a more reactive positioning shaped by European and OECD frameworks. Nevertheless, human capital remains insufficiently conceptualised as a unified and dynamic policy category, requiring greater coherence in future strategic frameworks.

Keywords: human capital, Romania, national strategies, OECD well-being framework, territorial disparities, policy realignment, well-being

Introduction

The second half of the twentieth century saw human capital emerge from a relatively marginal concept to a central topic in the social and economic sciences, as well as in national and regional policy agendas (Becker, 1964; Schultz, 1961).

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Human capital is an economic term that conceptualises the skills, knowledge, experience, health, and resilience of a population as an intangible economic asset (OECD, 2001). Instead of treating people merely as manual labour or as units of raw workforce, the human capital framework recognises that investing in a person's development increases their quality of work, innovation capacity, and overall economic productivity (Becker, 1964). Just as a company invests in physical capital, such as better machinery or software, to increase output, societies invest in human capital to drive long-term growth (Mankiw et al., 1992). From the perspective of regional development and international integration, particularly within EU Cohesion Policy or OECD accession goals, human capital is often regarded as a key differentiator between stagnant and prosperous regions (European Commission, 2020; OECD, 2019).

Some key pillars of human capital, mostly focused on education and formal training, health and well-being, skills, and, finally, adaptation and innovation, have also been theorised (World Bank, 2019). These four pillars define not only the main components of human capital but also its strategic policy dimensions.

The topic has become central to various national policies and strategies, as it is associated with long-term economic stability, adaptability, and resilience, characteristics that are increasingly required for states facing crises and shocks of different types and intensities. From this perspective, human capital becomes a strategic node within broader strategic networks, due to its long-term implications (OECD, 2019). Among its pillars, education and formal training stand out as they lay the foundation for all the other pillars to develop, integrate, and flourish (Hanushek & Woessmann, 2015). Thus, education and formal training should be regarded as a core strategic orientation in human capital policy.

However, it must be acknowledged that not all countries approach human capital in their strategies in uniform ways, and some countries are trying to accelerate the catching-up process by adopting more comprehensive frameworks, such as the one proposed by the OECD (OECD, 2019). Some of the countries involved in this catching-up process are former socialist economies, where the vision of human capital was slightly different and adapted to a more centralised, multi-annual planned economy, with little room for adaptability and malleability, and with a stronger focus on predictability and long-term directions (Svejnar, 2002). Romania is such a country, i.e., currently in the process of accession to the OECD. While still lagging slightly behind the V4 and Baltic countries, Romania is attempting to accelerate the catching-up process.

This study examines this catching-up process by focusing on the conceptualisation of human capital and its integration into national strategies. More precisely, the research question is: *How is human capital conceptualised and articulated within Romania's strategic documents, and how has this articulation changed before and after 2020?* In order to address this question, 14 strategies were analysed, totalling over 1,500 pages. The documents were divided into two periods,

analysed using MAXQDA 24 software, with codes assigned to paragraphs depicting causal relations. The results indicate a shift and a certain awareness of new directions, especially after 2020, when, most likely under the impulse of European Union strategies, the discourse shifted towards a more innovative-oriented approach, especially in relation to the green and digital transitions. The choice of 2020 as a splitting point in the timeframe is motivated by two main considerations. On the one hand, it marks the end of one financial programming period and the start of another, indicating a shift from the 2014-2020 vision to the 2021-2027 vision in European funding, as well as the broader alignment of Romanian strategies with EU programme orientations. On the other hand, it marks the onset of the pandemic and the ripple effects it had on strategic documents, on the attention given to human capital and its various sub-variables, as well as on the ongoing effects that became visible from that year onwards.

1. The evolution of the human capital paradigm

In the current state of the society, where many processes are knowledge-based, the development of human capital (stock) of the countries has become a continuous priority. Human capital refers to a set of intangible assets, including knowledge, abilities, skills, competencies, health status, and an individual's values held by a person. But used by the individual or in association with other holders, it may have a positive impact on the economy by increasing economic productivity at the individual, entity, or regional level. Unlike physical capital, human capital cannot be exchanged or sold but can be transferred through knowledge spillovers or multiplied or accumulated over time (Boarini et al., 2012). In this sense, human capital, together with education (as its main driver) is not solely perceived in terms of an individual's capabilities (Sen, 2004), but it is also considered a determinant of productivity, economic growth, development (Benhabib & Spiegel, 1994; Clarke, 2011; Jahanger et al., 2022), territorial cohesion (Eurofound et al., 2024), well-being and quality of life (Bourdeau-Lepage et al., 2018).

1.1. Transition phase: from labour to human capital

Human capital has undergone significant contextual perception over the last three centuries. Towards the end of the 17th century, it was strongly associated with the concept of labour. The intellectual traditions that emerged at that time, associated with William Petty, Alfred Marshall, Karl Marx, and Adam Smith, mainly addressed differences in remuneration between professions and the determination of value based on labour input and hours worked (Folloni & Vittadini, 2010). Later, starting with the second half of the 20th century, the work of the Chicago School members (Becker, 1964; Lucas, 1988; Mincer, 1984; Romer, 1990; Schultz, 1961), together with the transition to a knowledge-based economy in the 1970s and 1980s (Clarke,

2011), led to a reconceptualization of human capital, in a more elitist meaning. Thus, human capital is no longer seen only as labour, but as a productivity factor, as economic growth could no longer be explained exclusively by the classical factors of production (land, labour, capital, entrepreneurship).

1.2. Exploratory phase of human capital

In the second half of the 20th century, Gary Becker (1930-2014), Theodore Shultz (1902-1998), and Jacob Mincer (1922-2006) advanced the idea of investing in human capital, with a particular emphasis on education and on-the-job training. The Chicago School theorists justified these investments as a prerequisite for economic growth, as well as for increasing individual incomes, and their work is recognised in the literature as the first formal articulation of human capital theory, from an economic perspective. The human capital theory makes an important contribution to knowledge by emphasizing investment in education and vocational training, which plausibly explains the income differences between workers with different levels of knowledge and skills. This framework has informed policy measures that increased awareness of the importance of human capital at the decision-making level (Blair, 2011). As for Krogh and Wallin (2011), human capital theory 'represents a long tradition that attempts to explain the results and premises of individual investment in education, training, and [...] the creation of organizational knowledge'.

Becker (1964) analyses the rates of return for white men after graduating from high school and college. In the same study, he distinguishes between general human capital and specific human capital. General human capital is defined by basic literacy and numeracy skills, which are useful to all employees, while specific human capital represents a set of advanced skills that are useful only in a particular enterprise, industry, or country. Schultz (1961) shares the same view, supporting the importance of investment in human capital as a prerequisite for economic development. In his perspective, investment in human capital means investment in health, workplace training, formal education, lifelong learning for adults, and internal migration to access better jobs and balance the labour market supply and demand. Mincer (1974) supports the need to invest in human capital formation, considering human capital both a condition and a consequence of economic growth.

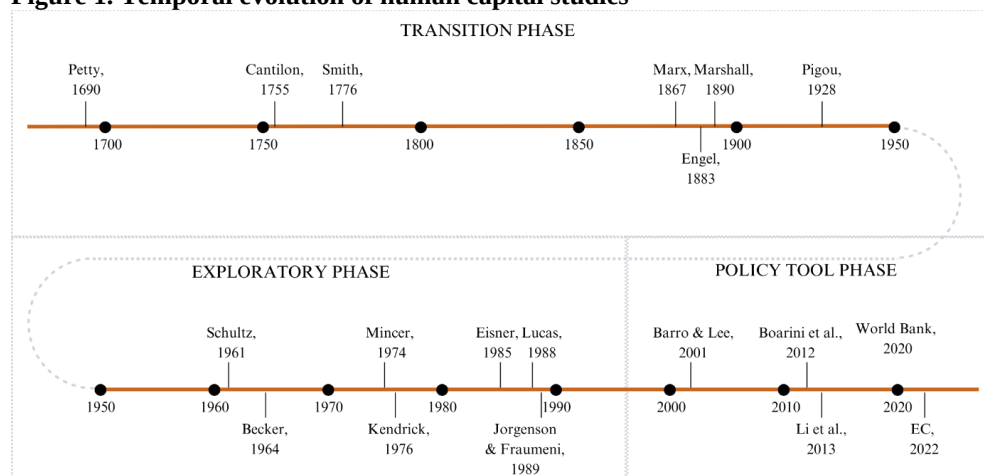
In the context of the crises emerged between 1970 and 1980, the transition from a traditionalist economy to a knowledge-based one took place. Thus, Robert Lucas Jr. (1937-2023) and Paul Romer (1955-present) are recognised as pioneers of endogenous growth theories. Within this paradigm, innovation and investments in human capital contribute to the intra- and interregional diffusion (Benedek, 2004) of knowledge and therefore become key factors in development. In the same vein, education, knowledge generation, and knowledge attraction are central drivers of economic growth and development (Brennan & Connell, 2000). Lucas (1988)

distinguishes between two types of human capital effects: the internal effect, which refers to individual productivity, and the external effect, referring to spillovers of knowledge in the economy. Subsequently, Romer (1990) examines the relationship between human capital and its growth rates, highlighting a causal relationship between human capital (initial literacy rate), subsequent investment in human capital, and income growth.

1.3. Policy tool phase of human capital, as a broad component of well-being

Since the 2000s, studies have focused on measuring human capital stock and its impact on development (Abraham & Mallatt, 2022; Bailey et al., 2013; Clarke, 2011; Folloni & Vittadini, 2010; Rodríguez-Pose, 2000; Rodríguez-Pose & Vilalta-Bufí, 2005). At the same time, with the evolution of knowledge on human capital, several conceptual overlaps with related notions (e.g., social capital or intellectual capital) have emerged. One of the major overlaps is between human capital (as an intangible asset) and human resources (tangible asset, an organisational and operational category). The two concepts are not fully equivalent, but they converge when aspects of human capital intersect with the needs of a company, generating specific talents and skills. Recent studies (Greer et al., 2017; Ployhart et al., 2014) suggest that this intersection has emerged as a distinct concept, *human capital resources*, representing an element of HR strategy (Boxall, 2011).

Figure 1. Temporal evolution of human capital studies



Source: authors' representation

Starting with the Multiannual Financial Framework (MFF) 2007-2013, human capital has also become an operational and policy tool, gaining increased importance at the European level and in some member states, becoming associated with

dedicated funding lines (European Union, 2014). Other initiatives involving human capital have emerged since 2014. At the European Union level, the Digital Economy and Society Index (DESI) was developed, where human capital, along with connectivity, digital technology integration, and digital public services, represents one of its main pillars (European Commission, 2022).

At the international level, the World Bank issued the Human Capital Project (HCP) in 2018, an initiative aimed to support investment in human capital to ensure greater equity and economic development. A central component of this initiative is the Human Capital Index (HCI), which estimates the level of human capital a child born today can expect to attain by the age of 18, considering the current health and educational deprivation of the country of residence (World Bank, 2019). Also, at the international level, since 1990, the United Nations Program introduced the Human Development Index (HDI), which, according to Angrist et al. (2019), can be considered a partial measure of human capital.

In the context of the increasing use of artificial intelligence, human capital plays a key role in its adoption and overall development. The presence of a higher level of human capital within enterprises can increase the use and adoption of artificial intelligence (Brey & van der Marel, 2024; Fan et al., 2025). Brey and van der Marel (2024) showed that the initial levels of human capital explain approximately 33% of AI adoption 10 years later.

Since 2011, human capital has been included in *How is life?* reports from OECD (OECD, n.d.) as one of the key dimensions for future well-being, along with natural, economic, and social capitals. In addition, these reports identify 11 other key dimensions of the current state of well-being.

Romania's accession process to the OECD represents a critical institutional juncture, serving as a structural anchor for the country's transition towards the global core of advanced market economies. Beyond immediate macroeconomic advantages, such as reduced sovereign risk premiums, improved credit ratings, and increased inflows of foreign direct investment, the integration process operates as a powerful exogenous vehicle for deep legislative and administrative modernization. The convergence process, which extends beyond corporate governance of state-owned enterprises, anti-corruption frameworks, and fiscal transparency, contributes to strengthening domestic institutional quality through OECD alignment. Ultimately, this structural upgrade mitigates long-standing regulatory fragmentation and positions Romania as an active participant in global economic governance, thereby supporting the long-term sustainability of its convergence trajectory within the Euro-Atlantic framework. In this transition, human capital does not only play a nominal role, but a strategic one, as it seeks alignment with OECD standards. Therefore, using an OECD framework for Romania's case study is not only methodologically appropriate but also relevant for assessing Romania's degree of preparedness.

2. Human capital in post-socialist Romania: institutional change and policy dynamics

Following the fall of the communist regime in 1989, Romania went through a major paradigm shift, marking the transition from a radical, centralised system (Sucala, 2018) to a participative, decentralised one (Dincă & Mihaie, 2019; Săgeată et al., 2023). In economic terms, this period enabled a transition from a goods-producing economy to an economy based on services, which is also known as the tertiarization of the economy (Săgeată et al., 2023). Also, besides the transition to a high skills and knowledge-based economy, there is an important paradigm shift in how humans are perceived within the economy. So, the individual is no longer regarded merely as a factor of production, but rather as a ‘resource’ endowed with substantial, unexploited intangible potential, difficult to measure, but which can increase the productivity and added value of an enterprise or of the society overall.

Multiple measures, policies, and strategies were adopted in the education sector, aimed to improve educational quality, by shifting from an objective-based to a competency-based curriculum (Ministry of Education and Research, 2015). Thus, during the first decade, compulsory education was reduced in 1990 and 1995 (Romanian Government, 1990; 1995), while proficiency testing was introduced along with the implementation of the Bologna Process and the European Credit Transfer System (ECTS) in 1999 (Romanian Government, 1999; Ministry of Education, 2024). Besides multiple institutional and curriculum reforms, this period was characterised by relative stability. The second decade, however, was marked by more significant changes. More specifically, in 2005, two bodies were established to oversee quality assurance in education, namely the Romanian Agency for Quality Assurance in Higher Education (ARACIS) and the Romanian Agency for Quality Assurance in Pre-university Education (ARACIP) (Romanian Government, 2005). Overall, the reforms have reshaped human capital development according to new principles: standardization of assessment, openness to European comparability, and a shift in responsibility from the education provider to an external quality assurance system.

In 2007, the National Pact for Education was adopted (Romanian Government, 2008), with an ambitious target of allocating 6% of GDP to education, a goal that has not yet been achieved. Two years later, the Arts and Crafts Schools (ACS), established in 2003 (Romanian Government, 2003), were abolished (Romanian Government, 2009). Within this context, the Strategy on Reducing Early School Leaving was adopted, with the stated aim of decreasing the rate of this phenomenon to 11.3% by 2020. However, the strategy’s objective was not achieved, with a rate of 16.6% recorded in 2022 and 2023, the highest in the EU (Eurostat, 2024), compared to 17.3% in 2013 (Ministry of Education and Research, 2015). This indicates limited effectiveness of the strategy, but also a lack of coherent short-, medium-, and long-term vision, as well as an insufficient integration of the

phenomenon within a broader, causal context. From 2010 onwards, decision-making became increasingly unstable, as only in 2012, six ministers of education in total were appointed, while in the following years (2017-2019), 2-3 ministers were replaced each year. As a result, policymaking and implementation capacity were weakened, with each minister introducing their own perspectives and priorities for the development of the education system. Unlike other social systems, education requires time for results to be visible (Gillies, 2015). Therefore, the lack of a common vision and frequent legislative changes have hindered progress and limited performance in education. In broad terms, there appears to be a limited overarching vision and a lack of shared perspective. Decision-making, marked by frequent changes in legislation and school programs and curricula, is fragmented. The long-term consequences of fragmentation are reflected in the education system instability, difficulties in adaptation for both students and teachers, and poor results already noted in national assessments (Buza & Istrate, 2022) and PISA tests (OECD, 2019; Schleicher, 2023).

The cost of this instability becomes apparent when the performance of the Romanian education system is compared with that of other countries. In recent years, several reports from the European Commission and OECD (Education at glance, or Country monitor) indicate that, in Romania, the enrolment rate in upper secondary vocational education is higher than OECD average (30%, compared to 23%). This is generally associated with lower performance in national assessments, as the 3-year cycle is often chosen by pupils who are not allocated to high school places, or whose national assessment scores were too low to enter the high school admission process. Although there are also multiple situations in which vocational training is consciously chosen by high-achieving students for vocational or practical reasons, the profile of students enrolled in vocational education is characterised by academic difficulties. The monetary stipends and the development of public-private partnerships aimed at facilitating their labour market insertion encourage pupils to continue their studies, rather than drop out at this level. However, these incentives do not guarantee completion of the full secondary cycle as they need to undertake two additional years of education (the last two years of high school), in order to pass the Baccalaureate examination, and subsequently access tertiary studies.

Beyond the educational dimensions and the new economic paradigm, both central to the national vision on human capital, recent developments also need to be acknowledged. In the first two decades following the change of regime, the economic and educational dimensions represented the main tools used by Romanian policymakers to assess the quality of human capital, often at the expense of other equally important aspects, such as civic engagement, social cohesion, subjective well-being, happiness, and community engagement. Quality of life and community relations were considered only by-products of economic and educational dimensions until more recent frameworks and case studies underlined their importance for Romanian communities as well, especially in the context of the green and digital

transitions (Ibănescu, 2025; Ibănescu et al., 2026). This is also an alignment process that Romania has to undergo in order to reduce gaps, considering that the V4 countries, as well as the Baltic ones, which share a similar former socialist past, already joined the OECD in the 2010s and now provide some examples to follow.

3. Data and methodology

The methodological challenge was to appropriately integrate into the research design a framework that is sufficiently broad, yet analytically focused, enabling both an in-depth examination of the Romanian case and its positioning within the broader comparative research context. The study employs a qualitative approach examining how national strategic documents of Romania conceptualise well-being dimensions in the public policy discourse. The analytical framework is based on the dimensions outlined in the OECD's 'How's Life?' reports, which assess people's lives based on eleven dimensions related to material conditions and quality of life, along with four types of capital that are fundamental to long-term well-being. This framework offers a base for capturing multiple dimensions of well-being reflected in policy discourse.

The analytical process began with a frequency analysis (represented in Figure 2) aimed at identifying the main terms and themes used in the corpus of the strategic documents and assessing their correspondence with the OECD well-being dimensions. Preliminary results indicated a conceptual overlap between policy discourse and the OECD well-being dimensions (human capital, environmental quality, housing, subjective well-being, knowledge and skills, etc). However, the OECD framework was used only as a referential coding structure, and not as a comparable measurement tool, as the variables the OECD uses for the quantitative analysis were not the main topics in the corpus of the strategies. The codes used can be consulted in Table 1. Subsequently, a corpus of fourteen (14) Romanian governmental strategies¹ was constructed covering multiple policy domains, such as education, economy, sociology, public administration, and housing (See Table A1 in the Appendix). The documents span two Multiannual Financial Framework periods (MFF 2014-2020 and MFF 2021-2027). The reason is that many of the strategies issued during the two MFF funding periods are to be in line with the European funding cycles, given Romania's strong reliance on European structural

¹ Strategy for preventing early school leaving; National strategy for lifelong learning 2015-2020; Romania's strategy for education and training 2016-2020; National strategy for research, development, and innovation 2014-2020; National strategy for tertiary education 2015-2020; National strategy for labour force occupation 2014-2020; Strategy on the modernization of educational infrastructure 2017-2023; National strategy for education for environment and climate changes 2023-2030; National strategy for labour force occupation 2021-2027; National strategy for competitiveness 2021-2027; Romania's national strategy for territorial development; Romania's national strategy for sustainable development 2030; National strategy for housing 2022-2050; National strategy for green jobs 2018-2025.

and cohesion funds to achieve its development goals. Moreover, both programming periods allow for an examination of potential shifts in policy discourse before and after Covid-19 pandemic.

All the strategies were manually coded using MaxQDA 24 software. Each paragraph depicting a causal relationship was assigned a code or a group of codes corresponding to the dominant themes, with no restriction regarding the number of codes that can be used. A causal relation was operationalised as any instance where the authors of the document explain the occurrence of an effect due to a determinant by using causal language (e.g. 'leads to', 'limits', 'prevents', 'results in', or 'in the absence of' etc), or conditional constructions (e.g. 'without X, Y cannot be accomplished'). By focusing on causal reasoning, rather than just thematic presence, the study aims to reveal how policy discourse builds its justifications for intervention. Non-causal, declarative, descriptive, or aspirational statements were excluded because they do not provide the necessary structure for comparable coding, although they constitute useful material for a complementary discourse analysis. The unit of coding was the paragraph, as an isolated phrase of a sentence does not provide enough context to reliably extract some conclusions. The coding strategy combined a deductive approach, based on the OECD framework, with an inductive, iterative process, through which additional categories (codes) were generated during the analysis.

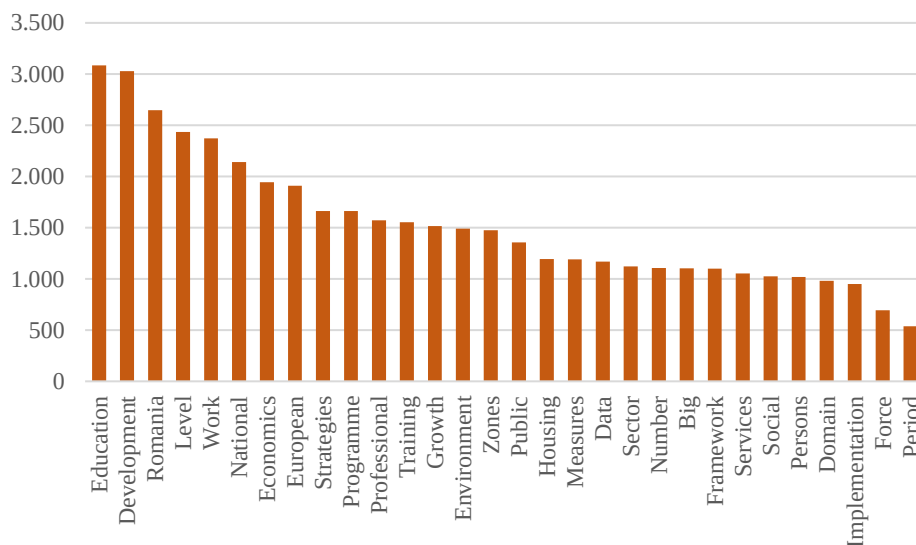
The OECD 'How's Life?' framework, developed in 2011 and periodically revised, proposes a multidimensional approach to quality of life, structured around eleven dimensions grouped into three categories: material living conditions (income and wealth, housing, quality of work), quality of life (health, knowledge and skills, environmental quality, safety, subjective well-being), community relationships (work-life balance, social connections, civic engagement) and resources for future well-being (natural, economic, human, and social capital). Within this framework, human capital is not an independent category, but one of the pillars supporting long-term well-being, interdependent with other forms of capital and with the subjective dimensions of quality of life. This study adopts this relational perspective: human capital is examined not as an isolated term, but in relation with the other dimensions of well-being, which allows for identifying the extent to which Romanian strategic documents integrate, or, conversely, fragment, the multidimensional vision of well-being proposed by the OECD. The full OECD framework was adopted as a coding grid precisely to enable an analysis of the relationships between human capital and the other components of well-being.

Several studies have employed the Qualitative Data Analysis (QDA) approaches in similar studies (Frieze, 2019), for the analysis of digital transformation and competition policy (Horobeț et al., 2024), culture and sustainable development (Clineu & Bănică, 2024), educational discourse (Ring, 2024), health policies (Song et al., 2025), citizen science policies (Hecker et al., 2019), and systemic innovation in bioeconomy (Carrarese, 2024).

Table 1. The coding framework

Main category code	Category code	Subcodes used for the current study
Material conditions	Income and wealth	Financial insecurity/Poverty rate; Welfare; Unemployment rate
	Work and job quality	Employment; Human resources; Labour market; NEET; Migration
	Housing	Housing
Quality of life	Health	Health status; COVID-19
	Knowledge and skills	Second chance reinsertion programmes; Functional illiteracy; School dropout and early school leaving; Vocational training and lifelong learning;
	Environmental quality	Climate changes, Environmental protection
	Subjective well-being	Subjective well-being
	Safety	-
	Work-life balance	-
Community relationships	Social connections	Culture
	Civic engagement	-
Natural capital	Natural capital	Natural areas; Sustainable development, Danube Delta and Black Sea; Natural resources;
Economic capital	Economic capital	Regional development (Economic crisis; Productivity, GDP; Competitivity, Value Added, Economic Growth; Economic development); Industry; Energy; Agriculture; Entrepreneurship; Digitalization; Economy; Services; R&D
Human capital	Human capital	Education and training; vocational education; Secondary education; Tertiary education; Human capital; Academic performance; Educational infrastructure; Investment and funding for education (POCU); School staff (Teaching staff/Trainers, Pupils, Parents); Education, Innovation
Social capital	Social capital	Rural areas: Urban areas; Assistance and social protection; Governance (Policies, Strategies, Administrative capacity, European Union, European funding, European Commission, Public expenditure, Romanian Government, Public administration); Minorities; Access to basic services; Vulnerable communities; Disparities, Demographic changes

Source: authors' representation

Figure 2. The most used words in the strategic documents

Source: authors' representation

Following the coding process, 2894 codes were assigned across the 14 strategic documents. Of these, 1112 codes were attributed to strategies from the 2014-2020 Multiannual Financial Framework (MFF), while 1782 codes corresponded to the 2021-2027 MFF period. In total, 669 individual causal paragraphs were identified and coded.

The manual coding results were further explored through a co-occurrence analysis to check the intersection of codes within the same paragraph and their proximity within the same document. This technique is a qualitative data visualization approach used to identify patterns, overlaps, and relationships between codes (nodes) or different domains. Multiple outputs were chosen to better understand the dynamics between the codes.

The first output consists of a *code co-occurrence map* (Figure 3 & Figure 4), which illustrates *intersections of the codes within a segment of text* and helps understand how the codes are linked based on their position on the network; proximity between nodes indicates higher frequency of co-occurrence, while more distant nodes reflect weaker or less frequent associations. The interpretation of the resulting networks rests on two distinctions. The absolute position of nodes within the figure is not analytically meaningful, as there are no fixed X, Y coordinates carrying substantive information, and the layout only reflects the visualisation algorithm. By contrast, the relative distance between codes is informative, nodes and clusters positioned at the periphery of the network co-occur less frequently with the central themes, suggesting that they are attributed in a more limited number of

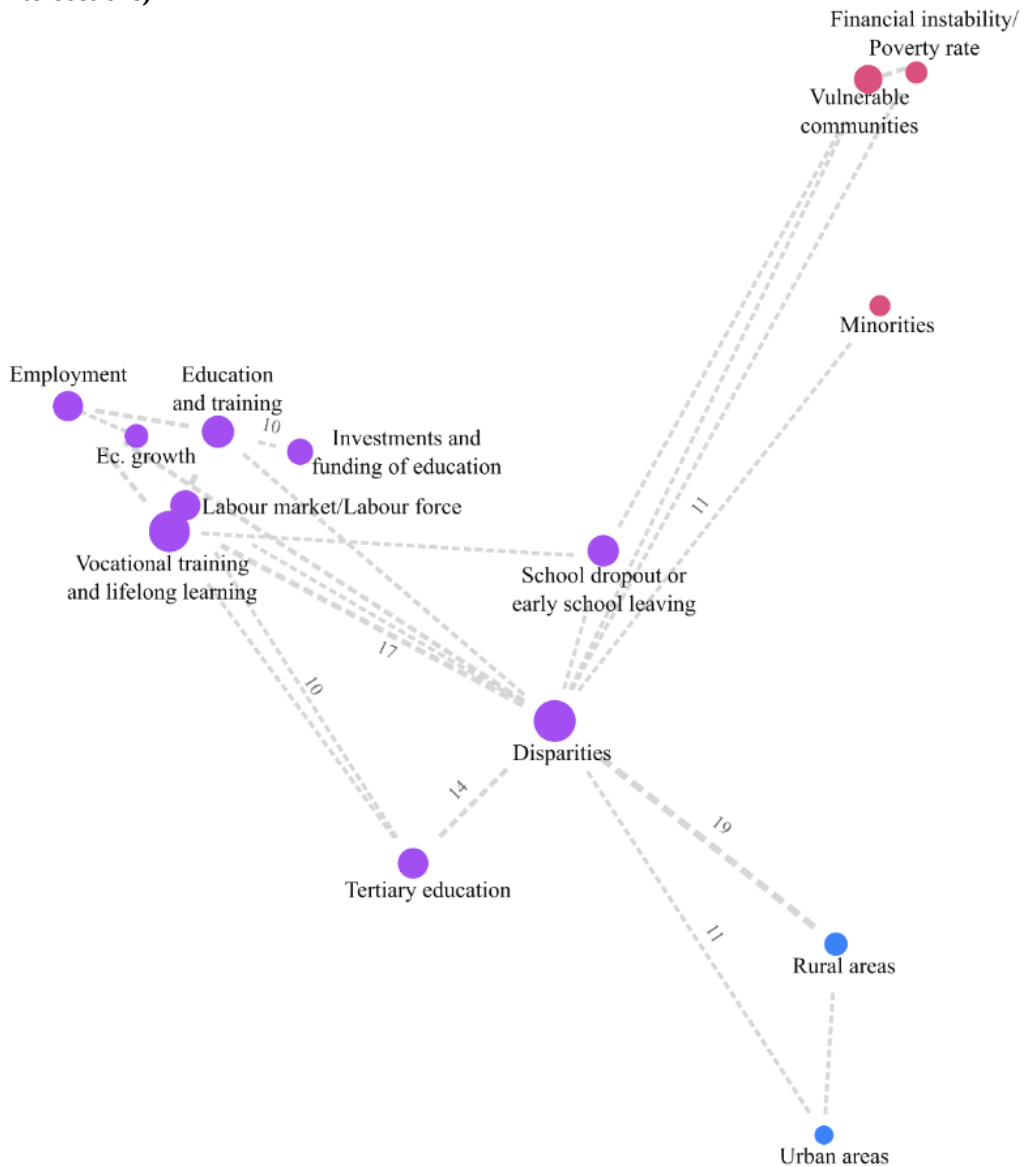
strategic documents. The magenta cluster in Figure 4, comprising climate change, environmental protection, and natural resources, exemplifies this configuration, as its peripheral location indicates a concentration of these themes within a specialised strategy (on green jobs). For clarity, only co-occurrences exceeding a threshold of ten intersections are represented. The second visualization output is a *code matrix browser* (Table 1 & Table 2) showing which codes were attributed to each document or which codes appear in connection with other codes or documents.

4. The integration and conceptual framing of human capital in national strategic documents – Results

Figure 3 shows the co-occurrence network for the coded strategies issued before 2020. The nodes represent thematic codes, while their size reflects the absolute frequency in the coded corpus. The thickness of the lines represents the strength of the associations between themes. The themes are divided into three clusters, strongly connected with the *disparities*. The first cluster, highlighted in purple, shows the semantic centre of the coded discourse. This cluster is organised around the themes of education, human capital, labour force, labour market, and integrates the following codes: *tertiary education, vocational training and lifelong learning, labour market/labour force, investments and funding of education, education and training, economic growth, employment, school dropout or early school leaving*, and the central node: *disparities*. The dominant paradigm is that of education and training, which can be interpreted as part of the broader human capital framework, without being explicitly mentioned. Overall, this suggests that education, vocational training, and lifelong learning are primarily framed as drivers for economic growth, employment, and labour market development. This framing aligns the national strategic discourse with the European framework of the Europe 2020 Strategy (European Commission, 2010), particularly with the objectives related to reducing early school leaving, increasing the tertiary education completion, and reducing poverty.

The second cluster, highlighted in blue, the one of territorial disparities, is composed of the codes of rural and urban areas. In this case, one of the strongest associations across all coded segments is observed between the rural areas and disparities. In the coded documents, the vulnerability of rural areas is frequently highlighted, alongside inequalities between different population categories between the rural and urban areas. Furthermore, the central concept of disparities suggests that public policy issues are framed in the logic of reducing inequalities, with a double focus: a territorial/spatial dimension, reflected in the rural–urban divide, and an educational and occupational dimension, expressed through access to tertiary education, and access to or participation in vocational training. The strength of the association between disparities and rural areas (1) suggests that rurality is presented as the primary explanatory factor for inequalities, while vocational training (2) is positioned as a key instrument for addressing these gaps.

Figure 3. The co-occurrence network of the strategies issued before 2020 (min. 10 intersections)



Source: authors' representation

The last cluster, highlighted in magenta, refers to socio-economic vulnerabilities, including codes such as vulnerable communities, minorities, financial instability, and poverty rate. This cluster shows a weak connection with the central node of disparities, as indicated by the greater distance between nodes and the limited frequency of co-occurrence with other clusters. This pattern suggests a fragmented approach to social vulnerability, and while these issues are present in strategic documents, they are poorly integrated into the central education–employment axis. The only point of connection is the school dropout code, indicating that vulnerability is primarily framed through an educational lens, rather than through a multidimensional perspective linking poverty, minority status, and labour market exclusion. This fragmentation can be interpreted as a limitation of strategic governance before 2020, in which social issues are acknowledged but not operationalised or fully integrated into a coherent public policy framework.

Figure 4 presents the co-occurrence network for codes in the documents issued after 2020. As in Figure 3, nodes represent thematic codes, and their size reflects absolute frequency in the coded corpus, while line thickness indicates how often the two codes were attributed to the same paragraph together. The network also reveals three main clusters. The first cluster, highlighted in purple, is structured around the economy-innovation axis, including codes like *human capital*, *innovation*, *R&D*, *labour market policies*, *migration*, *employment*, *economic development*, *knowledge and skills*, *digitalization*, *competitiveness*, etc.

The labour market/labour force node is the largest in the cluster, as well as in the entire network and can be perceived as the semantic centre of the analysed documents, being connected to most other codes in the cluster. The emergence of new codes, compared to the previously analysed period, such as *digitalization*, *innovation*, *R&D*, *competitiveness*, *knowledge and skills*, and *governance*, indicates a paradigm shift in strategic discourse. This reflects a transition from the *education/human capital for economic growth* toward an *education/human capital for competitiveness through an innovation* paradigm. The emergence of the nodes' *digitalization*, *R&D*, *innovation*, *competitiveness*, and *knowledge and skills*, which were less frequent in the network before 2020, reflects strategic alignment with the new European priorities highlighted through the Recovery and Resilience Facility (NextGenerationEU), the European Green Deal, and the 2030 Digital Compass. This reconfiguration may also reflect the influence of post-pandemic policy adaptation pressures. At the same time, the concept of *human capital* increasingly appears as a stand-alone term, rather than subsumed to the broader concept of education.

Figure 4. The co-occurrence network of the strategies issued after 2020 (min. 10 intersections)



Source: authors' representation

The second cluster, highlighted in blue, corresponds to territorial and socio-economic disparities. While in the period before 2020, *poverty*, *vulnerable communities*, and *minorities* appeared as peripheral, fragmented issues, in the post-2020 period, they are more systematically linked to the territorial dimension (rural/urban) and to *access to basic services*, and *housing*. A case can be made for a gradual realisation after 2020, possibly as a consequence of recent literature, that the strategic shift towards the inclusion of the 'leave no one behind' (LNOB) principle

was driven partly by the impulse of the SDGs and partly by the recognition of demographic and electoral shifts (Kroll & Zipperer, 2020; Sénit, 2020).

The third cluster, marked in magenta, corresponds to environmental development, and includes: *natural resources*, *climate change*, and *environmental protection*. The codes integrated in this cluster are not among the dominant ones used in the period before 2020. This cluster reflects the growth of sustainability as an individual dimension of strategic discourse. Its connection, primarily through the education and training node, suggests that the green transition is predominantly conceptualised in terms of green skills and green jobs, confirming the *twin transition* (green and digital) logic promoted by the European Commission. However, this cluster's relatively limited connectivity with the economic core indicates that sustainability has not yet been fully integrated into all economic development and employment policies but is rather approached on a sectoral basis.

Compared to the previous period, the coded corpus of the strategies issued after 2020 reveals a more complex and relatively more integrated structure. The *labour market/labour force node becomes the network's new centre*, with strong connections to policies, economic development, human capital, digitalization, innovation, and demographic changes. At the same time, the *disparities node*, which was central in the period before 2020, retains its relevance, but loses its position as the main hub, with *two new nodes emerging: education and training, and labour market/labour force*. The education and training node also functions as a bridge between the three clusters.

It is important to note a shift from urgent and acute issues related to poverty rates and vulnerable communities towards a more proactive orientation focused on environmental protection, climate change, and the green and digital transitions. While this shift may also reflect directives from the European Commission, it is highly plausible that a strong realisation at the level of national institutions has emerged: anticipating upcoming changes in the labour structure would allow for better preparedness and avoidance of possible future human capital shocks.

Several additional observations emerge, however, from the strategic documents. In the National Strategy for Competitiveness 2021–2027, human capital is rarely mentioned explicitly, but it is often implied when the level of competencies of the population is discussed, as well as when the need to increase overall investment in the field is mentioned, again without referring to it expressly. The strategy tends to use the term human resources rather than human capital, though not always in a conceptually equivalent sense.

A supplementary remark supporting the interpretation of results is that, in the National Strategy for Competitiveness 2021–2027, the codes for innovation and digitalisation were frequently co-occurring when the topic of Industry 4.0 was discussed. This allowed for a more pertinent and streamlined interpretation of results and of the Results section.

In the National Strategy for Green Jobs 2018–2025, human capital is mentioned extensively in relation to green jobs, particularly from the perspective of anticipating the evolution of green jobs in the short and medium term, which proves to be a complex and uncertain process. This also highlights the importance of the green economy both for economic performance and economic growth, as well as for human capital implications. The same strategy considers the competencies of the labour force as a major challenge for employment and productivity in Romania.

Table 2 presents the full matrix of co-occurrences between the 14 key codes derived from the OECD well-being framework, attributed across all 14 analysed strategies. The matrix can serve as a quantitative foundation for the co-occurrence networks presented in Figures 3 and 4, enabling a systematic investigation of the connections between dimensions of well-being within the Romanian strategic discourse. The first observation concerns the higher frequency of the three capitals (social, human, and economic). Although the OECD framework conceptualizes them as distinct dimensions for future well-being, the matrix's configuration suggests that, in the Romanian strategic discourse, the three forms of capital are frequently articulated together, suggesting that the concept of development is a multidisciplinary process in which human capital is interdependent with the other forms of capital. Moreover, code 6.1, *Knowledge and skills*, functions as a secondary, transversal hub of the matrix, being strongly associated with multiple dimensions, including: social capital (93), human capital (90), economic capital (46), quality of work (71), and income and wealth (17). A methodological note that should be added is that human, social, and economic capital do not appear as standalone constructs in this table, as their subcodes presented in Table 1 are also included in the analysis.

There are also broader implications of the results, which reveal a certain simplification in Romanian strategies regarding how different types of capital are understood. Instead of maintaining solid distinctions between social, human, and economic capital, the strategies tend to converge them into a more unified and less differentiated framework. Overall, this may indicate a lack of maturity regarding human capital and its implications, suggesting that more complex and elaborated frameworks, which clearly distinguish between various types of capital, should be approached in the future. Furthermore, the policy implications also need to be adjusted, as passing all forms of capital through a single lens could lead to inappropriate territorial strategies and unsupported long-term policies.

Table 1. Code relation browser between the main 14 codes²

	Social capital	Human capital	Economic capital	Natural capital	Community relationships	Civic engagement	Social connections	Work-life balance	Quality of life	Knowledge and skills	Safety	Subjective well-being	Environmental quality	Health	Material conditions	Housing	Work and job quality	Income and wealth
	1.	2.	3.	4.	5.	5.1.	5.2.	5.3.	6.	6.1.	6.2.	6.3.	6.4.	6.5.	7.	7.1.	7.2.	7.3.
1		173	191	43	1	5	11	3	13	93	5	8	23	42		49	175	67
2	173		120	25		8	6	2	11	90		6	20	24	2	14	119	32
3	191	120		64		2	9	1	4	46	5	7	29	16	1	25	135	35
4	43	25	64		2	2	4		3	8	5	5	41	6		6	21	7
5	1			2							1		1			1		
5.1	5	8	2	2			3			1		1	6	2				
5.2	11	6	9	4		3			1	3		1	3	3			2	
5.3	3	2	1											1		1	1	1
6	13	11	4	3			1			1		3	3	6		3	5	4
6.1	93	90	46	8		1	3		1			1	2	5		2	71	17
6.2	5		5	5	1								3	4		3	3	1
6.3	8	6	7	5		1	1		3	1			1	4		1	3	6
6.4	23	20	29	41	1	6	3		3	2	3	1		7		4	8	3
6.5	42	24	16	6		2	3	1	6	5	4	4	7			16	19	14
7		2	1														1	
7.1	49	14	25	6	1			1	3	2	3	1	4	16			19	21
7.2	175	119	135	21			2	1	5	71	3	3	8	19	1	19		30
7.3	67	32	35	7				1	4	17	1	6	3	14		21	30	

Source: authors' representation

Additionally, the matrix highlights a set of structural gaps that reflect the incomplete development of the OECD well-being framework within the Romanian strategic discourse. The subcodes 5.1 *Civic engagement*, 5.3 *Work-life balance*, 6.2 *Safety*, and 6.3 *Subjective well-being* systematically display low co-occurrences with most other dimensions. The underrepresentation suggests that essential dimensions

² Note: the table presents the code relation browser obtained through the qualitative content analysis of the fourteen strategic documents. Each cell indicates the absolute number of paragraphs in which two dimensions of the OECD well-being framework appear together. The rows and columns refer to the same set of dimensions, and the matrix is therefore symmetric, and it is sufficient to read one of the two halves. The diagonal is coloured in black, as the co-occurrence of a dimension with itself is not analytically relevant. The gradient scale ranges from green (low co-occurrence) to red (high co-occurrence), with intensity proportional to the frequency of co-coding. Empty cells indicate the absence of co-occurrence of the respective dimensions.

of the well-being proposed by the OECD, namely civic engagement, work-life balance, safety, and subjective well-being, remain marginal within the strategic discourse, despite their relevance within the OECD framework. This finding indicates a limitation in the extent to which human capital is embedded within a comprehensive well-being paradigm.

Furthermore, although it does not have the highest absolute values, the association between *human capital and work and job quality* is consistently present throughout the matrix. This suggests a conceptualization of human capital that remains strongly anchored in the employment and job quality logic. This pattern is consistent with the network analysis, which identifies the labour market/labour force node as the central pivot of the post-2020 configuration and confirms the persistence of an economic-occupational paradigm of human capital, even in the context of the post-2020 reorientation towards innovation and skills.

Table 3. Code relation browser between the main domains and the strategies (% from the total number of coded attributed to paragraphs in each document)³

National strategy for/strategy on	1. Social capital	2. Human capital	3. Economic capital	4. Natural capital	5. Community relationships	5.1. Civic engagement	5.2. Social consciousness	5.3. Work-life balance	6. Quality of life	6.1. Knowledge and skills	6.2. Safety	6.3. Subjective well-being	6.4. Environmental quality	6.5. Health	7. Material conditions	7.1. Housing	7.2. Work and job quality	7.3. Income and wealth	TOTAL
Preventing early school leaving	32.4	24.7	4.7				0.6			24.7						0.6	7.6	4.7	100%
Lifelong learning 2015-2020	25.8	17.2	17.8	2.5						18.4				0.6		0.6	15.3	1.8	100%
Education and training 2016-2020	22.6	21.4	8.3							28.6			1.2				16.7	1.2	100%
Research, development, and innovation 2014-2020	16.3	16.3	32.5	2.5		1.3	2.5		2.5	2.5	1.3	2.5	1.3	2.5			11.3	5.0	100%
Tertiary education 2015-2020	21.6	29.7	17.1							7.2			0.9	0.9			14.4	8.1	100%
Labour force occupation 2014-2020	29.9	14.3	11.7	2.6					3.9	7.8							27.3	2.6	100%
Modernization of educational infrastructure 2017-2023	25.9	33.3	9.3	1.9						11.1				1.9		1.9	11.1	3.7	100%
Education for environment and climate changes 2023-2030	10.7	23.8	4.8	11.9		7.1	3.6			1.2		3.6	25.0	4.8			2.4	1.2	100%
Labour force occupation 2021-2027	25.3	6.7	12.0							13.3		1.3		1.3		2.7	30.7	6.7	100%
Competitiveness 2021-2027	16.4	22.2	26.5	2.6			0.5	0.5	2.1	5.3		1.1	1.6	3.2	0.5		14.3	3.2	100%
Territorial development	27.2	6.9	22.6	9.1			1.5	0.3	1.3	1.3	1.0	0.8	4.6	3.6		3.8	12.7	3.6	100%
Sustainable development 2030	21.9	11.7	12.4	11.7	1.5	1.5	2.2		0.7	8.8	1.5	2.2	4.4	5.1		1.5	7.3	5.8	100%
Housing 2022-2050	21.4	8.4	8.4	1.9				0.6	1.9	0.6	1.3		1.9	9.1		24.0	9.1	11.0	100%
Green jobs 2018-2025	15.0	11.8	19.7	13.4					0.8	3.9	0.8		7.9	0.8	0.8		22.0	5.1	100%

Source: author's representation

³ Note: the table presents the code relation browser obtained through the qualitative content analysis of the fourteen strategic documents. Each cell indicates the percentage of paragraphs in which a specific dimension of the OECD well-being framework appears within a strategic document. The gradient scale ranges from green (lower share of the total number of occurrences) to red (higher share of the total number of occurrences). Empty cells indicate the absence of co-occurrence of the respective dimensions.

Table 3 depicts the distribution of coding across the fourteen strategic documents analysed, revealing a heterogeneous landscape, which reinforces the diagnosis of fragmentation in Romania's strategies. First, consistently present in most strategies, the high proportion of social capital stands out, with values ranging from 10% to 32%. The strategic discourse seems to prioritize the relational and institutional framework of education, relegating to the background the concrete dimensions related to individual well-being. Human capital, on the other hand, occupies a significant share only in documents directly related to the education system, such as infrastructure modernization (33.3%), tertiary education (29.7%), and the prevention of school dropout (24.7%), and is noticeably diluted in related sectoral strategies. This asymmetry confirms that the topic of human capital remains confined to educational documents in the strict sense, without being incorporated across the board into the rest of the strategic framework. The newer dimensions of well-being and safety, subjective well-being, social connections, and work-life balance are almost absent from all the documents examined, which reveals a clear conceptual gap compared to the OECD framework.

Romanian strategies thus continue to operate within a predominantly institutional and economic logic of human capital, which is why the reorientation proposed in the discussion section becomes more necessary.

Discussions & conclusions

Our study sought to answer the research question: *How is human capital conceptualised and articulated within Romania's strategic documents, and how has this articulation changed before and after 2020?* The choice of 2020 as a splitting point in the timeframe is motivated by two main considerations. On the one hand, it marks the shift between the two MFFs and, on the other hand, the start of the pandemic and its subsequent impact on the strategy planning process. The analysis was based on a series of 14 strategies, amounting to over 1,500 pages of policy discourse. The findings reveal several underlying dimensions of national strategies, while also raising important considerations regarding current perspectives and future development directions on human capital in Romania.

The first and foremost observation that emerges is the presence of disparities as a central node in both analysed periods. This is not a coincidence but rather reflects the concern of decision-makers with the various inequalities affecting the Romanian territory. In fact, beyond urban-rural inequalities, access to services, education, and digitalisation are consistently highlighted and require adapted strategies. As inequalities become a central concern in strategic documents, there seems to be a certain tendency to focus on compensating for effects rather than addressing their causes. In light of current developments, this emphasis is unlikely to diminish; on the contrary, it is expected to become more prominent in future policy discourse.

However, we consider that the central focus of the strategic approach should be the roots of disparities, not only the disparities themselves.

The second finding indicates a certain shift in the strategic discourse after 2020, expressed through several interrelated developments. This shift marks an important change in the long-term orientation of Romanian strategies and manifests itself through several equally important aspects. First, education increasingly operates as a bridging element between three thematic clusters, which signals a growing recognition of its central role in the formation of human capital. As previously argued, education is the most important pillar, as it lays the foundations for the other pillars of human capital and ensures wider economic implications. Second, a stronger orientation towards the green and digital transitions can be observed. This provides an optimistic view of the short- and medium-term orientation of Romanian strategies, especially as recent studies have pointed out the need to double efforts, particularly in relation to the digital transition, where several shortcomings and inequalities have been observed (Ibănescu et al., 2025). Third, and although this may seem secondary, it plays an important explanatory role: the configuration becomes more complex, and human capital becomes a more exhaustive topic, touching upon a wider complexity of codes within a denser co-occurrence matrix. Human capital is a necessary but not sufficient condition for societal well-being, as it becomes socially productive only when education shapes it coherently, and institutions effectively harness it, a requirement amplified by the digital transition, which is reshaping both the skills required and the ways we learn. The effectiveness of educational policies thus depends on their ability to operate simultaneously at the systemic and the specific levels: overall coherence without incisiveness remains merely declarative, and targeted interventions without an integrative vision remain fragmented.

Overall, these changes may indicate a thematic reconfiguration of the Romanian strategic discourse in relation to new European frameworks, such as NextGenerationEU, the Green Deal, the Digital Compass, as well as the overall OECD framework. This alignment process is driven by the need for stronger integration into the EU and OECD frameworks, but also by a strong necessity to increase the competitiveness and the labour force resilience in relation to potential shocks. Just like other European countries, Romania has developed a more resilience-oriented policy approach, including in relation to human capital, based on the experience of the 2008–2012 financial crisis and the pandemic. Furthermore, the presence of a war situation in a neighbouring country, since the Russian invasion of Ukraine in 2022, requires an even more focused approach to how competitive the respective labour force is and how adaptable it may prove in unforeseen situations.

This reorientation is not without its weaknesses, and several shortcomings still need to be considered in the overall findings of the strategies. For example, the relationship between human capital and well-being is almost non-existent. While some indirect connections can be identified, as they emerge from the overall discourse, they

are not strong enough to clearly highlight a focus on well-being dimensions. This absence is consistent with a predominantly economically oriented conceptualisation of human capital in the Romanian policy discourse. However, this aspect has to be carefully considered if the authorities wish to keep up with the international frameworks to which they are now reporting. A second shortcoming is the need to introduce a well-defined concept of human capital into strategies, more closely aligned with existing international frameworks. From the Romanian perspective, human capital still has rather scattered dimensions, being seen as a sum of various factors rather than as a unified, strong, and dynamic concept. This study shows that the central issue lies not so much in the absence of strategies as in the gap between their formulation and their actual implementation. The Romanian educational system operates, in fact, on three levels that poorly communicate with one another: the reality in schools, strategic documents, and the administrative capacity to implement them. This disconnect largely explains why European convergence, a constantly reaffirmed objective, has yet to translate into visible results.

Overall, the findings can be used both as a diagnostic of the existing situation and as an impulse for future changes in strategies focused on human capital. From this perspective, the dual nature of the study may allow for a better recomposition from both a conceptual and policy point of view. To this end, we recommend a stronger focus on currently hidden pillars, such as health and well-being, but also the positioning of human capital investments as strategies for fighting inequalities, with a slightly different approach based on territorial needs. While the rural-urban split is widely present in strategies and in previous studies, its integration in long-term strategic positioning remains limited.

While the study offers valuable insights, it should be acknowledged that it still faces two minor limitations. The first relates to those inherent in the paragraph-coding approach. Paragraph coding is inherently reactive; it can only tag text which is physically present on the page. It provides no systematic mechanism to capture what an author deliberately omitted between paragraphs or completely ignored across an entire text. While new LLM-based solutions provide a more word-by-word approach, it is worth mentioning that our study was exploratory in nature and aimed to identify the initial foundations and nuances of strategic approaches. A second limitation is that the analysis does not take into account the source of each strategy, as each document is produced by a different institutional structure. While this is a limitation in itself, it should also be acknowledged that a more granular, source-based interpretation could introduce additional background noise, which would therefore alter the overall results.

Acknowledgements: This work was supported by the project „SAGES: Spatial Analysis of Growth, Environment and Sustainable Well-being”, project code CF20/27.07.2023, financed through National Recovery and Resilience Plan for

Romania within project call –PNRR-III-C9-2023 - I8 PNRR/2023/Component 9/Investment 8. [Finanțat de Uniunea Europeană – Next Generation EU].”

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APPENDIX

Table A1. Coded strategies

Name of the strategy	Domain	Number of pages
Before 2020 (total 476 pages)		
Strategy for preventing early school leaving	Education	87
National strategy for lifelong learning 2015-2020	Education	84
Romania's strategy for education and training 2016-2020	Education	100
National strategy for research, development, and innovation 2014-2020	Education	43
National strategy for tertiary education 2015-2020	Education	44
National strategy for labour force occupation 2014-2020	Economic/ Social	57
Strategy on the modernization of educational infrastructure 2017-2023	Education	61
After 2020 (total 1073 pages)		
National strategy for education for environment and climate changes 2023-2030	Education/ Environment	44
National strategy for labour force occupation 2021-2027	Economic/ Social	51
National strategy for competitiveness 2021-2027	Economic	394
Romanian's national strategy for territorial development	Public administration	266
Romania's national strategy for sustainable development 2030	Environment/ Economic	112
National strategy for housing 2022-2050	Social	113
National strategy for green jobs 2018-2025	Social	93