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SAGES: Spatial Analysis of Growth, Environment and Sustainable Well-being

Scientific Report and Methodological Roadmap

Deliverable for A3.1 Literature review (Part 3 - final stage) and definition of the conceptual and methodological framework for the development and application of the Smiley Index

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CSE

SAGES
SPATIAL ANALYSIS OF GROWTH, ENVIRONMENT AND SUSTAINABLE WELL-BEING

Contents

I. The multidisciplinary nature of the SAGES methodological framework

The Smiley Index does not represent only a new way of displaying well-being values for various territorial divisions. It is also a new, innovative, and multidisciplinary approach to well-being altogether. Its novelty comes, on the one hand, from the effort to represent sustainable well-being at regional and local levels. The Smiley Index respects the new theoretical framing of the relationship between economic growth, inclusion, and sustainability. On the other hand, its novelty also comes from an approach that covers several disciplines, ranging from psychology, geography, law, administrative studies, sociology, and communication studies to economics. While the project goes beyond purely economic factors, it does not exclude them altogether.

Hence, from the beginning, the overall aim of the SAGES project has been to develop, test, and apply a new conceptual and operational framework of "beyond GDP" well-being approaches, including economic growth, inclusiveness, and sustainability, from a place-based perspective, with a specific focus on the European Union at regional level. The research develops an in-depth statistical-econometric modelling approach in order to understand and explain geographical and cultural well-being patterns and disparities.

From a methodological point of view, SAGES seeks to provide a quantitatively tested framework for sustainable well-being, based on the operational integration of economic, socio-cultural, and environmental indicators, as well as individual perceptions, leading to the Smiley Index. The Smiley Index assesses citizens' well-being in relation to the inclusiveness, regional growth, and sustainable development of their territory.

Of course, this effort is extremely voluminous and, beyond the scientific rigour of the approach, one must take into consideration its various steps. These start with the place-based conceptual and methodological framework for sustainable well-being and continue through place-based well-being modelling, adaptations of the index, data collection, testing, retesting, and adjustment, in order to obtain initial results that can afterwards be used for the scenarios toolbox, the Atlas of Well-being, and the Smiley Dashboard, which are key deliverables of the project.

Such an effort cannot be carried out without a solid basis, one that covers as many variables, methodologies, and inputs as possible, while also remaining sufficiently exhaustive

and methodologically manageable. This basis is the result of a long, difficult, and time-consuming process, involving repeated attempts, revisions, and refinements. It requires coordinated teamwork, but also dedicated attention to a wide range of details and connections, without which the methodology would remain incomplete and insufficiently responsive to the needs of the project.

The present report seeks to summarise, as clearly as possible, the research and methodological efforts dedicated to the construction of this basis. A considerable human effort, reflected in the number of authors involved, as well as strong coordination, was required in order to obtain the results. Starting from the original idea of a tripartite vision built upon economic, psychological, and geographical pillars, to which other aspects related to institutional factors, inequalities, and social relations were added, the report, in its almost 20,000 words, is not only a starting point for the upcoming deliverables, but also a result in itself.

It can be used by any research or policy actor interested in well-being measurement and its dimensions, as an extensive reference material that provides both answers and starting points. The reading of the material should follow, and we strongly encourage this, an exploratory mindset and a curious perspective on what the topic of well-being should encompass.

II. Well-being from a geographical approach

II.1 Introduction

The concept of well-being has gained increasing attention in academic, policy, and public discourse over the past two decades. While early research focused primarily on individual-level determinants—such as income, employment, health, and education—there is growing recognition that well-being is shaped not only by personal attributes but also by the broader spatial and environmental contexts in which individuals live. Contemporary studies have expanded the understanding of well-being beyond economic indicators like GDP, incorporating multidimensional frameworks that include social relationships, subjective life satisfaction, environmental quality, and access to services. As such, well-being is increasingly seen as both a personal experience and a socio-spatial outcome, influenced by local and regional structures, infrastructures, and institutions.

In this context, geography as a discipline offers valuable theoretical and methodological tools for deepening the analysis of well-being. Spatial variations in access to health care, education, green spaces, housing quality, transportation, and employment opportunities all contribute to uneven well-being outcomes across territories. At the same time, the lived experiences of place—such as safety, sense of belonging, or local identity—play a central role in shaping subjective and collective well-being. This has led to an increased interest in integrating geographical perspectives into the study of well-being, particularly through concepts such as place-based policy, territorial cohesion, spatial justice, and the urban-rural divide.

A geographical approach to well-being provides a critical lens for understanding the spatial distribution and social production of well-being. By examining how geographic factors mediate the effects of social and economic policies, scholars can identify patterns of inequality that are often invisible in aggregate national statistics. For instance, regional disparities in well-being across and within countries are frequently linked to historical development paths, governance structures, and infrastructural investments. Likewise, urban form and spatial planning influence access to green areas, mobility patterns, and exposure to environmental risks—all of which are strongly associated with physical and mental well-being.

Moreover, geography allows for the exploration of scale—local, regional, national, and supranational—revealing how different governance levels and spatial policies intersect to influence well-being outcomes. This is particularly relevant in the European context, where place-based strategies such as Smart Specialisation and the European Green Deal aim to enhance well-being through territorial development. Spatial data analysis, geographic information systems (GIS), and qualitative place-based studies further strengthen the capacity of researchers to map, measure, and interpret well-being across contexts.

This literature review aims to explore the growing body of work that connects geography and well-being, examining key theoretical contributions, empirical findings, and methodological approaches. In doing so, it seeks to establish a foundation for understanding well-being as a spatially embedded phenomenon, where place matters both materially and symbolically.

II.2 The role of spatial factors in shaping well-being

The relationship between spatial configurations and human well-being constitutes a complex, multidimensional phenomenon that has emerged as an important area of scholarly

inquiry within numerous academic fields, including human geography, urban studies, environmental psychology, and social epidemiology. This comprehensive analysis aspires to elucidate the causal mechanisms through which spatial distribution patterns significantly influence both social and economic determinants and also environmental parameters of collective and individual well-being, with particular emphasis on the variables of proximity and accessibility to essential infrastructure and services—specifically, healthcare facilities, educational institutions, cultural amenities, and digital connectivity networks. Through a systematic integration of empirical evidence and theoretical frameworks derived from peer-reviewed literature, this examination presents a diverse interpretation of the bidirectional relationship between spatial factors and well-being outcomes across diverse settlement typologies ranging from urban environment to sparsely populated rural landscapes.

Extensive research has demonstrated that differential access to spatial resources creates stratified well-being outcomes that frequently correlate with socioeconomic indicators, thereby reinforcing existing patterns of inequality. The spatial distribution of amenities and disamenities significantly impacts physical health outcomes through various pathways, including exposure to environmental hazards, access to recreational facilities, and proximity to food environments. Furthermore, the psychosocial dimensions of well-being are profoundly influenced by spatial characteristics such as residential density, neighbourhood design, and the availability of public spaces that facilitate social interaction and community cohesion.

Proximity

Proximity is one of the key factors that shapes the interactions between the economic, social, and cultural fields and often determines the level of ease for social connections, accessibility to basic services (Sengupta et al., 2016), social networks - intergenerational proximity (Schafer & Sun, 2022; van der Pers et al., 2015), and commercial processes. Also, proximity can have several meanings, it can be considered as distance (Sengupta et al., 2016; White et al., 2013), or apartness (to a group, a household, or a city) (Patterson & Margolis, 2023; Schafer & Sun, 2022). Waldron (2011) invokes the concept of spatial coexistence when discussing proximity. His work focuses more on the proximity principle, strongly shaped by Immanuel Kant, and argues that people should form political communities not because they are similar, but because they inevitably live close to each other and risk conflict. Thus, proximity is not a reason for a union based on affinity, but a practical condition requiring cohabitation and common government/governance.

Many authors (Boschma, 2005; Knoben & Oerlemans, 2006; Torre & and Rallet, 2005; Torre Shaw & Gilly, 2000, 2000) divide the proximity in two categories: geographical and organizational. Organizational proximity is based on the relationships between stakeholders, who are quite alike (sharing mostly similar knowledge), rather than on distance, as in the digital age the collaborations are not limited by the geographical boundaries. Geographical proximity concerns not only spatial distance, but the way distances are bridged through mobility. The concept is closely related to spatial structure and is influenced mostly by transport infrastructure, which affects the connectivity and localization of services (clusters, agglomerations) and stakeholders, both in an objective (accessibility) and subjective (perception of proximity) approach.

Proximity and inter-organizational collaboration: A literature review

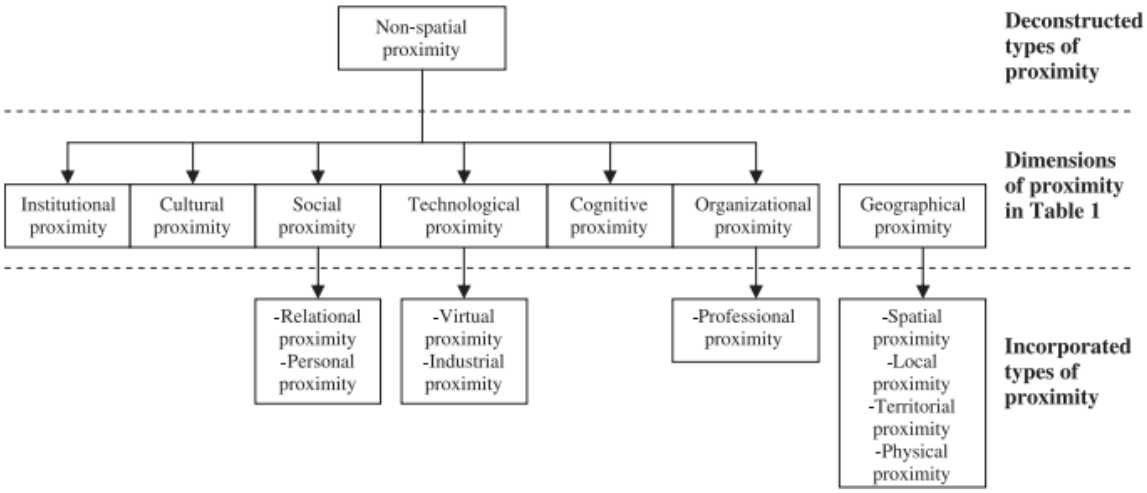


Figure 1. The (de)composition of the dimensions of proximity.

Source: (Knoben & Oerlemans, 2006)

In terms of accessibility, a study conducted for India (Sengupta et al., 2016) shows that proximity has a role in increasing the welfare and well-being of people living near a major highway, by higher incomes, employment, health status, and consumption.

In the light of the subjective approach, the study of van der Pers et al. (2015) highlights that there could be a direct causal effect between the geographical intergenerational proximity of older children and parental well-being. This finding is also supported by those of other authors who emphasize that family ties increase the individual well-being (Delbosc & Currie, 2011; Patterson & Margolis, 2023).

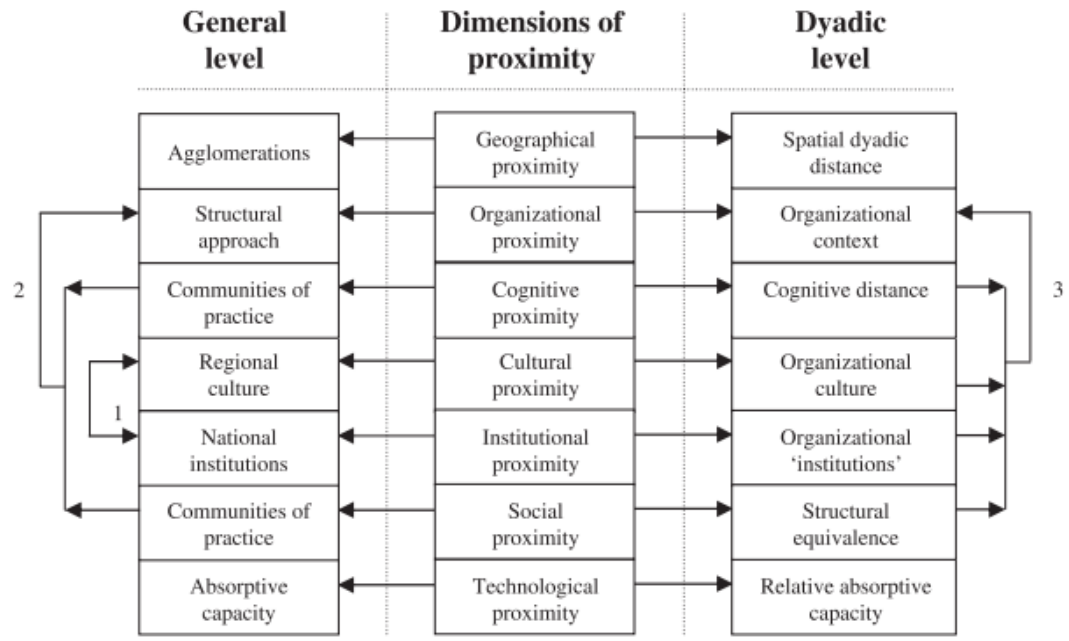


Figure 2. Condensing the dimensions of proximity.
Source: (Knoben & Oerlemans, 2006)

Accessibility

Moving from the proximity to the concept of accessibility, the focus shifts from distance to the actual possibility to reach and use available services. Spatial accessibility can be perceived as an expression of potential mobility using the network. More often, this can be quantified in three dimensions: metric distance (kilometers), temporal distance (minutes) and monetary distance (cost of traveling between two points). Thus, the level of accessibility and hence of addressability (frequency with which a service is reached) depends to a large extent on the existence and the quality of the transport infrastructure.

Some papers (Delbosc & Currie, 2011; Sengupta et al., 2016) suggest that a poor transportation network has a greater impact on social exclusion and well-being, especially in remote areas. In the same study, there are little regional differences in the frequency to which people reported difficulty accessing activities due to lack of transportation. The authors are stating that previous studies support this idea, showing that rural transport initiatives can improve quality of life by increasing independence, strengthening social ties and reducing stress and isolation. Theoretical work also suggests that transport plays a more important role in preventing social exclusion in remote villages than in areas near urban centres. Also, in the study of Sengupta et al. (2016), performed for the population located near a major highway, it

claims that the addressability to medical services and the enrolment in education is inverse proportional with the distances, and proximity.

On the other hand, there are also studies with nearly contrary findings. The study of Lionjanga & Venter (2018), conducted for Johannesburg - South Africa, came to the conclusion that the existence of a transport infrastructure and the localization in its proximity are not determinant conditions for increasing well-being and life satisfaction. In this case the main determinant being the (monetary) affordability of using transport services.

Accessibility to medical/health services

Health is one of the main determinants of individual well-being, both subjective and objective and the accessibility to medical services has a major impact in ensuring early diagnosis and effective treatment. According to stakeholders and clinicians, measurement of quality of life in terms of health status is a key factor to substantiate political decisions in this field (Guyatt et al., 1993; Nussbaum & Sen, 1993).

The health status depends on the level of accessibility to medical services. Statistics show that Romania is among the first European countries in terms of number of deaths among patients diagnosed with terminal cancer, as a result of latish addressability to a specialist (European Commission, 2023). Recent studies have shown that spatial accessibility and addressability are inversely proportional (Sengupta et al., 2016). Thus, a longer distance to a hospital medical unit will determine a lower addressability to medical services.

However, the literature also emphasizes the existence of contrary situations. Liu et al. (2024) found that, for the elderly population in China, maintaining high levels of access to medical care as part of recent government policies is correlating with improved psychological well-being. In contrast, older adults in Australia face challenges in accessing medical care, including geographic distance, financial barriers, and service acceptability issues (van Gaans & Dent, 2018), which may minimise their psychological well-being. Unlike, another study performed for the rural area of Australia came to the conclusion that areas with better accessibility to services and social interactions are statistically associated with greater levels of subjective well-being (Murray et al., 2004).

Accessibility to educational services

The educational level of the population represents one important driver for well-being and development. The more educated people are, the more likely they are to have a better job,

higher incomes and better living conditions. However, there are some recent reports from international bodies which show quite the opposite, the more educated people are, the higher the expectations and the lower the life satisfaction and subjective/perceived well-being (OECD, 2020). On the other hand, populations living in vulnerable communities tend to have a higher level of subjective well-being. Also, in the case of pupils, the academic performances and well-being tend to be correlated (Clarke, 2020).

Access in terms of acceptance. Vulnerable communities are facing not only physical barriers in accessing education services, but also hidden forms of exclusion related to lack of social acceptance, stigmatization or discrimination, which limit their full and equal participation in the education system. Immigrant pupils can achieve better school grades when they receive constant support both in and out of school. The support might come through initiatives that develop their language skills, provide guidance, create a stable and supportive learning environment and actively involve their family and community in the educational process (Gabrielli & Impicciatore, 2022).

In higher education the disparities are more prevalent. A study (Botticello & Olufunmilyo West, 2022) of minority students in the UK highlights that disparities in access, institutional support and wellbeing in higher education still exist, and have been exacerbated by the COVID-19 pandemic.

Accessibility to cultural amenities/services

There is some evidence which shows that the access to cultural services may increase the subjective and overall well-being. A study performed on a population of 1.500 Italians shows that culture tends to be the second most important factor of psychological well-being, after the absence of diseases, crossing determinants such as education, income, job or place of living (Grossi et al., 2012).

Also, there is some evidence that suggests that countries with higher levels of cultural consumption also tend to have more advanced cultural digitization (Fanea-Ivanovici & Pană, 2020). The same study shows that cultural digitization is positively correlated with online purchases of cultural goods and services, overall consumer spending and cultural participation.

Accessibility to digital services

As the society progresses and many services of public interest become digitized, accessibility to digital services becomes more important for social inclusion. The accessibility of digital services varies significantly across socio-economic groups, with differences in digital access, skills and support correlated with disparities in well-being (Heponiemi et al., 2020). Compared to conventional forms of accessibility, which involve physical infrastructures and transportation networks, digital accessibility is fundamentally different in that it is based on a technological network (a modal network). Instead of physical distance, its use depends on connectivity, digital skills and appropriate (digital) equipment.

The study performed by Boniwell et al. (2015) shows that individuals with home Internet access report higher psychological well-being, including more hope, fewer negative mental health symptoms, and greater level of happiness. Nevertheless, some researchers (Grimes & White, 2019; Ihm et al., 2024) indicate that access barriers (eg. cost, digital skills, and limited device ownership), decrease the positive impact of digital services on well-being. In terms of time spent accessing the internet, Grimes & White (2019) concluded that there is a negative association between the weekday internet use and well-being in New Zealand adolescents, with a possible cause being detachment from social connections and the outside world.

The relationship between well-being and the digital domain has led to a new concept: **digital well-being** (Schwartz et al., 2025; Vanden Abeele, 2021). According to Vanden Abeele (2021), through digital well-being it understands *a 'subjective individual experience of optimal balance between the benefits and drawbacks obtained from mobile connectivity. This experiential state comprises affective and cognitive appraisals of the integration of digital connectivity into ordinary life. People achieve digital wellbeing when experiencing maximal controlled pleasure and functional support, together with minimal loss of control and functional impairment*'.

II.3 The role of environmental factors in shaping well-being

With the increasing degree of urbanisation worldwide, it is necessary to organise it in a way that prioritises the quality of life of residents and the sustainable development of cities to reduce the negative effects. Many articles that are subject to environmental factors' impact write about how our still of life impacts the environment (Bera et al., 2023; Chen et al., 2022; Shivanna, 2022; Soni et al., 2025), how these factors can improve our health, well-being

(Mensah et al., 2016) or how it can have negative implications (Orru et al., 2016) and, in recent years, refer to the need for a more sustainable environment (Helne, 2021).

Therefore, environmental factors are essential in shaping our overall well-being. The quality of our surroundings can significantly impact our lives in numerous ways: the quality of living space, air, water, recreational facilities, etc. For example, a frequently addressed topic is pollution, which is mentioned in multiple contexts. This has gained momentum both in public (Politico, 2025; BBC, 2021) discourse and in the field of research (Ajibade et al., 2021; Papazotos, 2021), where it is debated, argued and, most importantly, solutions are sought to reduce the high pollution level (Arora et al., 2018; Rhodes, 2018) .

There are also attempts to develop sustainable directions as a global priority, some solutions being necessary to reduce the negative effects already created, such as climate change and problems caused on physical and mental health. Brunekreef (2010) mentions in the article *Air Pollution and Human Health: From Local to Global Issues* that the effects of fossil fuel pollution were first observed at a local level in Belgium and London, and later, the impact of secondary pollutants was observed, which spread over a larger area, Rhodes (2008) mentions in his article that between 1950 and 2015, the amount of plastic waste released directly into the environment was 79% of the total of 6.3 billion tonnes. Although he mentions that it is not clearly proven, there is also evidence that microplastics can be ingested through water, carried by the wind or inhaled. So, the effects of pollution have no borders or terrestrial limits, which shows us how difficult it is to limit them.

Air pollution, for instance, contributes to respiratory illnesses (Deng et al., 2020; Provenzano et al., 2024), cardiovascular diseases (Buya et al., 2024), and even cancer (Silva et al., 2025). Water and soil contamination can lead to infections and other health problems through direct contact or consuming contaminated food and water (Sehgal et al., 2024). Growing evidence suggests a connection between pollution and mental health disorders. The article *Impact of Air Pollution on Neurological and Psychiatric Health Studies* argues that air pollution creates respiratory problems and mental disorders, such as neurological and psychiatric ones.

The pressure on some overpopulated regions has led to inequalities felt by residents, or more precisely, has affected the quality of life of urban households (Roy et al., 2024). Inequalities are also observed between different parts of Europe. The analysis in the article *The Urban Paradox and Rural Appeal: Subjective Well-Being Across Diverse European Living Environments* argues that in northern and western Europe, subjective well-being is

higher in rural areas, while in eastern /post-communist Europe, values are better in urban areas. It also emphasises the need for green spaces and accessibility to services to improve well-being. Mun (2024) supports the same idea in his article, referring to South Korea, that overpopulation in regions can generate disparities.

As urban living spaces become more complex due to increasing population density, reduction of living space, the need for more green space, more parking, office and commercial space, etc., they require more attention and in-depth strategical approaches. As a help, the concept of a smart city can be considered; initiatives can help facilitate coexistence in an increasingly complex environment and improve quality of life (Gracias et al., 2023; Paskaleva & Cooper, 2022; Toli & Murtagh, 2020).

As we have seen, urban areas are overpopulated, and they are mostly not managed and organised to cope with rapid development, which affects the quality of life and well-being of their inhabitants. In general, pollution is a factor with serious repercussions that affects the entire population and does not depend on a physical boundary, and well-being can be perceived differently between urban and rural areas, depending on the reference area.

Another factor which influences quality of life is green space. It has also suffered from the chaotic development of built space. Akaateba (2021) mentions a great interest in green space management, but public spaces are still poorly managed. His article mentions the results of a case study from Ghana and supports the need to create a policy framework that helps and that there is a need for collaborative green space governance.

But is it a problem of policy application or development? Or perhaps the solution is generally to try to use what we already have as an organisational framework, but to apply it as best we can, and to be aware that our well-being also depends on us.

Research recognises and supports the positive effects. Liu (2024) mentions in his study, in which he analyzed the commute and exposure to green space during it, that, as expected, there is a positive association with exposure to green space, indicating a reduction in perceived stress. Also, Refisch's 2024 study shows a negative effect when there is no access to green space, but with the mention that this effect should be evaluated retroactively and that the effect obtained is not very large.

Another study, Egerer (2024), supports as arguments for the presence of green space: loss of biodiversity, public health, climate change. He states that urban oases are important for biodiversity, reducing climate effects, and public health. They are also important as recreational areas. According to Guo et al., 2024, urban parks, seen as recreational areas, help

urban planning and sustainable development. Neighbourhood green areas have a greater impact than regional ones, being easier to access by everyone in all areas. Thus, disparities are reduced, which is an aspect to be considered to prevent the differences between groups of people from increasing. According to Buchecker & Degenhardt (2015), spending time near the natural environment contributes significantly to the emotional well-being of urban residents, but the effects are often comparable to those of other recreational activities. The study found that while outdoor recreational activities have a positive effect on psychological well-being and resilience, these effects vary depending on the duration and intensity of participation in the activities. Therefore, the accessibility and quality of recreational spaces are essential to maximise the benefits for the well-being of urban residents.

During the pandemic, the role of outdoor recreation areas was even more emphasised, influencing subsequent changes. According to Fagerholm et al. (2021), many city residents sought out outdoor spaces to spend their time during this period, as there were restrictions and limitations on interacting in large groups. This increased interest highlighted the need for coherent planning and organisation of these spaces, as some became overcrowded during the pandemic. The link between spending time in nature and well-being proved essential in overcoming the challenges posed by the pandemic, highlighting the need to invest in urban green infrastructure to support the health of communities. The role of outdoor recreation spaces was even more emphasised during the pandemic, and this also influenced subsequent changes or the emergence of interaction habits and spending more time in open spaces.

II.4 Spatial/territorial disparities in well-being

Recent studies have shown that the level of (subjective) well-being can differ significantly across the territory. Bond et al. (2012) shows that neighbourhood matters, as in their study they came to the conclusion that people living in deprived residential zones are having a poorer mental health level than their counterparts from non-deprived areas. In the same vein, Visser et al. (2021) claim that neighbourhood effects, monitored in their study, suggest that living in a poverty-stricken area can negatively influence young people's development, in particular affecting their mental health and general well-being. According to many authors (Bond et al., 2012; Visser et al., 2021) the prerequisites for deprived areas and well-being disparities are the income gaps, unemployment, high criminality rates etc.

Nonetheless, there are also studies that show that even in deprived neighbourhoods the mental well-being can increase due to the aesthetic of the living spaces. In a study conducted

in Glasgow, Bond et al. (2012) found that better neighbourhood aesthetics were linked to a 3.3 times higher likelihood of improved well-being, while homes with a good external appearance were associated with a 2.6 times higher likelihood. Social dimension, represented by strong community ties and social cohesion, also plays an important role. Fone et al. (2007) and McAneney et al. (2015) show that high social cohesion could lessen the negative effects of poverty on mental health, while Kearns et al. (2015) and McAneney et al. (2015) point out that in deprived areas, frequent feelings of loneliness are closely linked to poor mental health . In Romania the deprived areas were included in *the Atlas of Marginalized Areas*, developed by the World Bank in partnership with national entities, which provides a detailed analysis and mapping of deprived/marginalized communities in rural (World Bank, 2016a) and urban areas (World Bank, 2016b). In order to identify and classify the deprived areas, the analysis uses a range of indicators such as poverty rates, (poor) housing standards, educational attainment, access to basic services, and (low) labour market integration. The studies point out various vulnerable groups such as Roma communities, informal settlements, former industrial workers and internal migrants who were resettled before 1989.

An important issue highlighted by the Atlas is the limited access to employment opportunities in those areas, as a consequence of low educational attainment, poor transportation infrastructure, and geographical isolation. Also, a larger share of the population depends on informal or temporary work, subsistence agriculture and social/governmental assistance, perpetuating in this way poverty and social exclusion.

II.5 Well-being measurement from a geographical point of view

The conceptualization and operationalization of the concept of well-being have passed through significant transformations(Kahn & Juster, 2002), evolving into a multidimensional construct (Schonhardt et al., 2023) that explores both quantitative and qualitative to evaluate the lived experiences of individuals and collectives within their spatial contexts. While conventional methodological frameworks have predominantly employed quantitative metrics (Gascon et al., 2017), contemporary scholarly research increasingly acknowledges the epistemological necessity of integrating qualitative parameters and mixed-methodological approaches(White et al., 2020). This chapter presents an in-depth analysis of the spatial dimensions inherent in well-being measurement paradigms, emphasizing established methodological frameworks and emerging analytical approaches that explicitly address the geographically-situated nature of well-being phenomena. The subsequent analysis interrogates

the theoretical advancements and practical implications of incorporating spatial heterogeneity into well-being assessment methodologies.

Historical evolution of well-being measurement

The measurement of well-being has encountered a significant evolution from classical approaches to contemporary innovative methods. In ancient civilizations, well-being was often assessed through philosophical and moral frameworks, where thinkers like Aristotle emphasized the importance of virtue and happiness as indicators of a good life (Huta, 2016). The focus was primarily on subjective experiences and ethical living, with little emphasis on quantitative measures. Over time, during the Enlightenment and into the 19th century, the emergence of empirical science resulted in more methodical and organized approaches. One of the first spatial investigations of wellbeing can be traced to Charles Booth's map of poverty in London (1889) (Backwith, 2015). Building on Booth's pioneering work, the mapping of socio-economic conditions has since evolved, reflecting a broader understanding of urban environments and their impact on well-being.

David Smith's "Geography of Welfare" methodology represents one of the first complex works integrating welfare geography with contemporary wellbeing conceptualizations. Smith established relevant linkages between spatial organization, societal structures, and multidimensional determinants of human flourishing. Smith's framework goes beyond traditional geographic analysis by systematically examining how spatial configurations both reflect and perpetuate inequalities while simultaneously influencing subjective and objective wellbeing outcomes across different geographic scales (Summers & Smith, 2014). This theoretical advancement, coupled with the methodological sophistication of statistical analysis and survey instruments, facilitates more robust spatial evaluations of wellbeing determinants, including access to services, environmental quality, social capital networks, and governance structures that vary significantly across landscapes. Smith's approach ultimately illuminates how place-specific factors interact with broader social structures to create distinctive wellbeing geographies, providing an analytical foundation for understanding the spatial dimensions of quality of life beyond purely economic measures.

Early wellbeing metrics at regional or national levels focused mainly on economics. GDP growth was wrongly seen as equivalent to improved societal welfare(Giannetti et al., 2015). This view was too simplistic. Economic indicators like GDP don't capture the complex realities of people's lives. In the late twentieth century, this limited approach faced strong criticism. Economists and policymakers identified major flaws in using GDP alone. These

limitations included GDP's inability to measure income inequality, non-market activities, environmental impacts, and subjective experiences.

Seminal critiques emanating from the Stiglitz–Sen–Fitoussi Commission and comparable academic initiatives catalyzed an emerging consensus regarding GDP's inadequacy as a comprehensive welfare indicator (Michalos, 2017). The United Nations Development Programme's inaugural Human Development Report (1990) represented a paradigmatic shift by prioritizing human capabilities—specifically longevity, educational attainment, and living standard adequacy—over unidimensional income metrics.

The subsequent theoretical landscape has witnessed significant diversification, incorporating multidimensional frameworks, rights-based approaches, and sustainability paradigms, notably exemplified by Amartya Sen's capabilities approach and Easterlin's empirical investigations into happiness determinants. Consequently, contemporary well-being conceptualization has evolved from purely economic parameters to encompass health outcomes, educational attainment, environmental quality, and subjective satisfaction as fundamental analytical dimensions.

This conceptual evolution changed the development of international composite indices designed to operationalize this expanded well-being framework. The Human Development Index, introduced by UNDP in 1990, systematically integrated life expectancy, educational metrics, and income parameters into a unified measurement construct. The OECD Better Life Index (2011) extended this multidimensional approach by comprehensively assessing eleven domains: housing adequacy, income sufficiency, employment quality, and work-life equilibrium.

Bhutan’s Gross National Happiness (GNH) index, formalized in 2008, offers a holistic approach to well-being by embedding cultural, psychological, and ecological dimensions across nine domains. While innovative, the GNH has been criticized for underrepresenting economic and social disparities, such as income inequality and access to resources—key elements of sustainable development. The ongoing debate around integrating economic indicators with subjective well-being, as seen in frameworks like the OECD Better Life Index, highlights the need for more comprehensive and context-sensitive measures.

Contemporary research on analyzing well-being increasingly embraces multidimensional, participatory (Sollis et al., 2022), and context-sensitive methodologies that reflect the lived realities of communities. A growing body of research emphasizes the need to integrate spatial determinants into well-being assessments (Bell et al., 2014), recognizing that

factors such as regional socio-economic disparities, cultural specificities, and environmental conditions significantly shape individual and collective health outcomes. New frameworks now incorporate innovative tools such as geospatial analysis to map disparities in access to green spaces, evaluate air quality, or assess proximity to public health infrastructure, thereby highlighting spatial inequalities that impact well-being. In parallel, place-based media, local news, digital storytelling, narrative-based assessments, and community well-being surveys have emerged as valuable sources of insight into public perceptions and emotional geographies, capturing localized experiences of well-being and distress. Furthermore, discourse analysis of social media platforms, community forums, and survey feedback enables the identification of emerging concerns and sentiments, offering real-time indicators of social cohesion or anxiety. These evolving methodologies emphasis the importance of integrating environmental justice, mental health access, and social equity into the assessment of well-being, moving beyond generic indicators toward dynamic, place-responsive and community-informed systems of measurement.

II.6 Quantitative well-being indicators and geographic applications

Historically, well-being was primarily assessed through economic indicators like Gross Domestic Product (GDP), which focused on national income and output. However, GDP was criticized for its inability to capture the multifaceted nature of human wellbeing, which includes social, environmental, and health aspects (Summers et al., 2012). This led to the development of multidimensional indicators, such as the Human Development Index (HDI), and the OECD Better Life Index, covering domains like housing, health, and life satisfaction (OECD, 2011). Researchers recognized early on that national income statistics masked significant disparities within and between regions. By the 1960s and 1970s, critiques from welfare economics (e.g., Kuznets and Sen) prompted a shift toward multidimensional measures, incorporating health, education, and subjective satisfaction alongside monetary metrics. Spatial analysis emerged as a distinct lens in the 1980s, driven by advances in geographic information systems (GIS) and spatial statistics, enabling scholars to map and quantify the geographic distribution of wellbeing and its inequalities.

The spatial determinants approach to wellbeing builds upon three key concepts: proximity, accessibility, and clustering. **Proximity** refers to physical distance between individuals and wellbeing-enhancing resources such as healthcare facilities, educational institutions, and employment opportunities. **Accessibility** extends this concept by considering

barriers like transportation networks, time constraints, and economic factors that mediate the relationship between physical distance and actual access. **Clustering** describes the spatial concentration of both advantages and disadvantages that can create hotspots of wellbeing or deprivation.

These concepts connect to wellbeing determination through a socio-ecological model wherein multiple geographic layers of influence shape individual outcomes. The Tobler-inspired "First Law of Geography"—everything is related to everything else, but near things are more related than distant things—serves as a theoretical foundation for understanding spatial dependencies in wellbeing outcomes. Early spatial models like the Preston curve (relating life expectancy to national income) (Freeman et al., 2020) have evolved into more sophisticated approaches that capture non-linear spatial relationships between socioeconomic factors and wellbeing indicators.

Spatial theories posit that place matters: social determinants of health and welfare are unevenly distributed across landscapes. For instance, areas with high accessibility to amenities often exhibit higher life expectancy and educational attainment (Krefis et al., 2018) . Conversely, “peripheral” regions suffer from service deserts and poorer outcomes (Oppido et al., 2023).

Data requirements present significant challenges, as spatially-disaggregated information often suffers from incompleteness, inconsistent administrative boundaries, and varying temporal coverage. Statistical methods for addressing these issues include small area estimation techniques, spatial microsimulation, and Bayesian hierarchical modeling, which enable robust identification of spatial patterns despite data limitations.

Quantitative indicators

Quantitative indicators that effectively capture spatial dimensions include accessibility indices (measuring distance to key services)(Iamtrakul et al., 2024) , environmental quality metrics (air pollution, green space access)(Merbitz et al., 2012), and neighborhood deprivation indices. Specific measures like the Normalized Difference Vegetation Index (NDVI) for quantifying greenness have demonstrated correlations with mental wellbeing outcomes (Rugel et al., 2017), while distance-based measures to healthcare facilities and public transport stops reflect critical accessibility and proximity dimensions. These individual indicators are increasingly supplemented by spatial composite indices that aggregate multiple

dimensions while preserving geographic specificity, allowing researchers to capture the multifaceted nature of spatially-determined wellbeing.

Data requirements and challenges

Spatially referenced data, such as census data, health records, and environmental metrics, are essential, though collecting and integrating these data presents significant challenges due to availability, quality, and compatibility issues including incompleteness, inconsistent administrative boundaries, and varying temporal coverage. While geocoded survey responses may be incomplete and environmental data may vary in resolution, statistical methods like small area estimation techniques, spatial microsimulation, and Bayesian hierarchical modeling enable researchers to identify robust spatial patterns despite these data limitations.

Statistical methods

Geo-statistical methods like Moran's I detect spatial autocorrelation, identifying clustering of similar values, while spatial regression models account for spatial dependencies. GWR is particularly useful for understanding how relationships between variables vary across space, providing localized insights into wellbeing determinants. ArcGIS Pro expands these capabilities through advanced techniques like Space-Time Cube Analysis, which adds temporal dimensions to spatial patterns, enabling researchers to track wellbeing changes across both location and time. Emerging ArcGIS Pro tools such as Hot Spot Analysis with Getis-Ord Gi* statistics identify statistically significant clusters of high and low values, while Optimized Hot Spot Analysis automatically selects parameters to maximize analytical precision. Additionally, the Forest-based Classification and Regression tool offers machine learning approaches to model complex nonlinear relationships within wellbeing indicators, while Suitability Modeler allows for weighted multi-criteria evaluation of spatial determinants (Casini et al., 2019) affecting community wellbeing.

These methods offer a nuanced understanding of wellbeing inequalities but are limited by data availability, the need for advanced statistical expertise, and potential biases in data collection.

II.7 Qualitative well-being indicators

The conceptualization of well-being through spatial determinants represents an emerging interdisciplinary field that acknowledges how geographic contexts fundamentally shape human experience. Spatial determinants—including built environment characteristics, geographic accessibility to resources, and place attachment—constitute powerful influences on **subjective well-being** that traditional quantitative measures often fail to capture adequately. The theoretical foundation for this approach draws upon environmental psychology, human geography, and medical sociology, recognizing that individuals' perceptions of their surroundings and their emotional connections to place contribute significantly to overall quality of life. These spatial factors operate through complex pathways, mediating access to health-promoting resources while simultaneously influencing psychological states through mechanisms like environmental stress, social cohesion, and cultural belonging. This multidimensional perspective necessitates qualitative methodologies that can extract meaning from lived experiences situated within specific geographic contexts. Qualitative methodologies, which prioritize personal narratives and contextual understanding, offer a powerful lens for exploring these spatial influences, particularly in the early stages of assessing subjective wellbeing (Mouratidis, 2021).

Existing literature on qualitative well-being assessment has employed methods such as in-depth interviews, photo assessment (Lee et al., 2021), and participatory mapping(Anderson et al., 2024) to capture the nuances of how people experience their environments. Studies in urban neighbourhoods, for instance, have documented how residents' narratives about walkability and street aesthetics correlate with feelings of safety and social cohesion (Zumelzu & Herrmann-Lunecke, 2021). These methods excel at uncovering the nuanced relationships between people and places that quantitative indices frequently obscure. For instance, Manzo and Devine-Wright's (2021) work on place attachment demonstrates how emotional bonds to locations significantly impact psychological well-being, while Kearns and Moon (2002) research highlights how qualitative investigations reveal place-based health inequalities invisible to statistical analysis. In rural settings, oral histories reveal the centrality of natural landscapes to collective well-being, as communities articulate the spiritual and cultural benefits of environmental stewardship. Cross-regional comparisons further suggest that spatial variations—whether in metropolitan peripheries or coastal villages—yield

divergent taxonomies of well-being, shaped by local histories and resource endowments. However, qualitative studies remain unevenly distributed, with a preponderance of research in Western contexts and a relative scarcity of comparative work in rapidly urbanizing Global South regions.

However, methodological challenges persist in capturing subjective experiences across different geographic contexts. The contextual embeddedness of qualitative data complicates comparative analysis between regions with distinct cultural and historical backgrounds. Additionally, spatial sampling raises questions about representativeness: purposive sampling may yield rich insights into specific locales, yet may also reinforce existing biases if marginalized voices remain underrepresented. Temporal dynamics further complicate qualitative inquiry, since seasonal or economic fluctuations can alter perceptions of well-being, requiring longitudinal designs that are often resource-intensive.

Emerging frameworks for measuring regional well-being inequalities using qualitative indicators include the Place-Based Narratives Approach (Marshall et al., 2022), which systematically analyses experiential accounts across diverse landscapes, and the Qualitative with GIS, which integrates spatial mapping with narrative data (Mouratidis, 2021). These frameworks represent early attempts to develop structured methodologies for comparing subjective well-being across geographic boundaries while preserving contextual richness. When complemented by quantitative approaches (Davern & Chen, 2010), these methods create powerful mixed-method designs that both identify broad spatial patterns and explain their underlying mechanisms. The Quality of Urban Life spatial survey by European Commission exemplifies this complementarity, where statistical clustering of neighbourhood disadvantage is enriched by residents' narratives about place meaning and community resources.

Photovoice, where participants use photography to document their environments, similarly captures spatial influences on wellbeing, emphasizing personal perspectives (Oyarzún-Gómez & Loaiza de la Pava, 2020). These methods are particularly effective for assessing regional and national wellbeing inequalities, as they highlight disparities in access to resources or environmental quality. For example, participatory mapping can reveal how urban youth perceive their neighbourhoods differently from rural residents, informing targeted interventions.

Ethical considerations in conducting qualitative spatial well-being research remain paramount, particularly regarding community representation, data ownership, and potential

stigmatization. Researchers must navigate power imbalances when mapping disadvantage while ensuring that spatial representations do not reinforce territorial stigma. Participatory approaches that engage communities as co-researchers rather than subjects represent ethical best practices in this emerging field. Looking forward, future research directions should focus on developing standardized protocols for cross-regional qualitative comparisons without sacrificing contextual validity. Policy implications from this work suggest the need for place-sensitive interventions that address both physical infrastructure and social-cultural dimensions of geographic contexts. As this field continues to evolve, qualitative spatial determinants research promises to transform our understanding of well-being inequalities from abstract statistical disparities to lived human experiences embedded in the places we inhabit.

The future of qualitative spatial wellbeing research lies in integrating advanced technologies and mixed-methods approaches. Combining participatory mapping with Geographic Information Systems (GIS) can enhance qualitative data visualization, making it more accessible to policymakers. Social media and digital storytelling offer new avenues for capturing subjective wellbeing, particularly among younger populations. Policy implications are significant, as qualitative insights can inform urban planning, such as designing inclusive public spaces, or health service delivery, like ensuring local access in remote areas. Continued development of frameworks that blend qualitative and quantitative data will provide a holistic understanding of wellbeing inequalities, guiding equitable interventions (Spatial Determinants Lab).

Qualitative spatial wellbeing research excels in capturing the depth and context of subjective experiences, offering insights that quantitative methods alone cannot provide. Its participatory nature empowers communities, ensuring that research reflects local priorities. However, limitations include limited generalizability, resource-intensive data collection, and potential researcher bias in data interpretation. Ethical challenges, such as ensuring representation and privacy, require ongoing attention. By complementing quantitative approaches, qualitative methods enhance the robustness of wellbeing research, but their integration demands methodological rigor and interdisciplinary collaboration.

Qualitative measures of wellbeing through a spatial determinants lens provide a rich, nuanced understanding of how place shapes subjective experiences. By leveraging methods like participatory mapping and interviews, researchers can uncover the complex interplay of built environments, accessibility, and place attachment in driving wellbeing inequalities. Case studies from Nashville and Indigenous Australia illustrate the practical value of these

approaches, while ethical considerations highlight the need for inclusive practices. As technology and mixed-methods frameworks evolve, qualitative spatial wellbeing research holds immense potential to inform policies that create healthier, more equitable communities.

II.8 Beyond traditional measurements of wellbeing

The traditional approach to measuring well-being has relied heavily on economic indicators (GDP, income) and self-reported surveys. However, these methods often fail to capture the nuanced, multi-dimensional nature of human well-being and its relationship to place. They often overlook how place-based factors—from built environments to social dynamics—interact with individual experiences to shape overall quality of life. Moreover, conventional measurements typically aggregate data at broad administrative levels, obscuring relevant intra-community variations and failing to account for the subjective, lived experience of residents within their unique geographic settings.

Recent methodological innovations offer promising alternatives that more effectively capture the spatial determinants of well-being. Social media data scraping(Parry et al., 2022) and sentiment analysis (Zunic et al., 2020) enable researchers to map emotional well-being geographically by analysing geo-tagged posts across platforms like Twitter, Instagram, and Facebook. This approach has revealed emotional hotspots within urban landscapes, identifying areas associated with positive experiences versus those generating expressions of stress or anxiety. Liu et al. (2023) demonstrated how sentiment analysis of geo-tagged tweets could identify neighbourhood-level variations in subjective well-being that were undetectable using traditional survey methods, revealing how specific urban features—from green spaces to commercial districts—influence emotional states.

Citizen science initiatives have emerged as powerful tools for participatory well-being assessment. These approaches engage residents as co-researchers in collecting and interpreting well-being data within their communities. The "Happy Maps" project (Rodríguez-Pose & Von Berlepsch, 2014) equipped community members with mobile applications to report real-time emotional responses to their environments while navigating their neighbourhoods. This participatory approach uncovers hyper-local determinants of well-being while empowering communities to define what matters most in their specific spatial contexts.
Alternative data sources, including mobility patterns from anonymized cell phone data, environmental sensors measuring air quality and noise pollution, and digital traces from location-based applications, offer additional layers for understanding the spatial dimensions of

well-being. These passive data collection methods overcome some limitations of self-reported measures while providing unprecedented temporal and spatial resolution of how people interact with their environments.

Methodological challenges persist in combining these qualitative insights with quantitative spatial analysis. Issues of data representativeness arise, particularly as access to digital technologies varies across socioeconomic groups. Ethical considerations surrounding privacy and consent in social media data collection require careful attention. Additionally, integrating heterogeneous data types—from narrative text to sensor readings—demands innovative analytical frameworks that preserve the richness of qualitative insights while enabling systematic spatial analysis.

These innovations carry significant implications for place-based policy interventions. By identifying well-being hotspots and coldspots at higher resolutions, policymakers can target interventions to specific micro-geographies rather than broad administrative units. The participatory nature of citizen science approaches ensures that interventions align with community-defined priorities rather than externally imposed metrics. Most importantly, these approaches enable a dynamic understanding of how well-being fluctuates across space and time, allowing for more responsive and adaptive policy mechanisms that address the lived realities of residents within their unique spatial contexts.

By moving beyond traditional well-being metrics toward more spatially nuanced, participatory, and multidimensional measurements, researchers and policymakers can develop more effective strategies for fostering environments that genuinely support human flourishing across diverse geographical settings.

III. The psychological dimension of the wellbeing concept

III.1 Introduction

The well-being of individuals has been investigated over time in literature due to the multiple implications of this variable. Also, lower levels of well-being can be associated with the presence of problematic behaviors for both the individual and those around them (Huppert, 2009). Therefore, "happy people tend to function better in life than less happy people" because are more productive, more socially engaged and tend to have higher incomes (Huppert, 2009, p. 139). Also, Lyubomirsky et al., (2005a) explained that happy people, compared to less happy people, are more likely to volunteer, cooperate and help others, to be good organizational citizens in the workplace, and to donate money and blood. Furthermore, individuals experimentally induced to be in a happy mood later behaved in more prosocial ways than did those in a control group (Lyubomirsky et al., 2005a). Some authors suggest that an assessment of individual well-being can be determined by performing an analysis related to the presence or absence of positive or negative indicators associated with psychological functioning (Hu et al., 2015). Thus, *psychological well-being* can be understood as a combination of a high level of functionality and adaptation of the individual to the social environment, as well as the presence of positive feelings or emotions (Kirca et al., 2023). A higher level of individual functionality can be related to resilience, a protective factor that plays a major role in helping individuals achieve a state of positive mental health and reduce negative indicators (Hu et al., 2015).

III.2 Theoretical background

The *hedonic perspective of wellbeing* was mostly conceptualized based on Diener (1984) model that refers to life satisfaction, and the balance between positive, and negative affect, together summarized as happiness. The hedonic view highlights the pleasure / pain continuum of personal experiences, the final aim being a maximized state of happiness based on good elements of life (Ryan & Deci, 2001). Thus, the hedonic view of wellbeing highlights the importance of gratifying experiences and a focus only on pleasures of the mind and body. From the *eudaimonic perspective of psychological wellbeing* (Ryff, 1989; Ryff, 2018) several key features associated with positive human functioning were highlighted, such as autonomy

(having an internal locus of control and an independent self-regulated behavior), environmental mastery (i.e., modeling the environment according to individual psychological needs), personal growth (i.e., self-actualization and continuous evolution through time), positive relationships with others (i.e., ability to love, feel empathy and establish deep social connections), purpose in life (i.e., having clear personal objectives that give meaning in life), self-acceptance (i.e., positive self-regard and acceptance of personal experiences and ways of functioning). Thus, the eudaimonic perspective highlights the individual's ability to achieve a state of well-being and happiness by trying to maximize their potential and focus on personal development, going beyond the stage of happiness that results only from maximizing pleasure.

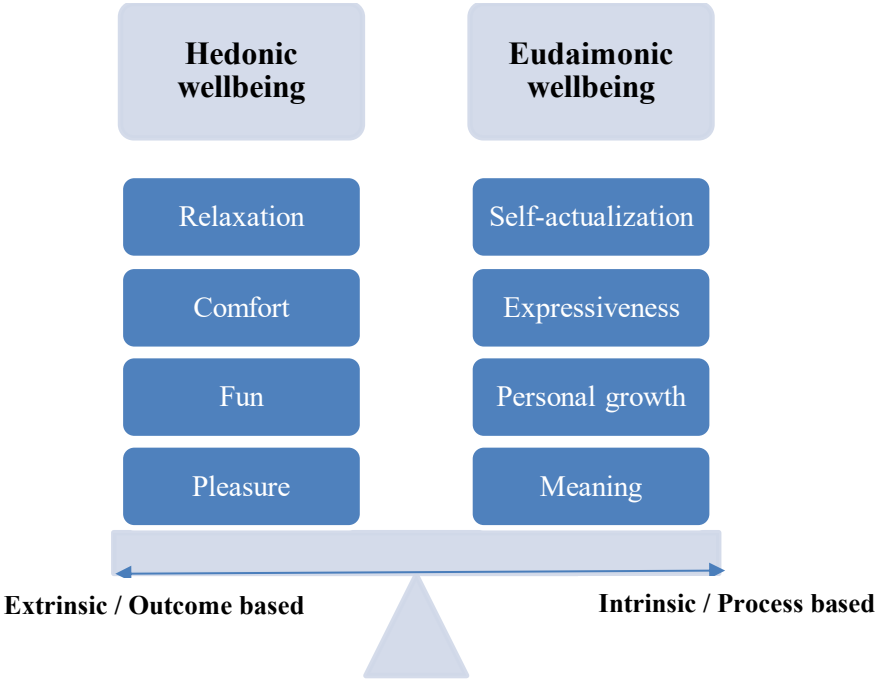


Figure 1. A balanced view of hedonic and eudaimonic orientations (adapted from Seaborn et al., 2020; Smith & Reid, 2018)

Flourishing wellbeing contains a mix of hedonic (i.e., feeling good) and eudaimonic indicators (i.e., functioning effectively) as depicted in Figure 1, but currently there is no unanimously accepted definition of the concept (Rule et al., 2024). While several scales have been developed to measure the flourishing concept, most of them represent subjective

measurements of wellbeing emphasizing multidimensional aspects of everyday life (e.g., psychological, social and physical functioning) (Rule et al., 2024).

III.3 Well-being interventions

Can we improve the psychological well-being of individuals? Many researchers have asked this question and have tried to identify various behavioral interventions that could lead to psychological benefits among individuals. In the literature we find a fairly concrete answer: yes, we can increase the psychological well-being of individuals using behavioral interventions. In a meta-analysis conducted by Weiss et al. (2016) researchers found a moderate effect size across studies for psychological well-being that use behavioral interventions. The researchers' meta-analysis included 27 studies published between 1998 and 2014 (totaling 3579 participants) that used different therapeutic techniques to increase the level of psychological well-being of individuals. However, this meta-analysis has a set of limitations related to the fact that the researchers did not compare their effectiveness to explain whether there are significant differences between interventions in terms of increasing psychological well-being. Therefore, we cannot know which technique or psychological intervention works better.

A significant body of research has focused on risk factors associated with individual well-being and mental health, with various approaches being proposed that focus on reducing symptoms associated with ill-being (Kubzansky et al., 2023). More recently, we have seen an increase in interest in approaches and psychological interventions focused on stimulating positive functioning of individuals. *Psychological or behavioural interventions* can be defined as "activities or groups of activities aimed to change behaviours, feelings and emotional states, that can lead to improvements in either mental wellbeing or mental illness, or both" (van Agteren et al., 2021, p. 631). *Positive psychological interventions (PPIs)* aim to increase positive feelings, cognitions, and enhance wellbeing, while ameliorate depressive symptoms (Sin & Lyubomirsky, 2009). The first systematic review of PPIs effectiveness on well-being was published by Sin and Lyubomirsky (2009). The authors obtained results that supported the significant medium effect size of PPIs on well-being and reduced depression. Although the authors concluded that PPIs are effective, they reported significant heterogeneity among investigated studies. Therefore, it is possible that the observed effect sizes to be slightly overestimated. Later, Bolier et al., (2013) conducted a meta-analysis to investigate the

effectiveness of PPIs in mental health promotion and found that these interventions lead to improvements in subjective well-being, psychological wellbeing, and reduce depressive symptoms. Boiler et al., (2013) included in their analysis only randomized controlled trials (RCT). However, the authors found small effects for PPIs and interventions were more efficient if they were conducted over a longer period, but they drew attention to the fact that most of the studies included in the analysis have a low quality. Moreover, Hendriks et al., (2020) conducted a meta-analysis that included 50 randomized controlled trials from 51 articles published between 1998 and 2018. The authors found small to moderate effects of PPIs on subjective and psychological well-being. More recently, Carr et al., (2024) conducted a mega-analysis of meta-analyses that included one hundred and ninety-eight meta-analyses involving 4,065 primary studies and 501,335 participants. The results indicated that PPIs have a small to medium effect on well-being, increasing quality of life and reducing depression, anxiety and stress. Also, the effects were more efficient on individuals who engaged in longer face-to-face programs or mind-body PPIs. Therefore, we can conclude that PPIs have a small effect on well-being outcomes. Next, we present in Table 1 a list of psychological interventions that have been used in various studies and that have been synthesized by van Agteren et al., (2021).

Table 1. Intervention types used in several studies (adapted from van Agteren et al., 2021, p. 634)

No.	Intervention name	Key aspects
1.	Cognitive behavioural therapy (CBT)	Multi-sessions that target maladaptive thinking patterns, emotion regulation, cognitive reappraisal and developing coping skills, also target an increase in positive emotions.
2.	Acceptance and Commitment therapy (ACT)	Multiple sessions that focus on creating hope, increasing self-help, acceptance and commitment to change.
3.	Mindfulness interventions	Multiple sessions of meditation or mindfulness (e.g., breathing exercises, mindful imagery, mind-body scan).
4.	Compassion interventions	Involve interventions focused on love and kindness

		when interacting with another person, in order to increase compassion to others.
5.	PPIs	Include several exercises from positive psychology focused on building a positive self (e.g., imagining a positive future, strengths assessment of values or character, setting goals in relation to best strengths, reflecting on experiences that individuals are grateful for, reflecting on fun experiences that bring happiness, thinking about three good things in life, identifying acts of kindness, savouring interventions or humor interventions).
6.	PPIs multi-component	Positive psychology exercises delivered in a long-term program that include positive psychotherapy, clinical therapy and wellbeing therapy, focused on individual strengths, gratitude, counting blessings and savouring.
7.	Expressive writing	Involve exercises in which individuals write about their traumatic events, adversity or stressful situations over a period of time, focusing on coping methods that can be successful.

Lyubomirsky et al., (2005b) suggested that the route for achieving sustainable increases in well-being should be paved with *intentional* (i.e., discrete actions that individuals must choose to engage in and that require a degree of effort), *cognitive* (i.e., adopting new behaviors such as an exercise program, changing one's cognitive attitudes or practices, for example practicing forgiveness) and *volitional activity* (i.e., setting and pursuing personal goals). Also, Lyubomirsky et al., (2005b) pointed out that the new activities in which the individual engage should fit with his or her values and interests. Therefore, a good way to obtain higher levels of well-being and happiness is behavioural activation (BA) (Lyubomirsky et al., 2005b). Usually, BA refers to a specific activity schedule that is recommended for individuals based on activities and events that have been enjoyable, pleasant, meaningful, or interesting for them in the past (Mazzucchelli et al., 2010). In order to investigate the

effectiveness of BA on well-being, Mazzucchelli et al., (2010) conducted a meta-analysis of randomized controlled studies. Their results indicated that BA interventions can increase the well-being, the overall effect size of intervention being moderate. The authors concluded that BA and other interventions are equally effective in increasing well-being, but BA interventions and CBT interventions may be more effective than other psychological interventions at maintaining increases in well-being at follow-up periods of up to 3 months (Mazzucchelli et al., 2010).

III.4 A need for well-being interventions among youth

A broad decline in the emotional wellbeing of young people across Europe was suggested in the literature (Blanchflower et al., 2024; Dewa et al., 2024). Recent major societal changes (i.e., the Covid-19 pandemic, the ongoing Russia – Ukraine war, global recessions) have led to a decline in mental health in Europe (Scharbert et al., 2024). Lower levels of wellbeing and poor mental health of youth (e.g., depression, attention deficit hyperactive disorder) represent psychological risk factors that are strongly associated with becoming NEET (i.e., Not engaged in Education, Employment, or Training; Organization for Economic Cooperation and Development; OECD, 2024) in Europe (Lindblad et al., 2024). Also, the number of young people (15-29 years) who are NEET is increasing in Eastern Europe (International Labour Organization. Employment, Labour Markets and Youth Branch; ILO, 2024). The disconnection of young people from the educational system and labour market has economic, social, and policy implications, affecting the prosperity of several countries (Redmond & McFadden, 2023; Ruesga-Benito et al., 2018). *Thus, the wellbeing of young people should be investigated with priority to anticipate and reduce potential negative consequences at the societal level*. Therefore, an analysis of the factors and interventions that allow young people to develop a sustainable state of wellbeing is required, so that they can navigate successfully in crisis contexts. Moreover, by testing intervention strategies that can promote youth sustainable wellbeing, we can also address the EU-level target that specifies that by 2030 the share of young people NEET should be less than 9%, Romania reporting 19.3% rate of young NEET (Eurostat, 2024). Also, Henderson and Loreau (2023) highlighted the need to prioritize specific actions that focus on education, power dynamics, social inequalities and development in lower income countries to promote long-term sustainable wellbeing and to obtain significant environmental progress.

III.5 New perspectives - Sustainable well-being

Some authors argue that we need *a change of paradigm* to succeed in implementing solid sustainable eco-social policies (Hirvilammi & Helne, 2014). Also, a shift from classical paradigms that conceptualize wellbeing (i.e., hedonic and eudaimonic wellbeing) is needed to address the environmental concerns related to climate change crises that humanity faces today and "this requires integration, from the individual locus dominant in wellbeing, to interrelated environmental (nature-ecosystems) and human systems (society-economy)" (O'Mahony, 2022, p. 13). *Sustainable well-being* offers a suitable foundation to incorporate both personal and social concerns related to prosperity, as well as environmental concerns (e.g., the relationship with nature, ecological worldviews) in the search for a better life (Obeng et al., 2023). Therefore, sustainable wellbeing is achieved "when improving individual wellbeing is correlated with improving the other members of society and the natural environment" (Ronen & Kerret, 2020, p. 3).

Figure 2. Having, Doing, Loving and Being model (HDLB-Model; adapted from Hirvilammi & Helne, 2014; Martela, 2024)

Martela (2024) proposed a theory that integrates psychological wellbeing research in order to define four central dimensions of human wellbeing. The first dimension, *Having*, refers to a set of determinants that describe individual material needs, as well as the need to have access to certain physical resources that can ensure the optimal survival of the individual (e.g., shelter, access to water, food). The second dimension, *Loving*, captures the individual

need to interact with others in a meaningful way (i.e., establishing long quality relationships) and to feel that it is part of a social group or a community that gives him/her a sense of belonging and acceptance. The third dimension, *Doing*, emphasizes the fact that individuals are "active players" in this world and have the capacity to influence their functioning (due to their goals and desires) and self-orient to a desired future state (by making choices and acting according to them). The fourth dimension, *Being*, is related directly with perceived wellbeing (i.e., affective and evaluative wellbeing) and considered "the most fundamental dimension of human well-being" (Martela, p. 380). *Affective wellbeing* represents the general feelings (i.e., everyday emotions, joys, sadness / the positive and negative affect) that an individual has in relation to various aspects of life, while *evaluative wellbeing* indicates the capacity of an individual to reflect and assess his life (Martela, 2024).

Looking inside the model

Promoting sustainable ways to fulfill the four elements that define the HDLB model could be a good premise in developing a composite index of *individual sustainable well-being*. We can refer to sustainable well-being because the component elements of the index should be based on sustainable actions carried out by individuals in the four fields. Thus, reshaping the way in which individuals think that can satisfy their human needs (material, social or agentic needs) could be the path to obtain a higher perceived sustainable wellbeing. How we can do this:

- by changing the perceptions related to the *resources* we need to live and the way of exploiting and consuming them (Having dimension);
- by changing perceptions related to *activities* considered responsible and useful for protecting the environment and promoting activities through the lens of social and environmental utility in relation to nature impact (Doing dimension);
- consolidating *collective relations* (social group, community and global level) while taking into account representatios of individualism-collectivism and highlighting some trajectories for future generations, along with emphasizing the *interdependence* between people, other species and nature, thus increasing environmental sensitivity (Loving dimension);
- *educating* individuals to change the way they evaluate the aspects that define their lifes (Being dimension).

However, this model highlights the basic ingredients of individual wellbeing, but the individual does not live in isolation, and his wellbeing is also dependent on other factors that interact in a complex manner (Martela, 2024). Thus, to discuss about sustainable wellbeing, it is not enough to monitor the level of wellbeing of individuals, but to identify a set of factors that can contribute to the development of the sustainability of wellbeing. Therefore, the inclusion of sustainability in the definition of wellbeing brings into discussion other theoretical aspects that deserve to be mentioned (O'Mahony, 2022):

- *Growth and change*: spread of higher material consumption and promoting (over)consumerism vs. environmental resource conservation and promoting autonomous green ways to live;
- *Social justice* related to poverty and equity: wellbeing is important to all people (including those in poverty) and cannot be described as a replacement for income;
- *The ethics of freedom*: living well individually vs. living well together;
- *The value of nature*: intrinsic (ecocentric values, humanity as a part of the nature) vs. instrumental (anthropocentric values).

Therefore, sustainable well-being lies in *the interdependencies* between a variety of interaction processes and systems, and we need more nuanced theoretical understanding of this concept, while selecting observale indicators that can help us to analyze the interrelationships between human and environment. We argue that a central component of sustainable wellbeing *is related to the ability of individuals to anticipate the long-term consequences of their behavior*, along with *the understanding that we are interdependent* with *others* and with *natural systems*. However, some might perceive this interdependence as a shortcoming, because most societal systems are oriented to promote independent ways of living in which individuals can pursue the fulfillment of their personal needs and pleasant desires (i.e., hedonic wellbeing). Also, some might consider that interdependence represents a state of helplessness that they want to avoid at all costs in order to live autonomously as they please. Moreover, some aspects associated with sustainable development are delivered in society in the form of a need to obtain an individual and collective sacrifice for the common good. Therefore, self-sacrifice, that can be associated with a source of unhappiness and unfulfillment, is an aspect that individuals seek to avoid. However, self-sacrifice is opposed to acting in self-interest, but the two can lead to different effects on wellbeing.

III.6 Relating well-being with sustainability actions

Several social measures have been proposed that could contribute to *increasing sustainable wellbeing*, such as the implementation of taxes to reduce the excessive use of natural resources (Having dimension), reducing opportunities for excessive consumption and involvement in environmentally valuable employment (Doing dimension), the encouragement of ecological social activities that support the human relationship - nature and green care (Loving dimension), the implementation of welfare systems, slow life (Being dimension) (Hirvilammi & Helne, 2014). Some authors argue that a good way to promote sustainable wellbeing would be to target young people through school education (Ronen & Kerret, 2020). In a systematic review, Obeng et al., (2023) investigated several nature-based interventions (NBIs) that can promote sustainable wellbeing among young individuals. The authors highlighted the importance of interconnection between wellbeing and environmental sustainability, alongside social and economic factors, and the youth's connections with nature. The results indicated that NBIs (e.g., environmental conservation activities, care farming, horticultural interventions) can promote *environmental sustainability while enhancing wellbeing outcomes* (i.e., preserving environment and making non-damaging nature activities reduces the health risks and increase perceived welfare). Also, by using NBIs, *social sustainability* can be obtained through a sense of belonging into an environmental – oriented community enhancing the perceived opportunity to interact with others when protecting the environment. *Economic sustainability* can be achieved because young people develop certain skills that increase their chances of employment on the labor market in meaningful occupations, at the same time increasing local production and consumption. Therefore, a balance between social, economic and environmental aspects represents the key stones for sustainable wellbeing, development and future (Costanza et al., 2016).

Common NBIs identified by Obeng et al., (2023, p. 2887):

- wilderness/forest therapy with expeditions into remote forest/wilderness/woodlands;
- animal-assisted intervention (AAI) with observation and care for animals;
- outdoor adventure intervention (OAI) with challenging outdoor activities;
- horticultural/garden intervention with planting and caring for plants;

- care farming with the use of agricultural landscapes and farming practices to promote wellbeing;
- environmental conservation with the preservation, management, and protection of natural places;
- surfing therapy with surfing in waterbodies;
- sustainable construction with the use of environmentally responsible methods in construction works.

IV. Well-being from an economic approach

IV.1 Introduction

In the vast literature dedicated to development policies, the focus is typically on using GDP as a proxy for both welfare and individual well-being. However, the times we live in and the global transformations point to a broader approach, which demands taking into account the subjective component and the local specifics. Without disregarding the role of GDP in measuring well-being, it becomes of interest to delve into the relationship between welfare and happiness. Although more attention is paid to it in Psychology, the alternative exploitation of the introduction of subjective factors in the discourse about the well-being of people can also be integrated in Economics. Policies for a better life, designed on the basis of a systematic evaluation of well-being from the perspective of people-place interdependencies, could provide answers to some of the dilemmas surrounding this topic and may contribute to improving strategies by considering the current changes in terms of digitalization, ecological transformation, migration, geopolitical issues, etc. Corroborating these, the paper advocates for an enhanced understanding and measurement of the population's sustainable well-being, distinguishing between objective and subjective determinants, referring mainly to the OECD dimensions in connection with access to housing, health, education, satisfaction with the job and life in general, safety, social ties, civic commitment, work-life balance. Looking beyond the conventional approach, the study also highlights new quality of life assessment tools and several patterns for escalating well-being, this aligning with what the Stiglitz-Sen-Fitoussi Commission revealed, namely that if GDP growth does not reflect an increase in the well-being of the majority of citizens, then this is not a "real" growth.

Well-being concept

Well-being determinants comprise a mix of subjective and objective factors affecting both current and future well-being (Durand, 2015; Diener et al., 2018; OECD, 2020; Fuchs et al., 2020).

Well-being evaluation models are based on:

- Subjective well-being comprising hedonic aspects (pleasure, comfort and positive emotions) and eudaimonic aspects (meaning in life, feelings of vitality, intrinsic self-realization, personal flourishing and social relations) (Hansen, 2015).
- Objective determinants of well-being include material living standards (income, consumption quality of housing and wealth), health status, work-life balance, education and skills, social connections, cultural identity, civic engagement and governance, environment quality, and personal security (Iriarte & Musikanski, 2019; Sachs, 2019; Helliwell et al., 2019; OECD, 2020).

IV.2 Topics related to the SAGES project

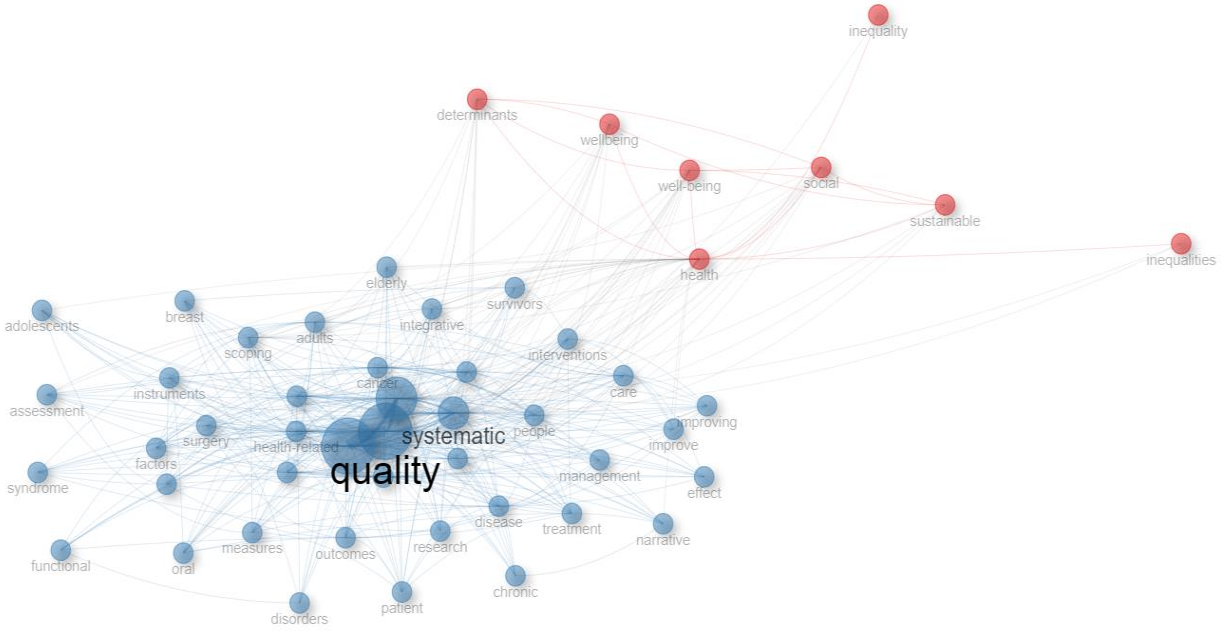


Figure 1. Main concepts related to the SAGES project (co-occurences)

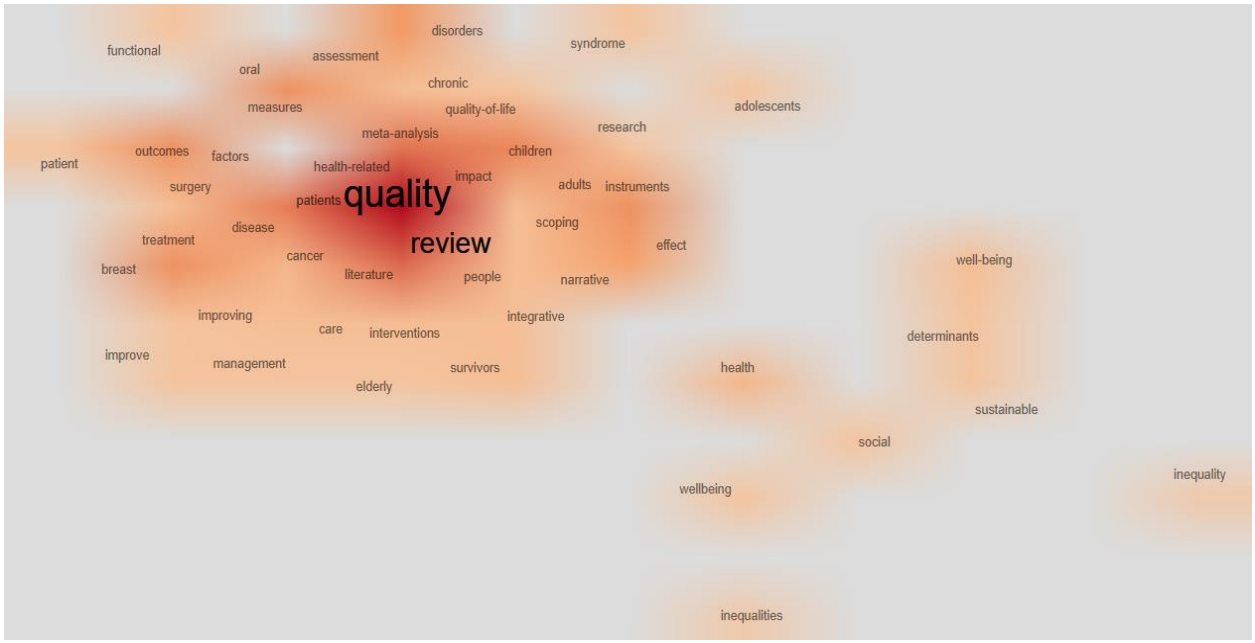


Figure 2. Main concepts related to the SAGES project

Web of Science: key terms found in the titles of the papers: *subjective well-being*; *objective well-being*; *socio-economic inequalities*; *quality of life*; *institutional factors and well-being*; *well-being assesement*.

Period: 2010 – 2024

Articles: 2701 (most of them appeared in the last years)

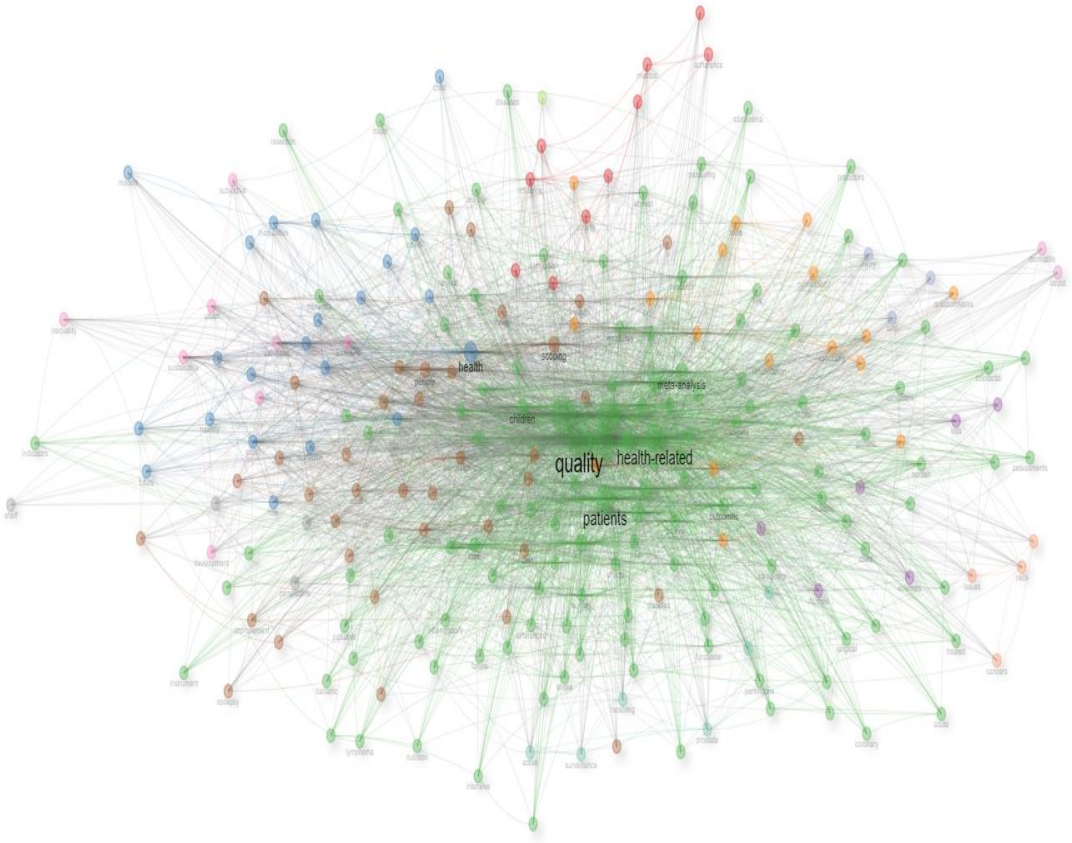


Figure 3. Main concepts related to the SAGES project (co-occurences)

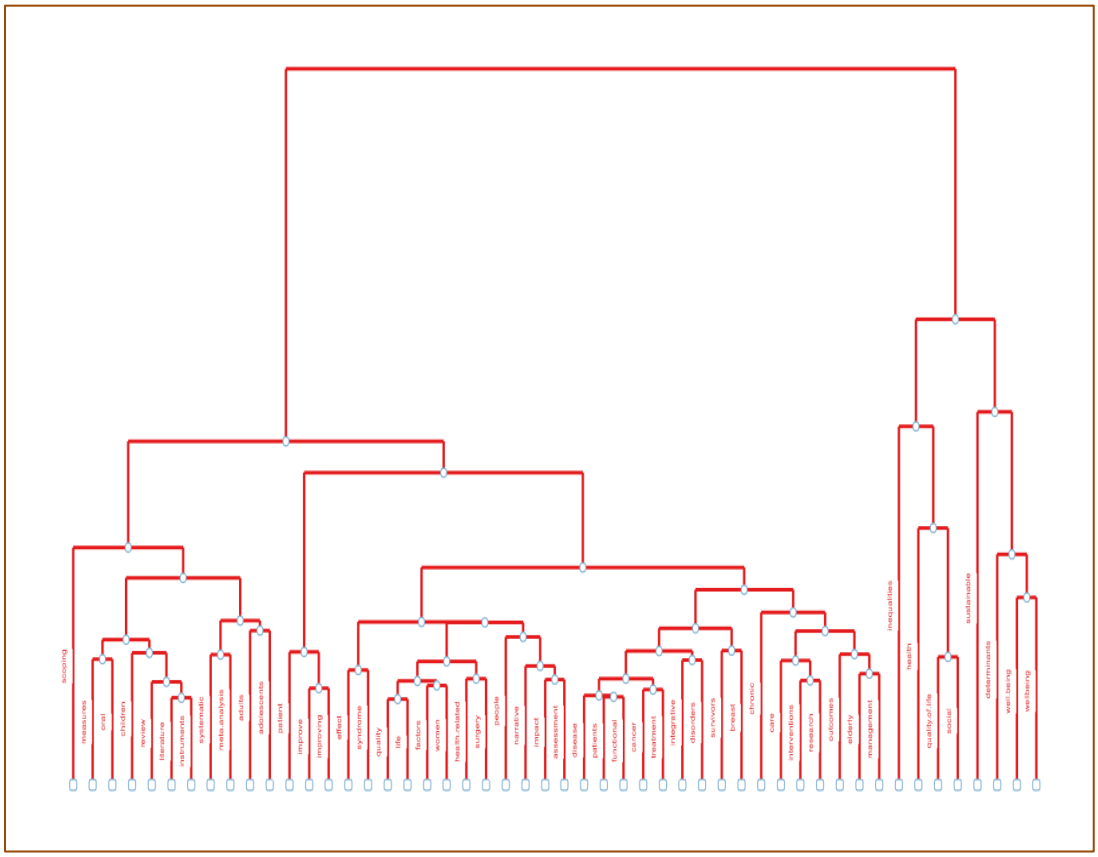


Figure 4. Main concepts related to the SAGES project (clusters)

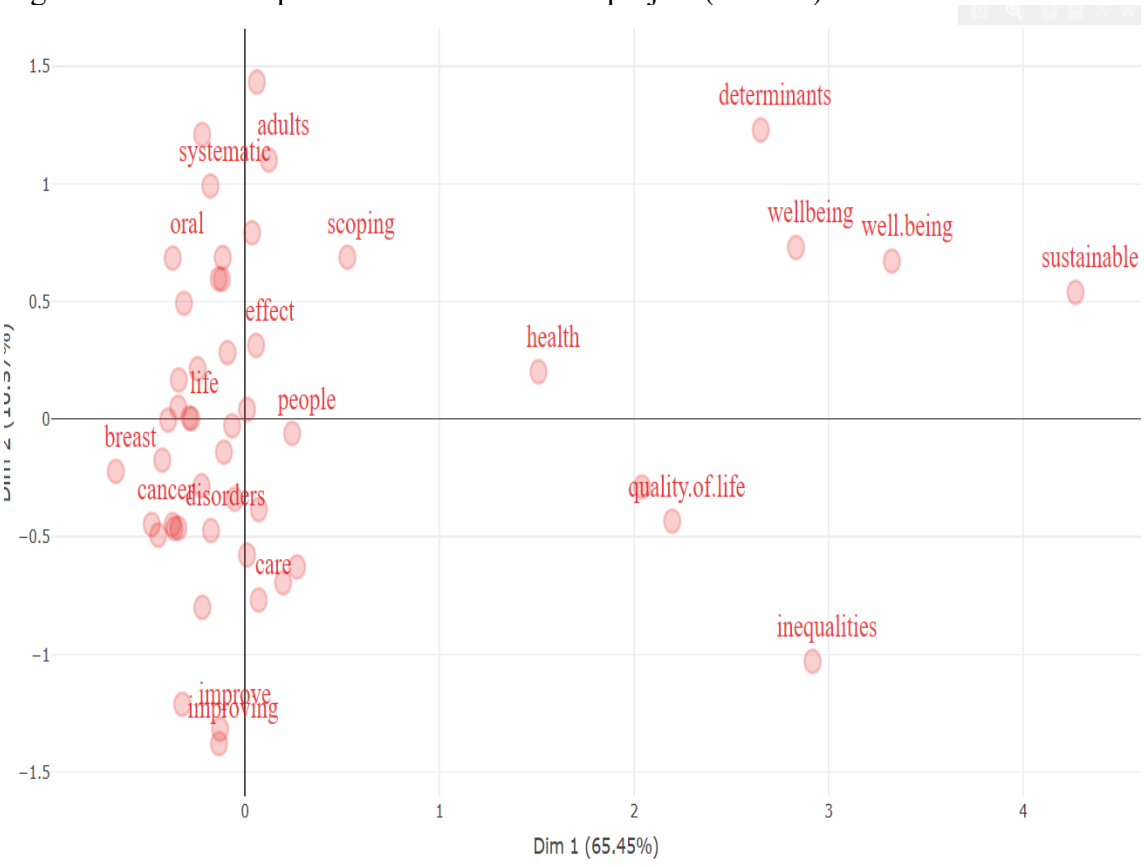


Figure 5. Main concepts related to the SAGES project (chart)

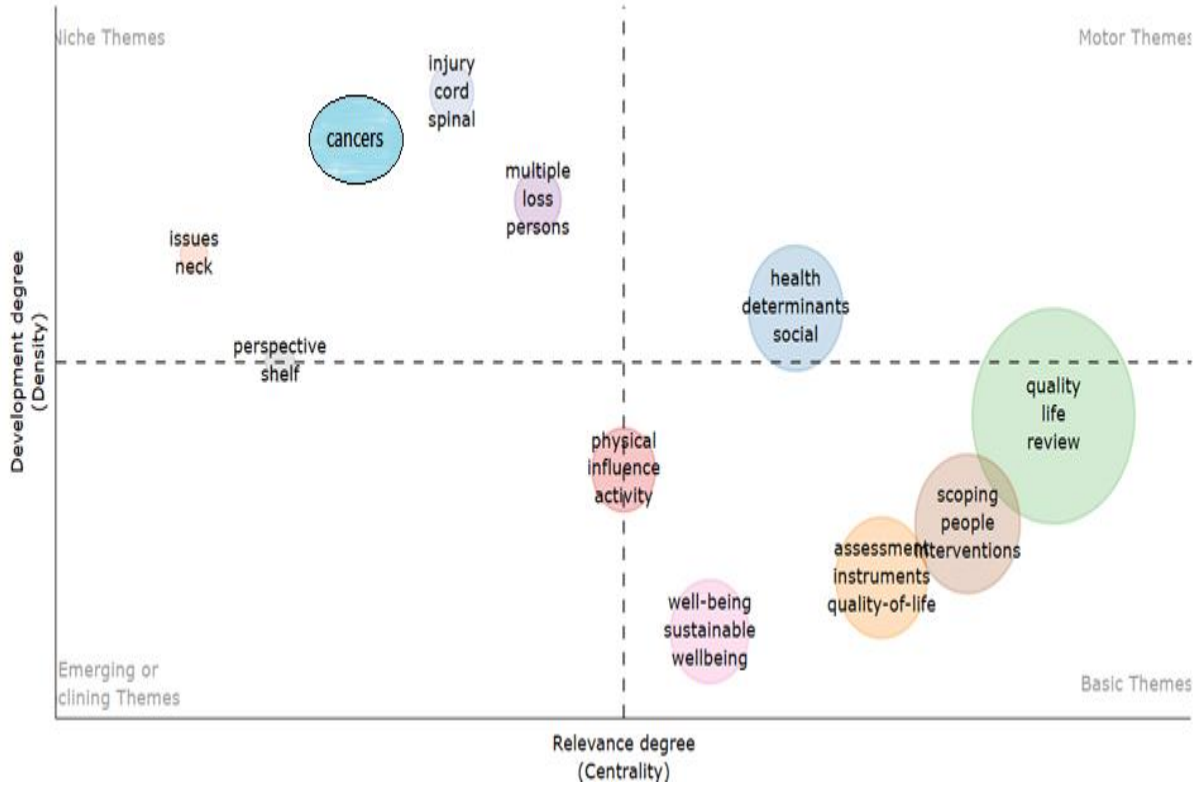


Figure 6. Main concepts related to the SAGES project (chart on emerging or clining themes)

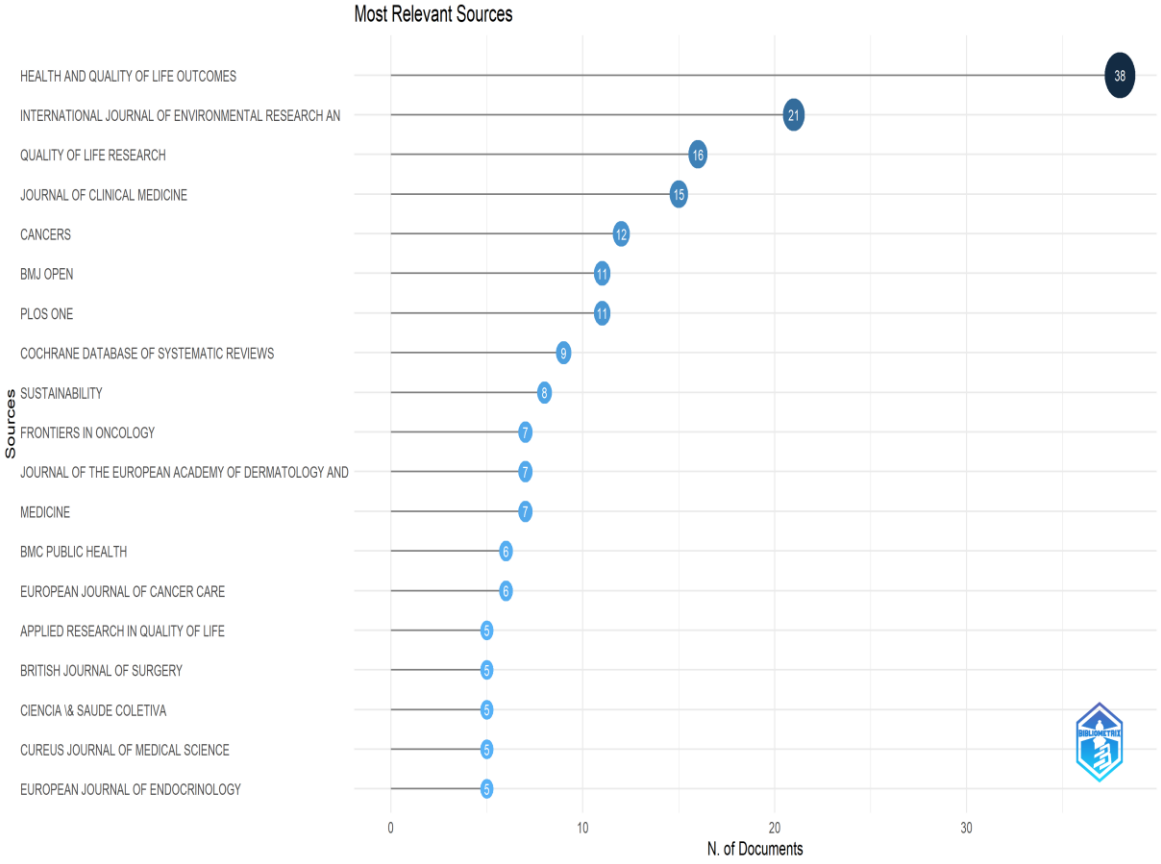


Figure 7. Main concepts related to the SAGES project (most relevant soures)

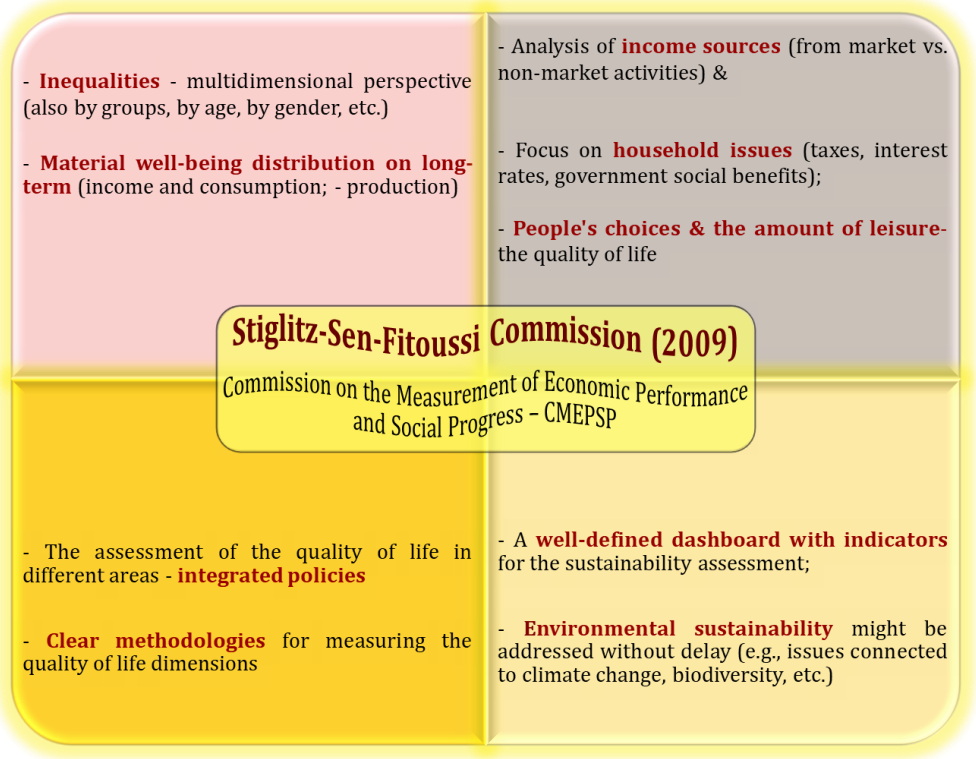


Figure 8. Commission on the Measurement of Economic Performance and Social Progress – CMEPSP
Source: based on information from https://ec.europa.eu/eurostat/documents/8131721/8131772/Stiglitz-Sen-Fitoussi-Commission-report.pdf

IV.3 Recommendations (R) included in HLEG & people's well-being dimensions

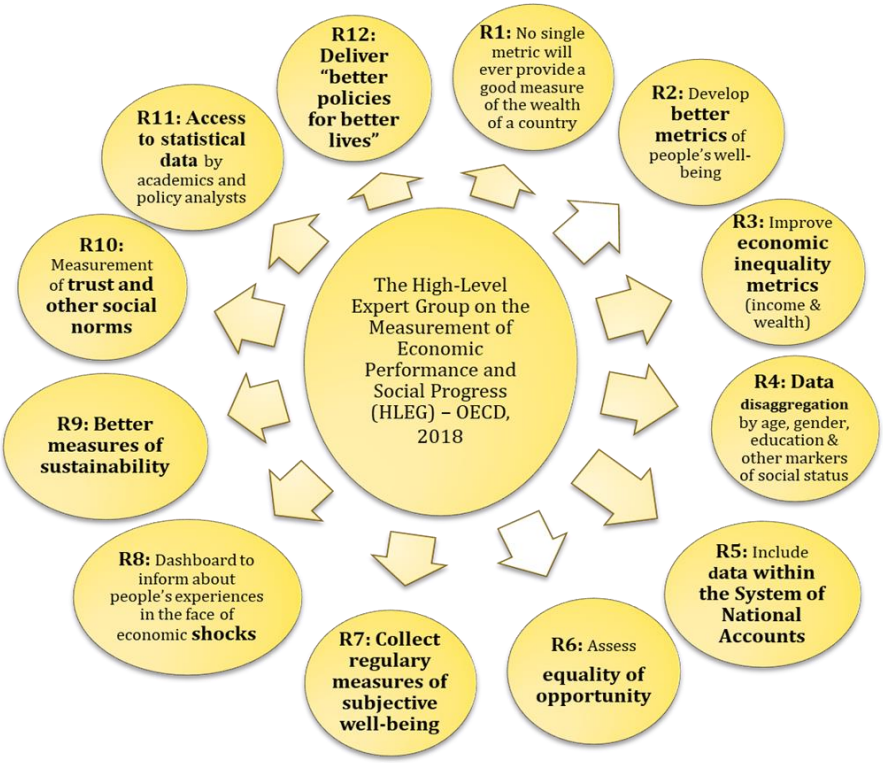


Figure 9. Recommendations (R) included in HLEG & people's well-being dimensions
Source: after https://web-archive.oecd.org/2018-11-27/500378-HLEG-reports.pdf

People's well-being dimensions:

- ✓ Material living standards (income, consumption and wealth);
- ✓ Health;
- ✓ Education;
- ✓ Personal activities;
- ✓ Political voice and governance;
- ✓ Social connections and relationships;
- ✓ Environment;
- ✓ Insecurity

Covered areas:

- Income and wealth inequalityș
- Multidimensional and global inequalities;
- Multidimensional subjective well-being;
- Sustainability

IV.4 OECD well-being framework

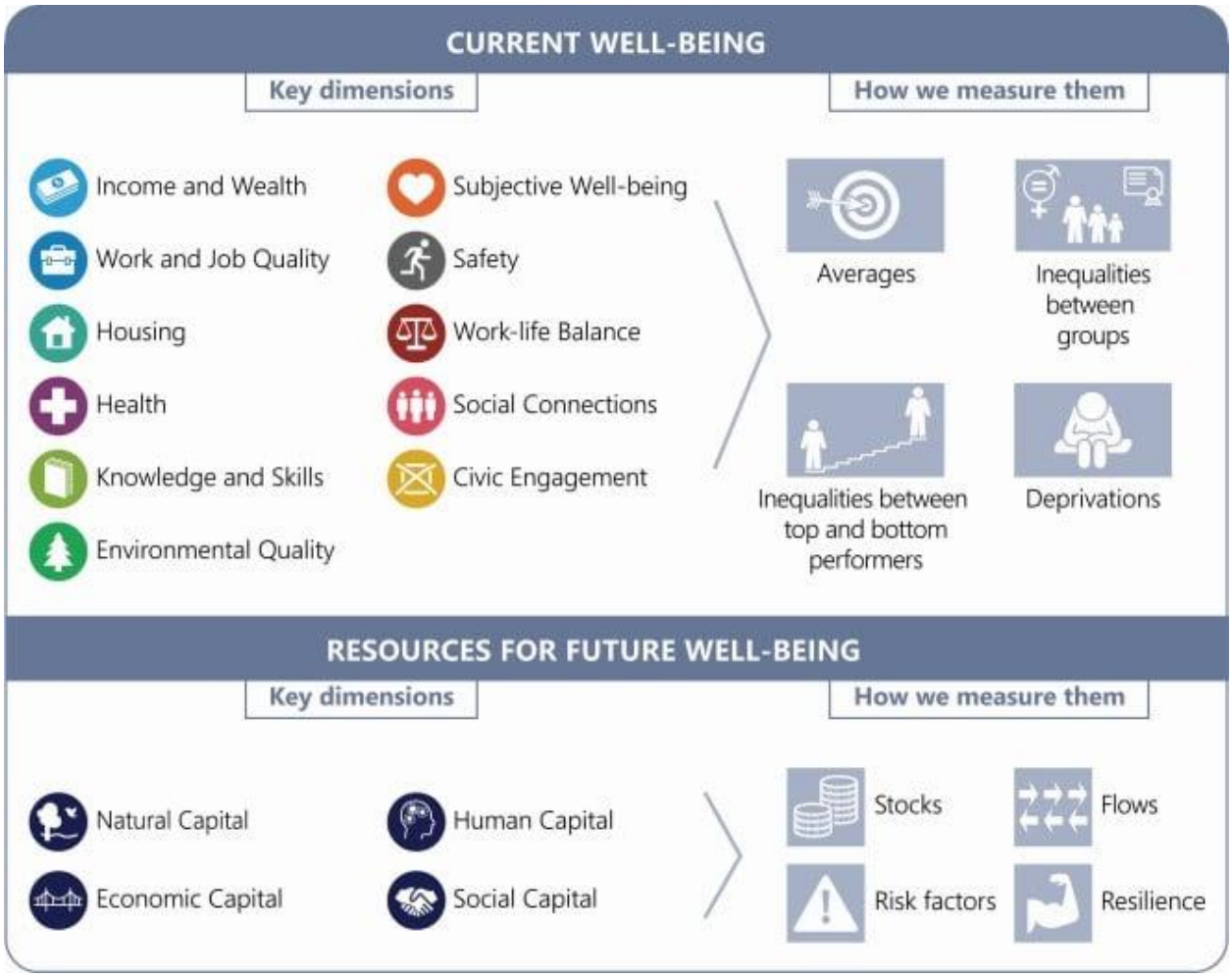
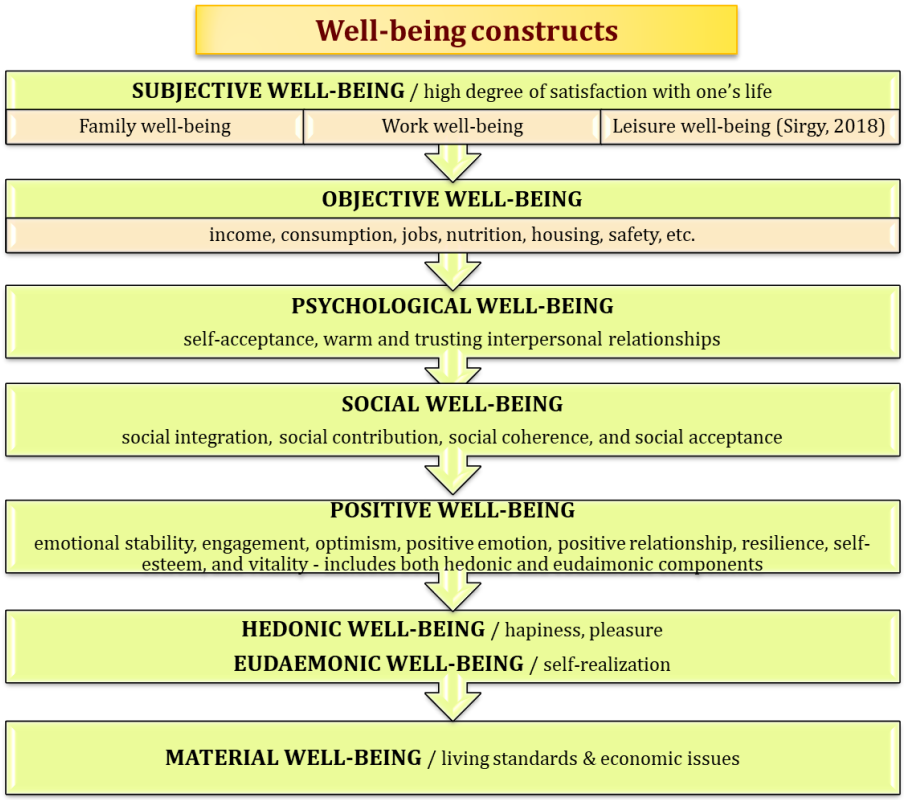


Figure 10. OECD well-being framework
Source: Measuring Well-being and Progress: Well-being Research - OECD, https://www.oecd.org/wise/measuring-well-being-and-progress.htm

How's Life? is part of the OECD Better Life Initiative, which aims to promote "Better Policies for Better Lives". It is a statistical report released every two to three years that documents a wide range of well-being outcomes and how they vary over time, between population groups, and across countries based on a multi-dimensional framework covering 11 dimensions of current well-being and four different types of systemic resources that help to support well-being over time.

How's Life? 2020 shows that well-being has, in some respects, improved relative to 2010, a year when the impacts of the financial crisis were still being felt in most OECD countries.

IV.5 Well-being constructs



Source: after Oades, L.G .& Mossman, L. (2017).*The Science of Wellbeing and Positive Psychology*. In: Slade, M,. Oades, L, Jarden, A., (eds.), Wellbeing, Recovery and Mental Health. Cambridge University Press. pp. 7-23.

Figure 11. Well-being constructs

Indices related to well-being and sustainability

				Sustainability pillars covered		
Index	Organisation	Countries	Indicators	Economic	Social	Environment
Competitive Sustainability Index	University of Cambridge	27	84	■	■	■
Ecological Footprint	Global Footprint Network	184	5			■
Environmental Performance Index	Yale University, Columbia University	180	40			■
Global Sustainable Competitiveness Index	SolAbility	180	131	■	■	■
Human Development Index	UNDP	189	4	■	■	
Planetary-adjusted Human Development Index	UNDP	189	6		■	■
Legatum Prosperity Index	Legatum Institute	167	300	■	■	■
Social Progress index	Social Imperative	169	60		■	■
SDG Index and Dashboards	SDSN	193	92	■	■	■
Transitions Performance Index	European Commission	73	28	■	■	■
World Happiness Report	SDSN	146	6	■	■	

Figure 12. Indices related to well-being and sustainability

Correlations: well-being and sustainability indices

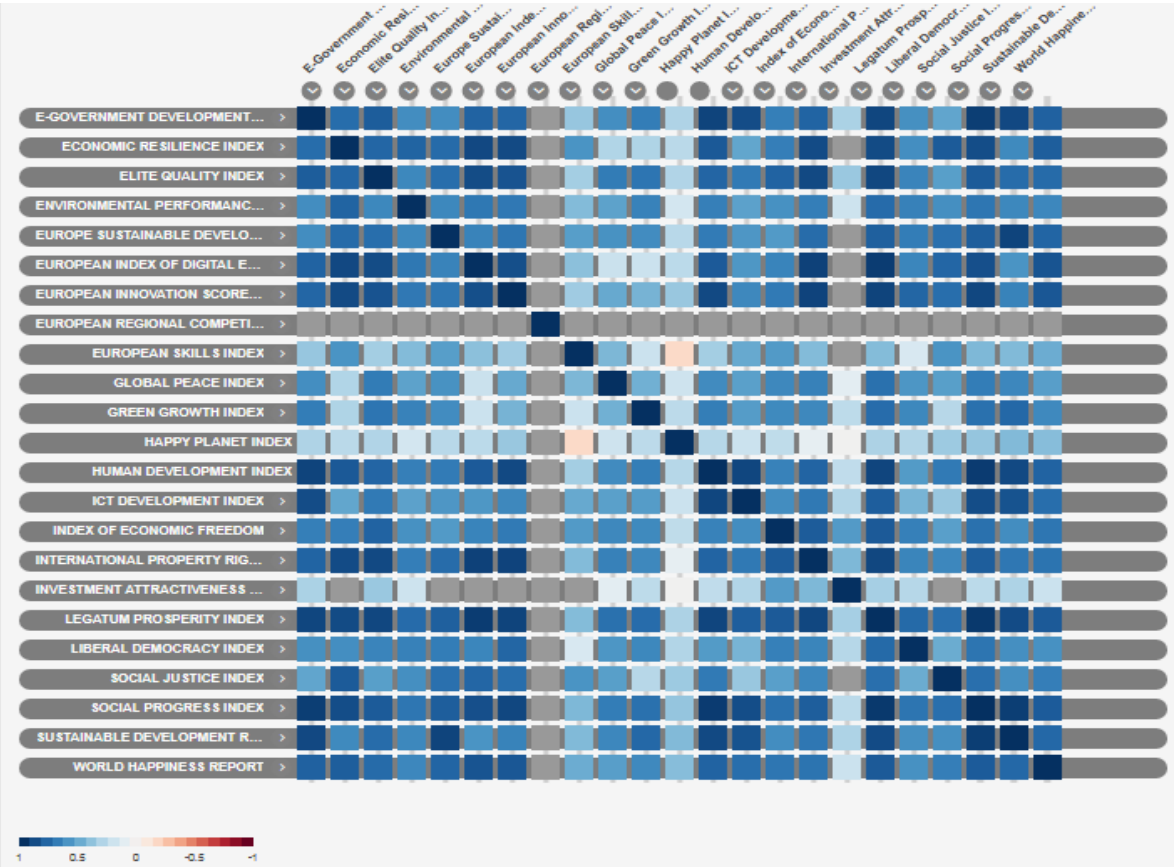


Figure 13. Correlations: well-being and sustainability indices

Better Life Index

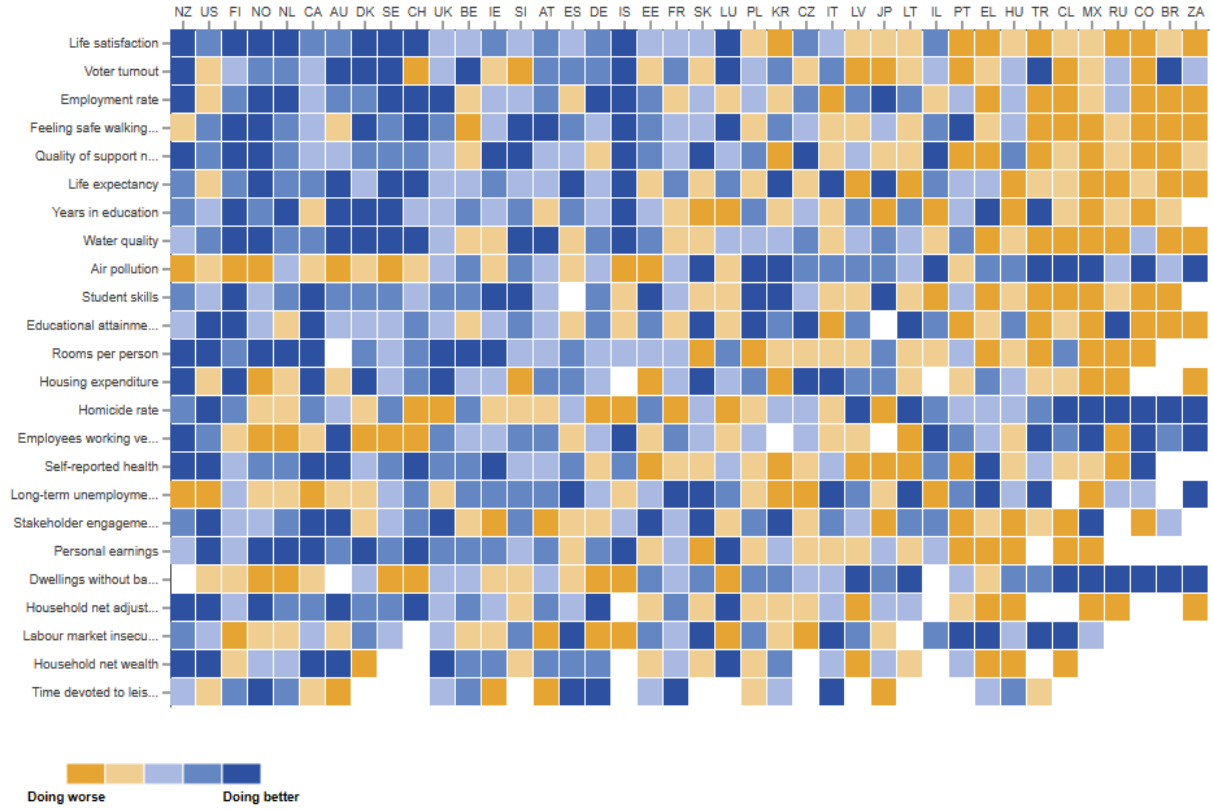
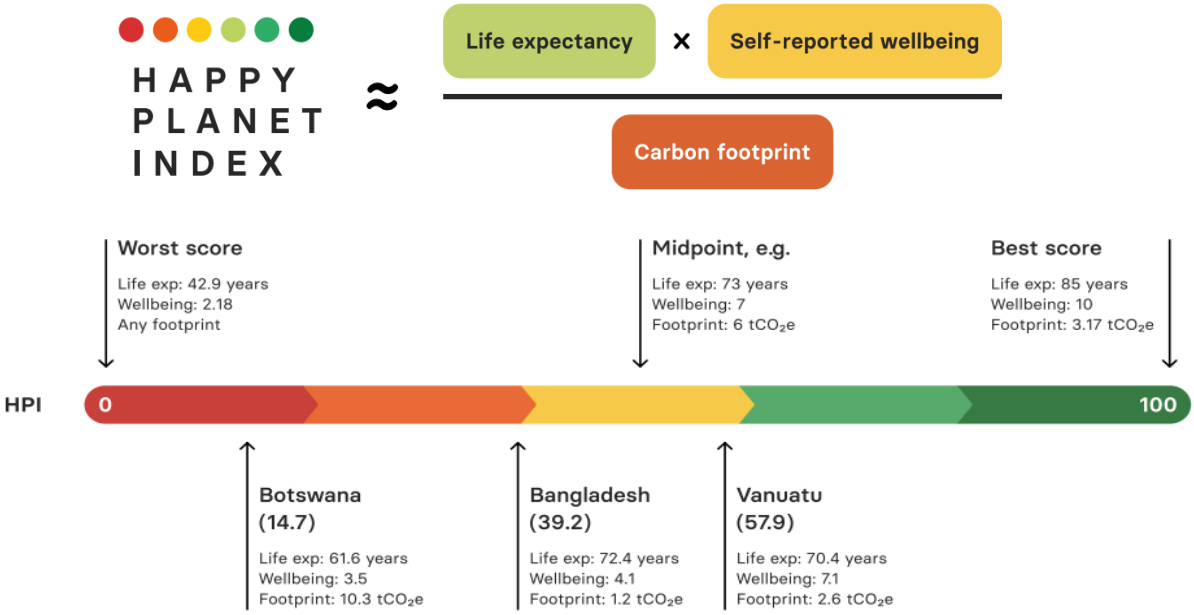


Figure 14. Better Life Index

Happy Planet index (HPI)



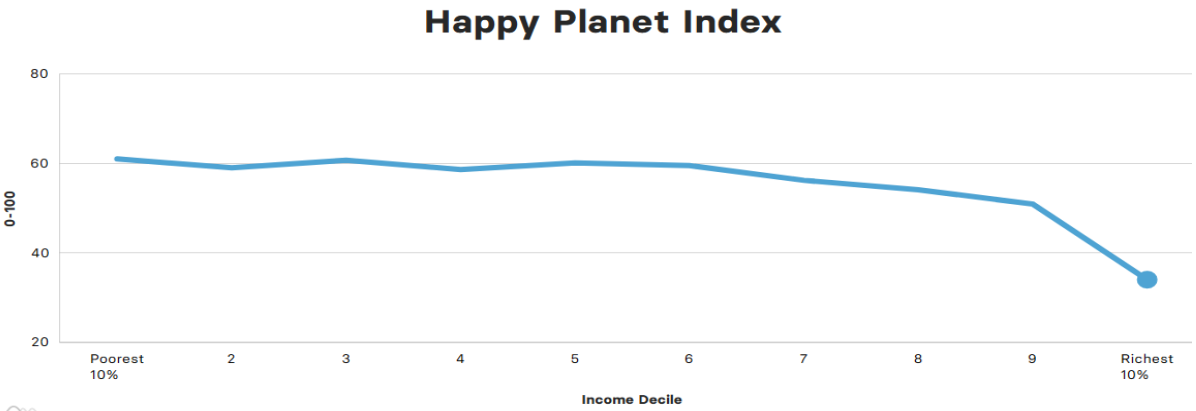


Figure 15. Happy Planet index (HPI)

HPI & economic freedom

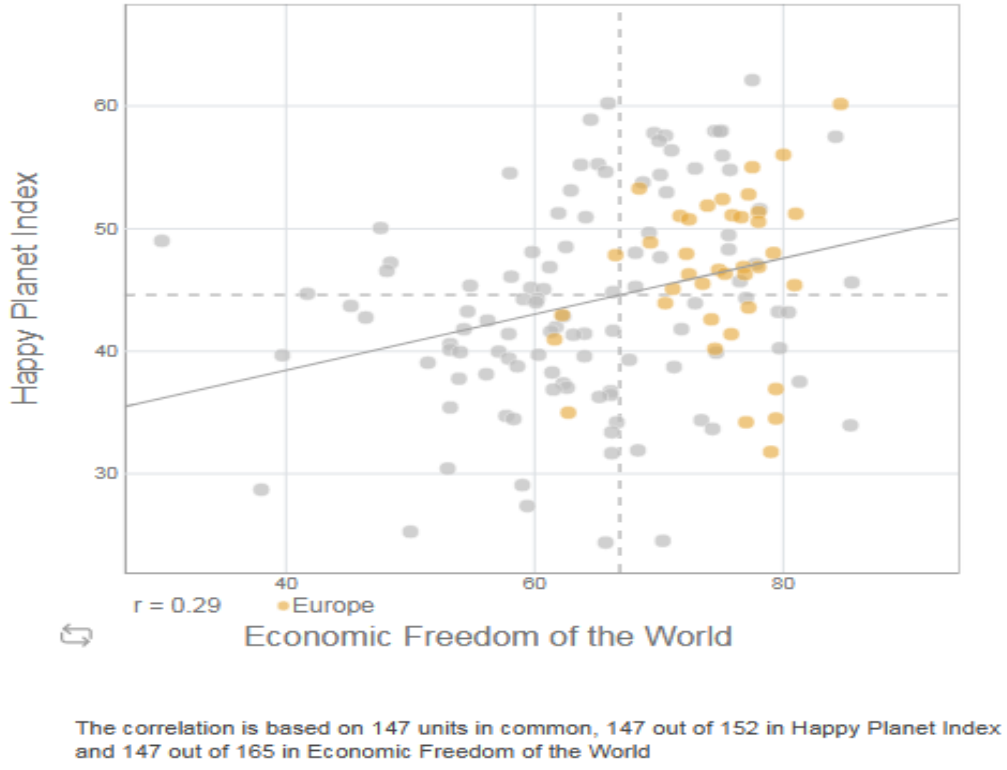


Figure 16. Happy Planet index (HPI) – Eonomic Freedom of the World

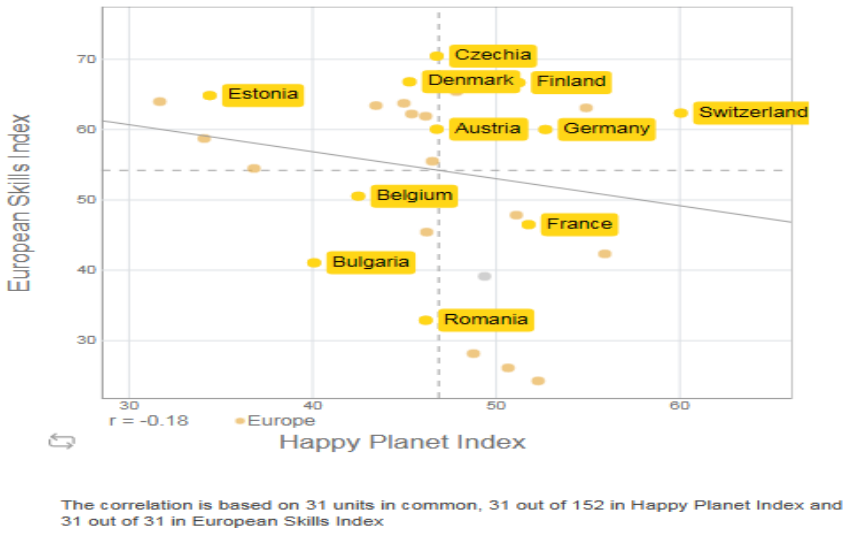


Figure 17. Happy Planet index (HPI) – European Skills Index

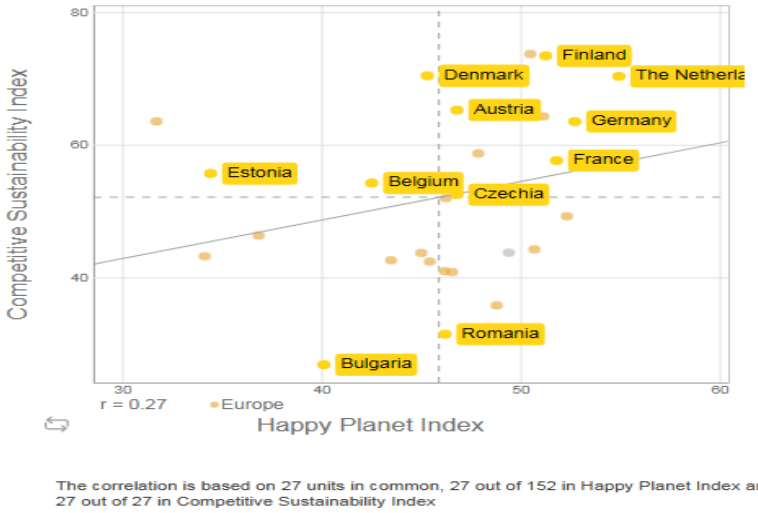


Figure 18. Happy Planet index (HPI) – Competitive Sustainability Index

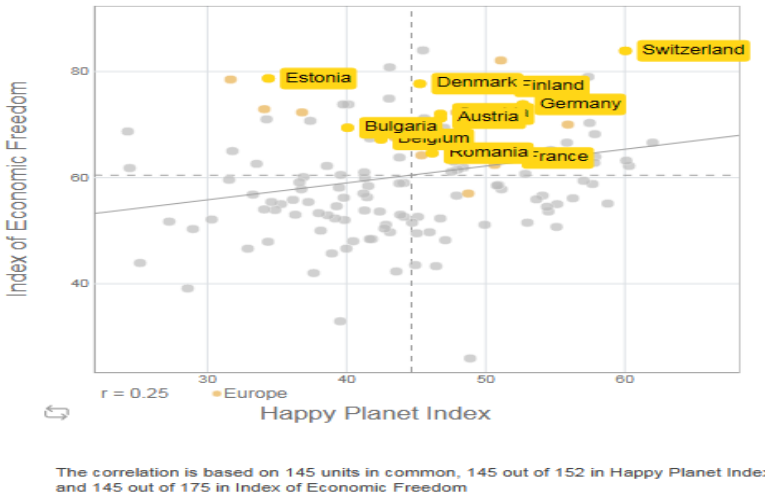
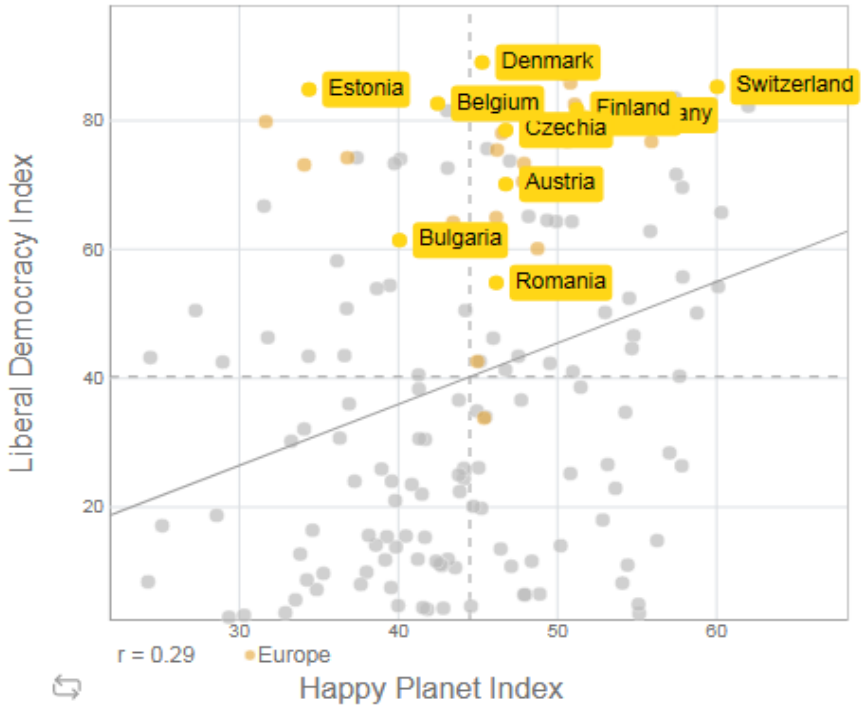
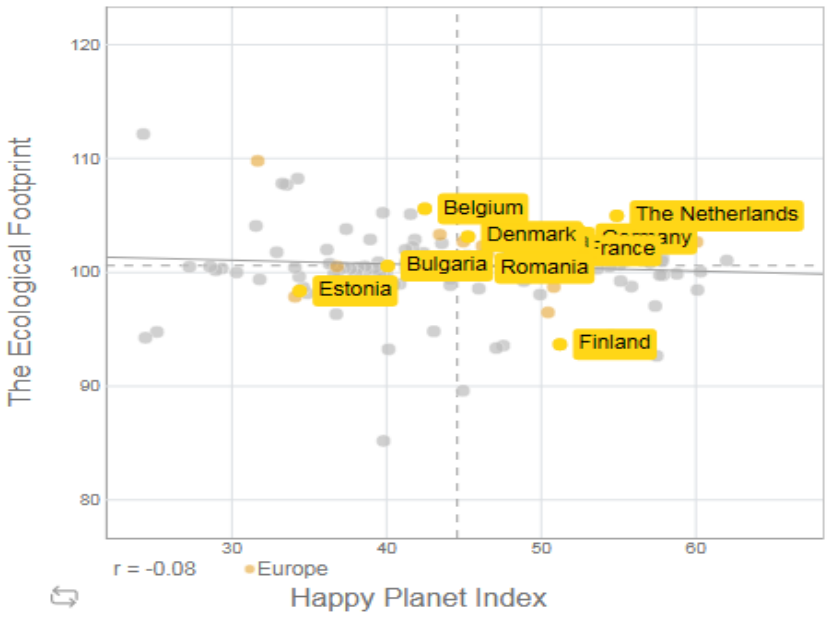


Figure 19. Happy Planet index (HPI) – Index of Eonomic Freedom



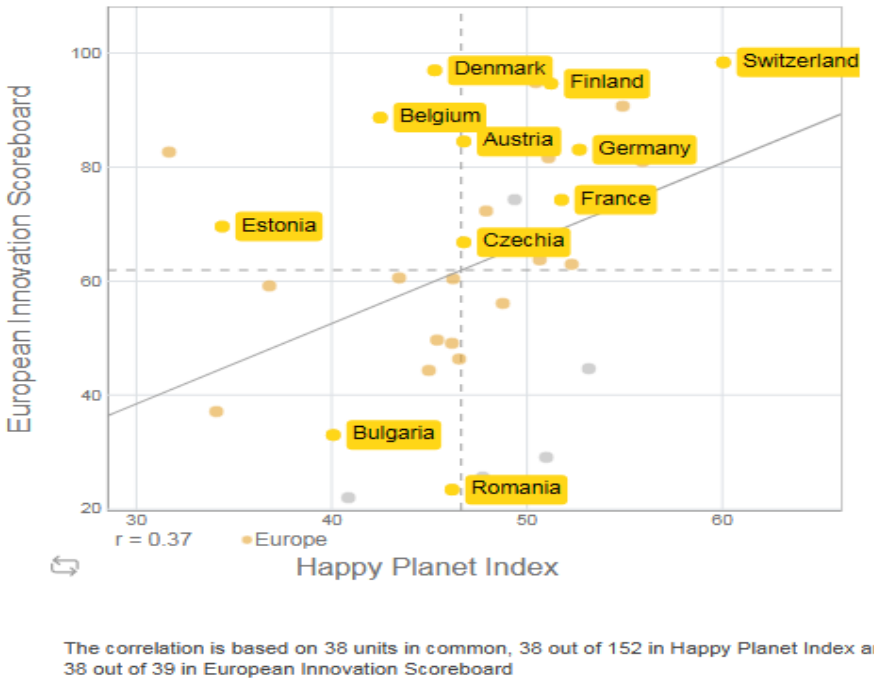
The correlation is based on 152 units in common, 152 out of 152 in Happy Planet Index and 152 out of 175 in Liberal Democracy Index

Figure 20. Happy Planet index (HPI) – Liberal Democracy Index



The correlation is based on 145 units in common, 145 out of 152 in Happy Planet Index and 145 out of 180 in The Ecological Footprint

Figure 21. Happy Planet index (HPI) – The Ecological Footprint



The correlation is based on 38 units in common, 38 out of 152 in Happy Planet Index and 38 out of 39 in European Innovation Scoreboard

Figure 22. Happy Planet index (HPI) – European Innovation Scoreboard

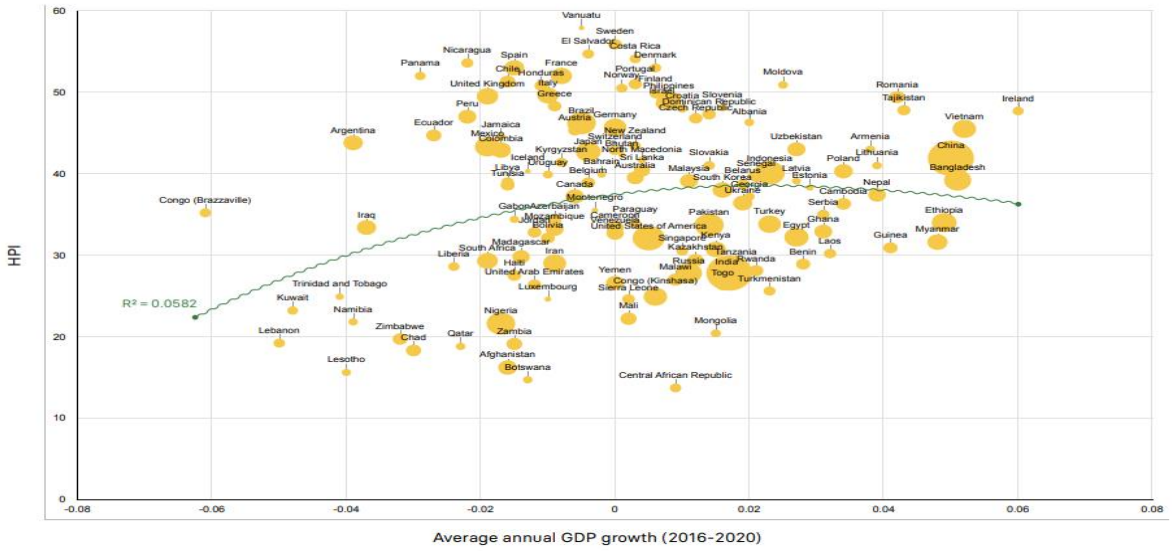


Figure 23. HPI – Average annual GDP growth (2016-2020)

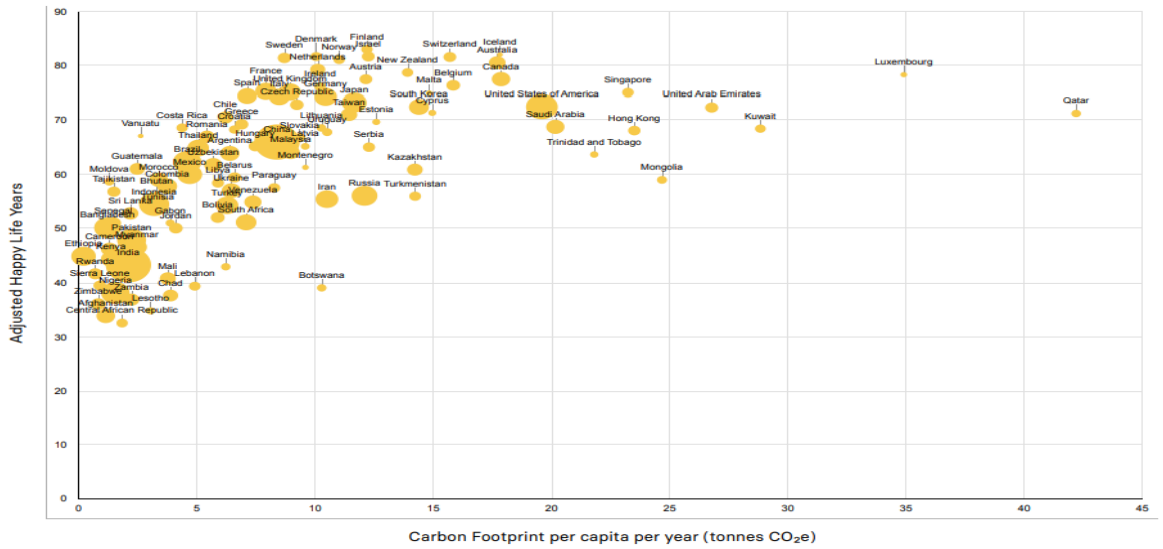


Figure 24. Adjusted Happy Life Years – Carbon Footprint per capita per year (tonnes CO2e)

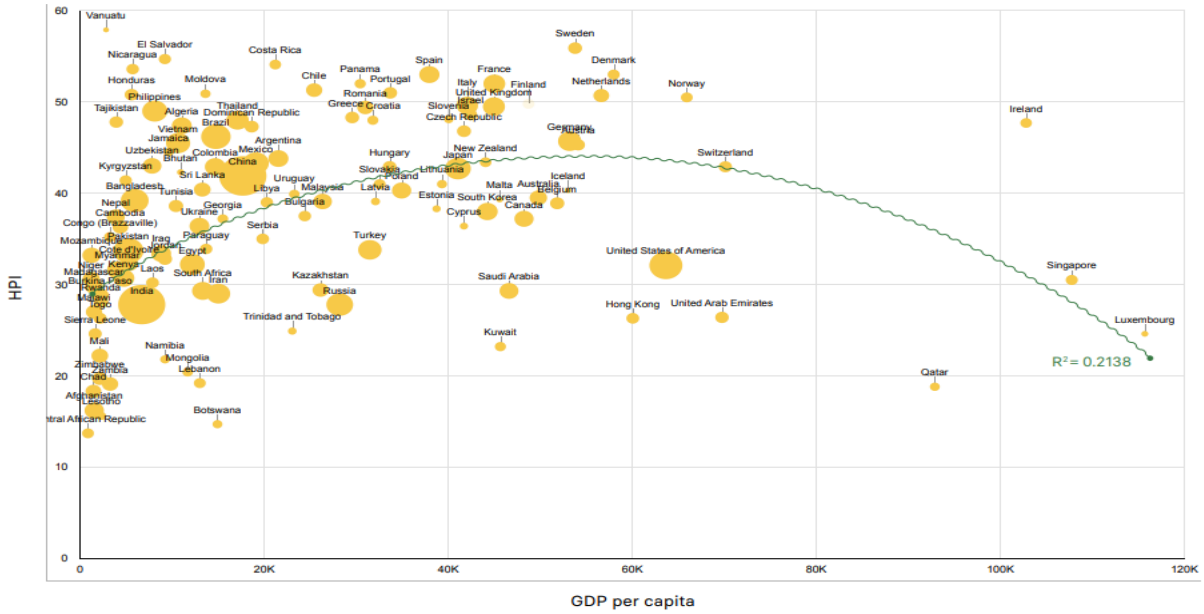


Figure 25. HPI - GDP per capita

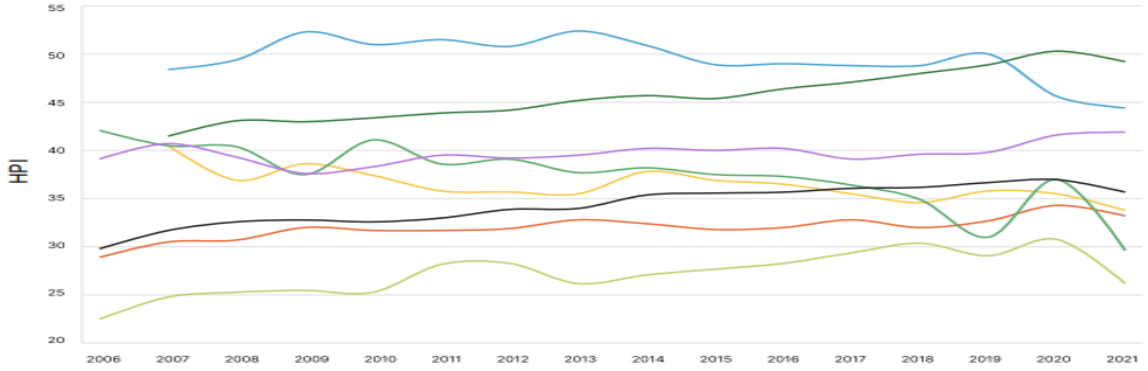


Figure 25. HPI

Good health and well-being

Figure 26. Good health and well-being

IV.6 Measuring subjective well-being

World Happiness Report 2024 (Helliwell et al., 2024)

Purpose: assessing life satisfaction - individuals' distance from their aspirations (*Gallup World Poll*):

N = 143 countries; around 1000 respondents/country;

Scale: 0 – 10 (10 = the best possible life)

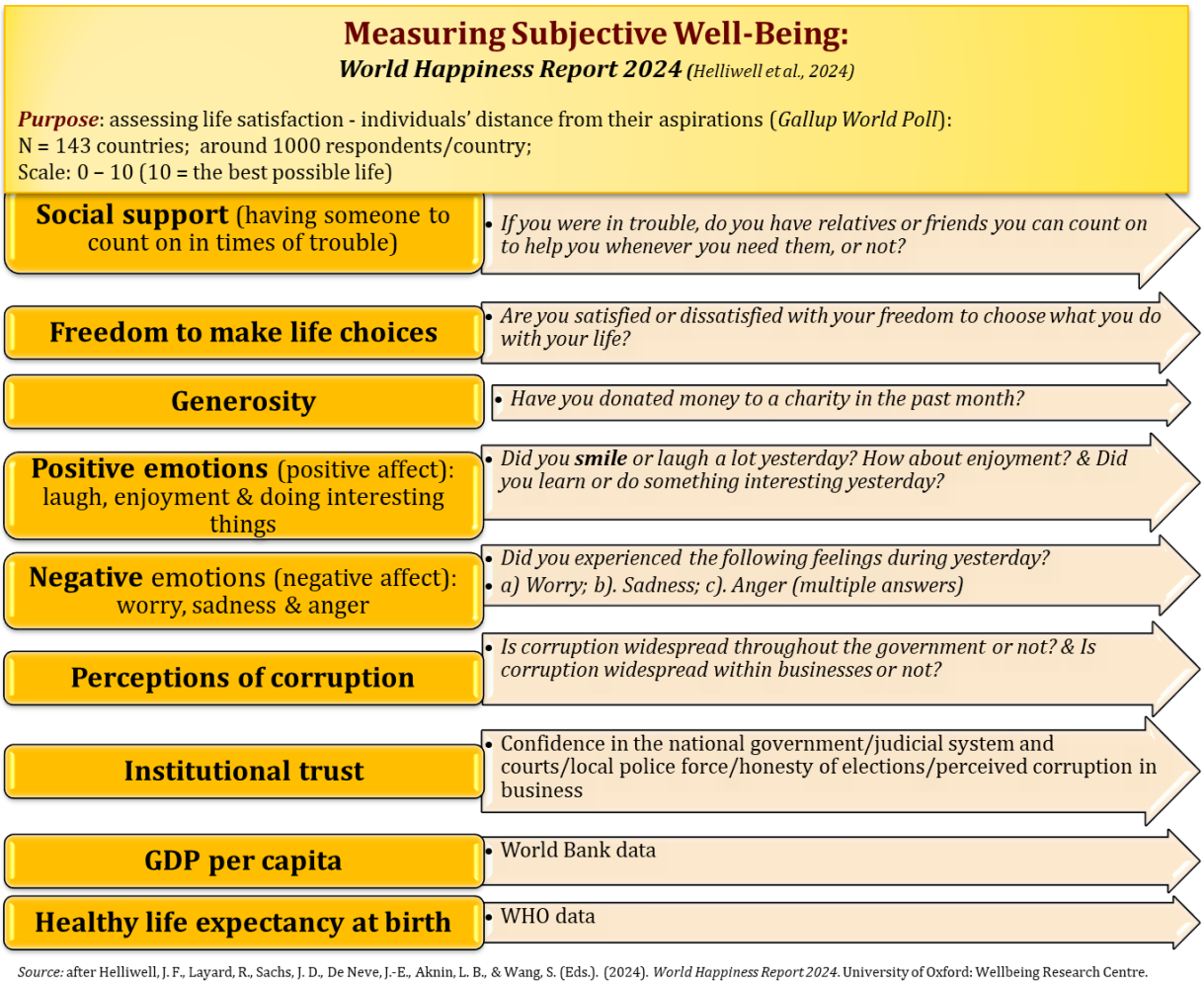


Figure 27. Measuring Subjective Well-Being: World Happiness Report 2024

Ranking by age group (happiest vs. least happy)
World Happiness Report 2024

Country name	All Ages	The Young	The Lower Middle	The Upper Middle	The Old	Happiest Age Group	Least Happy Age Group
Finland	1	7	1	1	2	Old	Young
Denmark	2	5	3	4	1	Old	Young
Iceland	3	4	4	2	5	Young	LowerMiddl
Sweden	4	18	8	3	4	Old	Young
Israel	5	2	2	7	18	Young	Old
Netherlands	6	9	5	5	7	Old	Young
Norway	7	20	6	6	3	Old	Young
Luxembourg	8	6	11	8	12	Young	LowerMiddl
Switzerland	9	13	9	11	14	Young	UpperMiddl
Australia	10	19	14	10	9	Old	LowerMiddl
New Zealand	11	27	18	13	6	Old	LowerMiddl
Costa Rica	12	11	15	23	17	Young	UpperMiddl
Kuwait	13	16	20	9	13	Old	LowerMiddl
Austria	14	12	17	18	15	Young	UpperMiddl
Canada	15	58	28	12	8	Old	Young
Belgium	16	24	13	15	19	LowerMiddle	Old
Ireland	17	21	21	21	16	Young	UpperMiddl
Czechia	18	10	12	22	23	Young	Old
Lithuania	19	1	7	20	44	Young	Old
United Kingdom	20	32	27	19	20	Old	LowerMiddl
Slovenia	21	15	10	27	32	Young	Old
United Arab Emirates	22	35	25	16	11	Old	LowerMiddl
United States	23	62	42	17	10	Old	LowerMiddl
Germany	24	47	16	28	21	LowerMiddl	Young
Mexico	25	22	19	32	33	Young	Old
Uruguay	26	30	22	34	24	Young	UpperMiddl
France	27	48	23	26	25	LowerMiddle	Old
Saudi Arabia	28	42	39	14	27	UpperMidd	LowerMiddl
Kosovo	29	23	37	33	39	Young	Old
Singapore	30	54	36	25	26	UpperMiddle	Old
Taiwan Province of China	31	25	35	31	34	Young	Old
Romania	32	8	26	35	48	Young	Old

Countries by happiest age group

Region indicator	The Young	Lower Middle	Upper Middle	The Old	Total
Western Europe	10	3	1	6	20
Central and Eastern Europe	15	1	1	0	17
Commonwealth of Independent States	9	0	0	1	10
Southeast Asia	6	0	2	1	9
South Asia	6	0	0	0	6
East Asia	4	0	1	1	6
Latin America and Caribbean	18	0	1	0	19
North America and ANZ	0	0	0	4	4
Middle East and North Africa	12	0	2	3	17
Sub-Saharan Africa	25	1	2	7	35
All	105	5	10	23	143

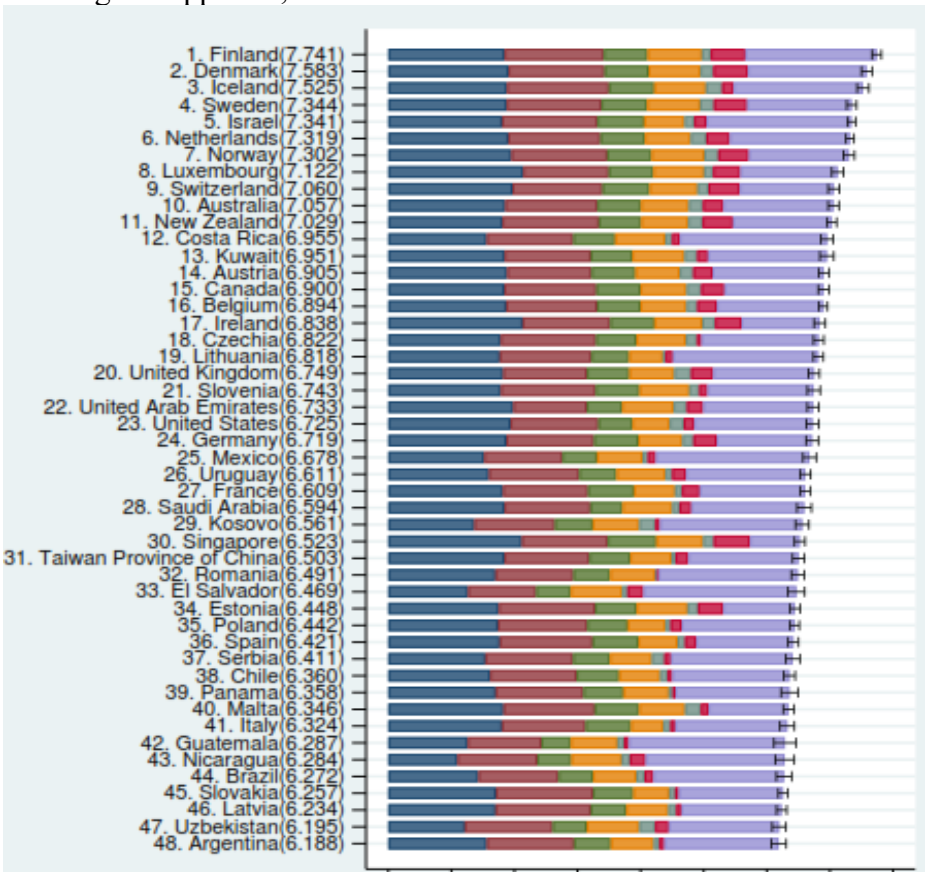
Countries by least happy age group

Region indicator	The Young	Lower Middle	Upper Middle	The Old	Total
Western Europe	6	3	4	7	20
Central and Eastern Europe	0	0	0	17	17
Commonwealth of Independent States	0	2	1	7	10
Southeast Asia	0	4	1	4	9
South Asia	0	1	3	2	6
East Asia	0	4	0	2	6
Latin America and Caribbean	0	0	8	11	19
North America and ANZ	1	3	0	0	4
Middle East and North Africa	0	4	6	7	17
Sub-Saharan Africa	0	9	12	14	35
All	7	30	35	71	143

Figure 28. World Happiness Report 2024 - Ranking by age group (happiest vs. least happy)
Source: Helliwell et al., p. 66-70

- Young (Age below 30)
- Lower Middle Age (between 30 and 44):
- Upper Middle Age (between 45 and 60)
- Old (60 and above)

Ranking of happiness, 2021-2023



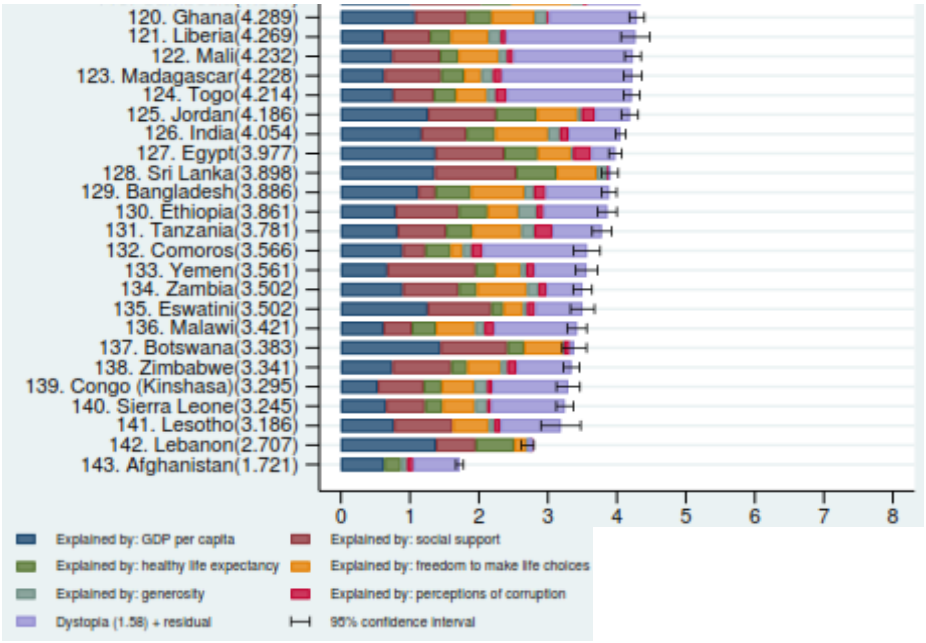


Figure 29. Ranking of happiness, 2021-2023
Source: Helliwell et al., p. 87-89

The Well-being INDEX project

University of Malta & Malta Foundation for the Well-being of Society;
Launched on the 10th December 2020;
Goals:

- to measure well-being in Malta;
- to assess policy performance in well-being;
- to identify policy priorities (evidence-based policy);
- to provide robust national well-being statistics and research;
- to expand research networks internationally

Prof. Marie Briguglio - principal investigator

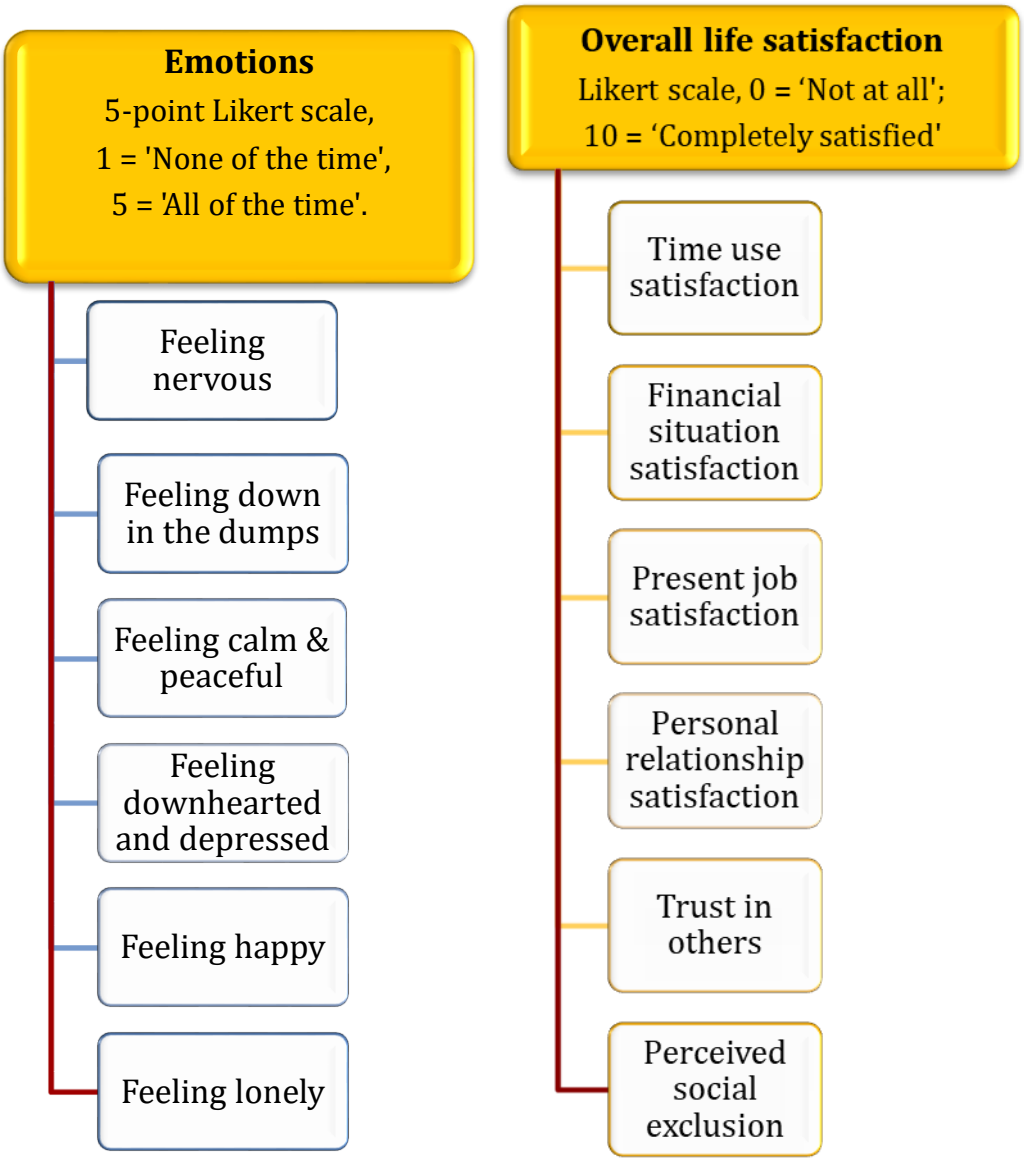


Figure 30. The Well-being INDEX project

Indicators/Indexes

Gross Domestic Product
https://ec.europa.eu/eurostat/databrowser/view/sdg_08_10/default/table?lang=en

Human Development Index
https://hdr.undp.org/data-center/human-development-index#/indicies/HDI

Sustainable Development Goals Index
https://dashboards.sdgindex.org/explorer

European Union Sustainable Development Goals Index
https://eu-dashboards.sdgindex.org/explorer

European Union Quality of Life Dashboard
https://ec.europa.eu/eurostat/cache/infographs/qol/index_en.html

Life Evaluation
https://worldhappiness.report/data/

Survey on Income and Living Conditions and Well-being Module
https://nso.gov.mt/themes_sources___met/statistics-on-income-and-living-conditions

OECD Better Life Index
https://www.oecdbetterlifeindex.org

EUROSTAT
https://ec.europa.eu/eurostat/cache/infographs/qol/index_en.html

EUROSTAT

https://ec.europa.eu/eurostat/cache/infographs/qol/index_en.html

Figure 31. Overall life satisfaction - Eurostat

V. Sustainable well-being: bibliometric analysis and in-depth literature analysis

Understanding the concept of well-being implies a broader approach that considers the complexity of the human, natural, economic and social spheres. The study seeks to explore alternative and sustainable well-being analysis models based on the interaction of multiple dimensions. It aims to examine the theoretical approaches to the construct of sustainable well-being in the academic literature and the relationships between various well-being dimensions.

The analysis is grounded on the Organisation for Economic Co-operation and Development (OECD) Well-being Framework (2020) that includes as key dimensions: income and wealth, work and job quality, housing, health, knowledge and skills, environment quality, subjective well-being, safety, work-life balance, social connections and civil engagement. The methodology is based on a literature review and spatial analysis of well-being dimensions using the OECD Well-being Framework. The study emphasizes the interdependencies between well-being dimensions as a form of better understanding the dualism and synergies between sustainability and well-being. "Higher levels of sustainable consumption and pro-environmental behavior are associated with higher subjective well-being" (Herziger et al., 2020). By fostering knowledge of sustainable well-being there are gained broader insights into criteria needed to sustain well-being into the future. A flourishing community can be seen as a framework where all aspects of the community's life are good. This includes both objective and subjective elements at individual and community levels (VanderWeele, 2019).

Well-being is a resource for daily life and is determined by social, economic and environmental conditions. It encompasses quality of life and the ability of people and societies to contribute to the world with a sense of meaning and purpose (World Health Organization, 2021). Well-being is a shared European value, as recognised by Article 3 of the Treaty on European Union. [….] Promoting fundamental rights and increasing opportunities for all constitute the heart of an economy of well-being (OECD, 2020). Sustainable and inclusive economic growth and resilience function as enablers for the wellbeing of people, societies and the planet.

V.1 Bibliometric analysis

Scopus - 14819 documents

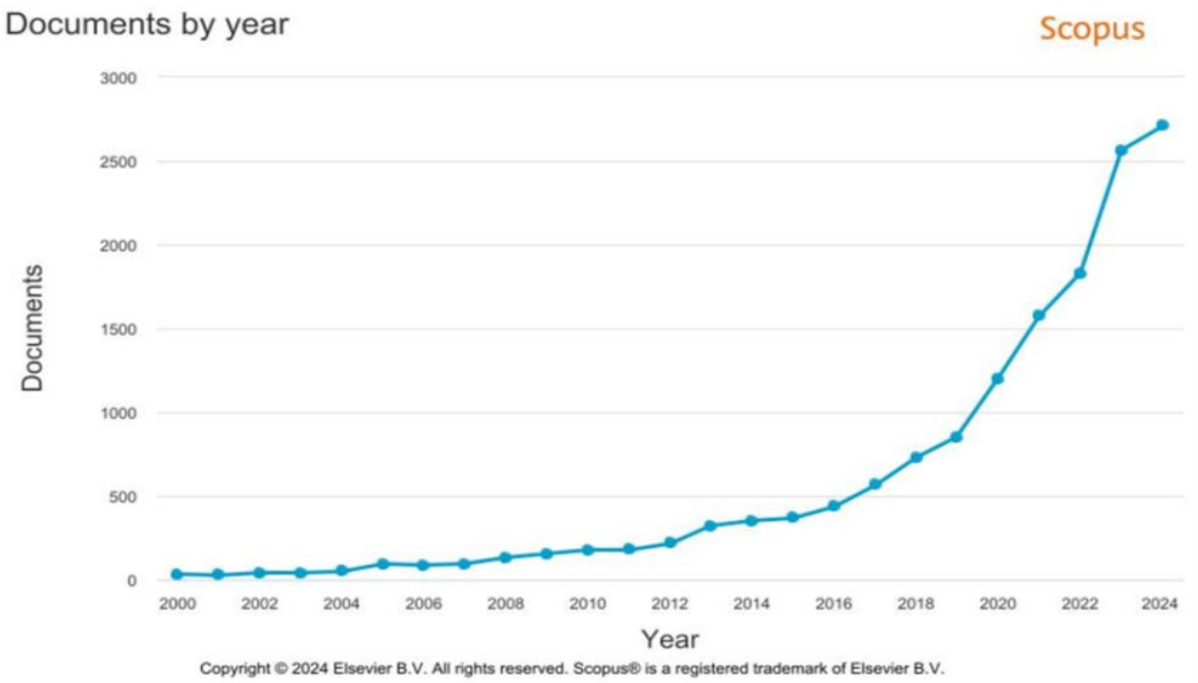


Figure 32. Documents by year, source: Scopus

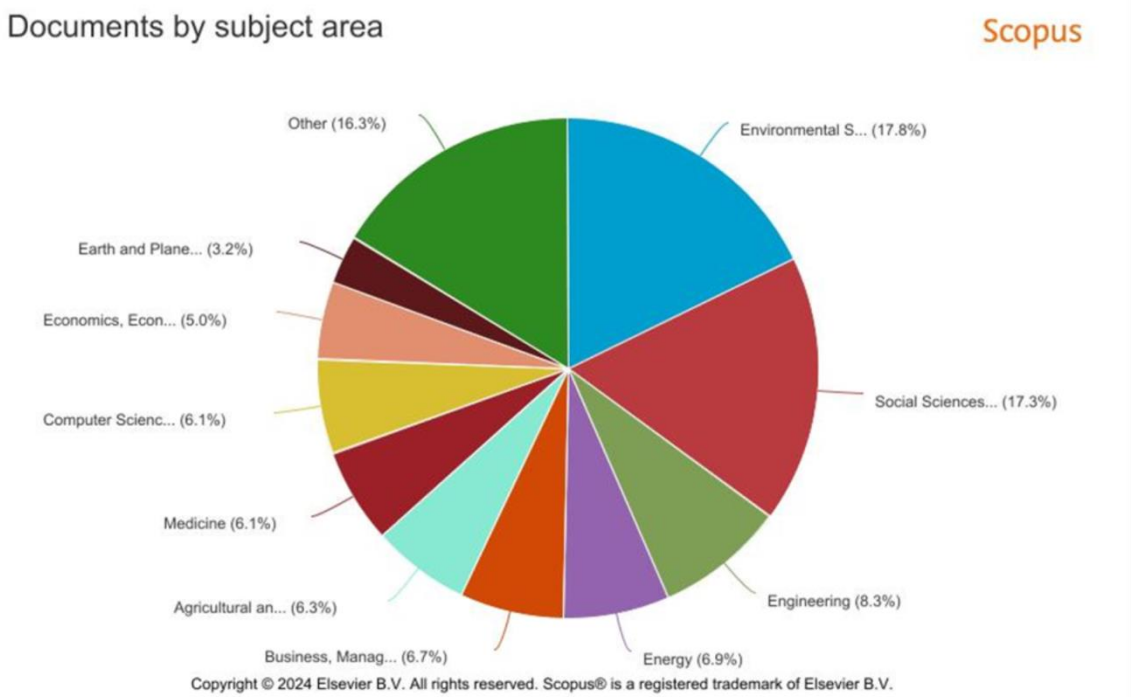


Figure 33. Documents by subject area, source: Scopus

Web of science - 8635 documents

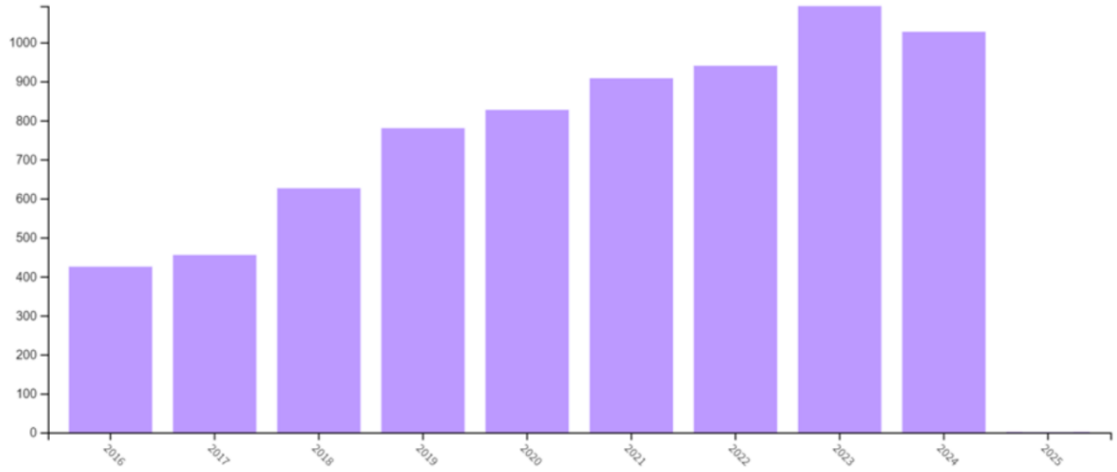


Figure 34. Documents by year, source: Web of science

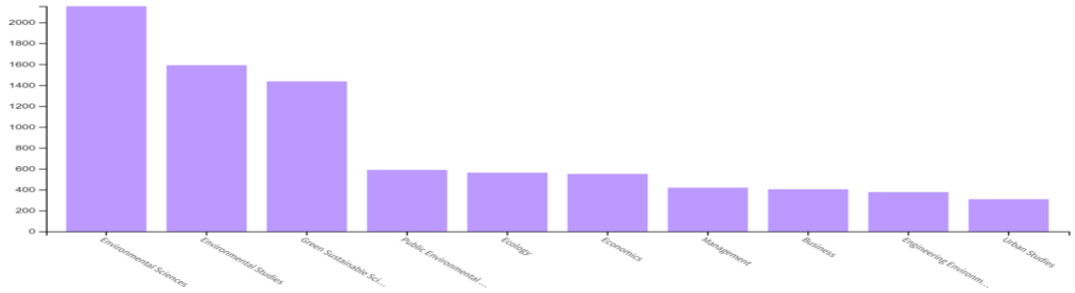


Figure 35. Documents by subject area, source: Web of science

Bibliometric analysis - Sustainable well-being
Scopus

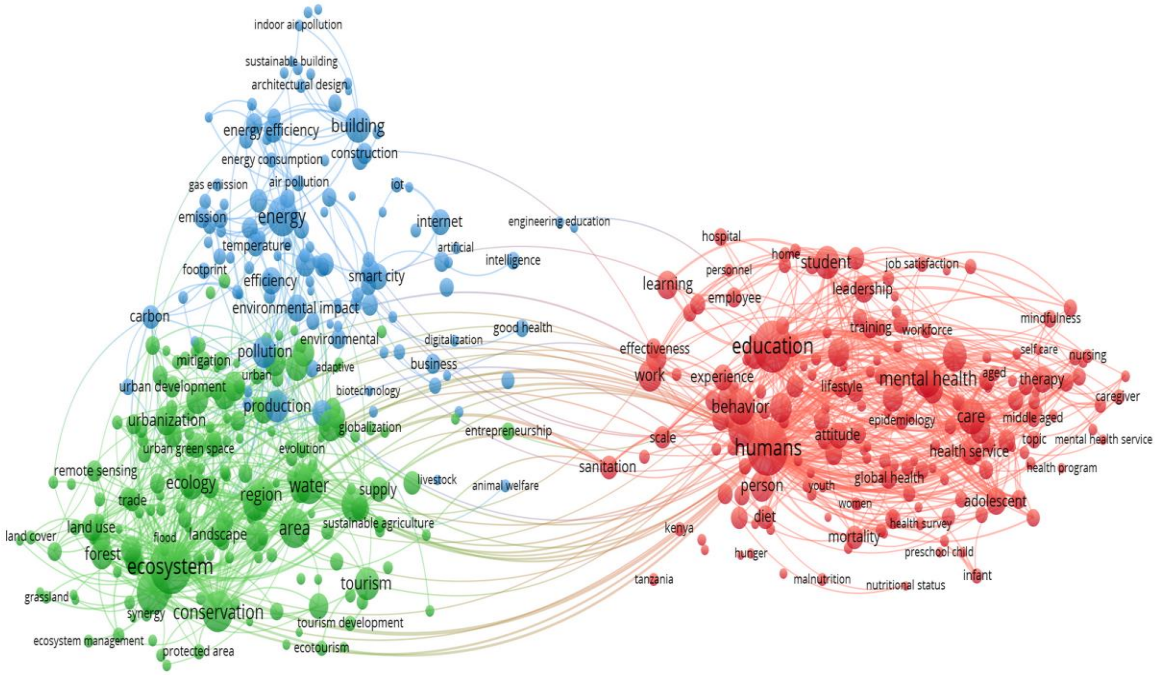


Figure 36. Main concepts analysis – Scopus
Source: own representation in VoS viewer software
Minimum number of occurences of a term: 50, 60% of the relevant terms, 3 clusters, 182 items
Relevant terms:
education, mental health, humans, behavior, ecosystem, energy, buildings

Web of Science

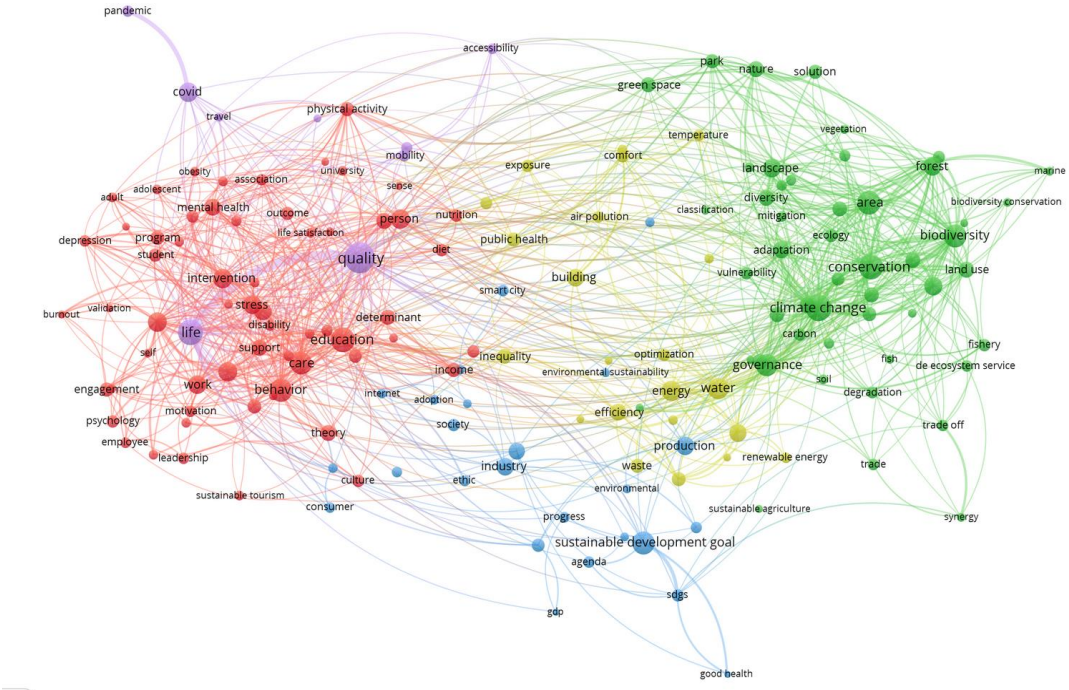


Figure 37. Main concepts analysis – Web of Science
Minimum number of occurences of a term: 50
60% of the relevant terms; 5 clusters, 61 items
Relevant terms:
life quality, education, behavior, climate change, conservation, biodiversity, governance, energy, production, sustainable development goal, health

V.2 In-depth literature review

Step 1: Top 10 most relevant articles in Scopus and 10 in Web of Science

Step 2: Top 10 most cited articles in Scopus and 10 in Web of Science

Step 3: Analysis of the main approaches to relate to the OECD well-being dimensions

Step 4: Eliminate duplicated research articles in the two databasis

Final result: 25 research articles

Period of time: 2000-2024

Language: English

Nr. crt.	Article	Authors and year of publication	Journal
1.	Sustainable Well-Being: A Potential Synergy Between Sustainability and Well-Being Research	Kjell, O. N. (2011)	Review of General Psychology
2.	Measuring Well-being Across Europe: Description of the ESS Well-being Module and Preliminary Findings	Huppert, F. A., Marks, N., Clark, A., Siegrist, J., Stutzer, A., Vittersø, J., & Wahrendorf, M. (2009)	Social Indicators Research
3.	HEALTH, WELL-BEING AND SUSTAINABLE HOUSING	Prochorskaite, A., & Maliene, V. (2013)	Journal of Strategic Property Management
4.	Resident well-being and sustainable tourism development: the 'capitals approach'	Dwyer, L. (2023)	Journal of Sustainable Tourism
5.	Well-Being and Geography: Modelling Differences in Regional Well-Being Profiles in Case of Spatial Dependence-Evidence from Turkey	Elburz, Z., Kourtit, K., & Nijkamp, P. (2022)	Sustainability
6.	Exploring Compatibility Between Subjective Well-Being and Sustainable Living in Scandinavia	Hansen, K. B. (2015).	Social Indicators Research
7.	Pursuing happiness: The architecture of sustainable change	Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005)	Review of general psychology
8.	The role of urban parks for the sustainable city	Chiesura, A. (2004)	Landscape and Urban planning
9.	The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context	Murray, A., Skene, K., & Haynes, K. (2017)	Journal of business ethics

10.	Sustainable development: Mapping different approaches	Hopwood, B., Mellor, M., & O'Brien, G. (2005)	Sustainable development
11.	Theory and practice in assessing vulnerability to climate change and facilitating adaptation	Kelly, P. M., & Adger, W. N. (2000)	Climatic change
12.	Psychological benefits of greenspace increase with biodiversity	Fuller, R. A., Irvine, K. N., Devine-Wright, P., Warren, P. H., & Gaston, K. J. (2007)	Biology letters
13.	Six Transformations to achieve the Sustainable Development Goals	Sachs, J. D., Schmidt-Traub, G., Mazzucato, M., Messner, D., Nakicenovic, N., & Rockström, J. (2019)	Nature sustainability
14.	Associations between grit, sustainable behavior, and emotional well-being	Choi, J. (2020)	Asian Journal for Public Opinion Research
15.	Assessment on subjective sustainable well-being for central region of Malaysia	Bakar, A. A., Osman, M. M., Bachok, S., Ibrahim, M., & Abdullah, A. (2017)	Advanced Science Letters
16.	Socio-Economic and Psychological Well-Being: An Analytical Study for Sustainable Policy-Making	Satsangi, R., Jamwal, D., Sharma, S., Manani, P., & Satsangi, D. (2024)	International Journal of Sustainable Development & Planning
17.	Unraveling the Relationship between Well-Being, Sustainable Consumption and Nature Relatedness: a Study of University Students	Redondo, R., Valor, C., & Carrero, I. (2022)	Applied Research in Quality of Life
18.	Is There Hope for the Double Dividend? How Social Context Can Shape Synergies and Tradeoffs between Sustainable Consumption and Well-Being	Herziger, A., Claborn, K. A., & Brooks, J. S. (2020)	Ecological Economics
19.	Towards sustainable well-being in SMEs through the web-based learning program of ergonomics	Randelin, M., Saaranen, T., Naumanen, P., & Louhevaara, V. (2013)	Education and information technologies
20.	Hedonic and eudaimonic well-being for sustainable development in university students: personality traits or acceptance of change?	Di Fabio, A., Palazzeschi, L., Bonfiglio, A., Gori, A., & Svicher, A. (2023)	Frontiers in Psychology
21.	Do All Dimensions of Sustainable Consumption Lead to Psychological Well-Being? Empirical Evidence from Young Consumers	Carrero, I., Valor, C., & Redondo, R. (2020)	Journal of Agricultural and Environmental Ethics
22.	Assessment of Sustainable Well-being in the Italian Regions: An Activity Analysis Model	Cracolici, M. F., Cuffaro, M., & Lacagnina, V. (2018)	Ecological Economics
23.	Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'	Wolch, J. R., Byrne, J., & Newell, J. P. (2014)	Landscape and urban planning

24.	A Systematic Study of Sustainable Development Goal (SDG) Interactions	Pradhan, P., Costa, L., Rybski, D., Lucht, W., & Kropp, J. P. (2017)	Earth's Future
25.	Assessing, mapping, and quantifying cultural ecosystem services at community level	Plieninger, T., Dijks, S., Oteros-Rozas, E., & Bieling, C. (2013)	Land use policy

Table 1 - The selected research papers, authors, year of publication and journal

The codes were selected based on OECD well-being framework, key dimensions: inome and wealth, work and job quality, housing, health, knowledge and skills, environmental quality, subjetive well-being, safety, work-life balanace, social connetions, civic engagement.

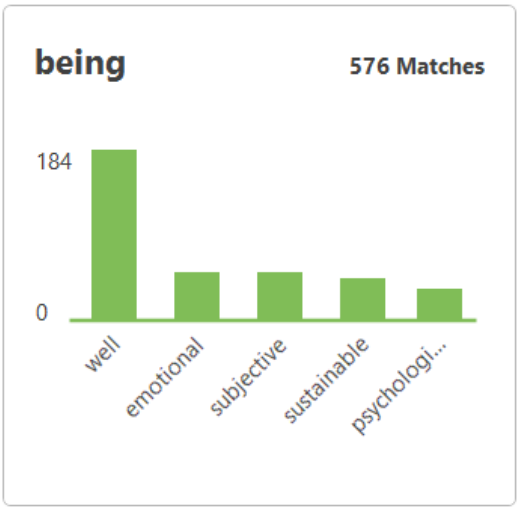
Codes	Associated words
income and wealth	income, wealth, inequality, living wage, distribution
work and job quality	work, labour market, employment/unemployment, wage, satisfaction, employee
housing	affordability, accessibility, utilities, urbanization,
health	life expectancy, healthcare, mental health, public health, healthcare infrastructure, care
knowledge and skills	education, literacy, skills, lifelong learning, school,
environment quality	green spaces, climate change, sustainable development, sdgs, footprint, pollution
subjective well-being	life satisfaction, happiness, mental well-being, emotional health
safety	security, welfare
work-life balance	leisure time, productivity, working hours, job autonomy
social connections	community engagement, social support, social capital, social cohesion,
civil engagement	participation, civil society, civic responsibility, volunteering, governance
well-being	income and wealth, work and job quality, housing, health, knowledge and skills, environment quality, subjective well-being, safety, work-life balance, social connections, civil engagement, well-being

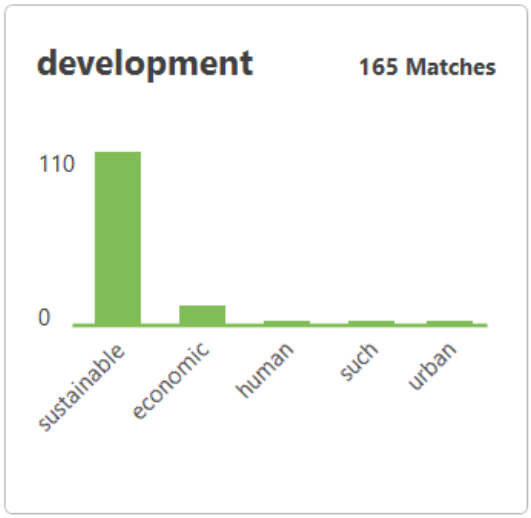
Table 2. Codes and associated words

Word cloud

Figure 38. Wordcloud - frequent terms
Source: own representation

Opinion mining





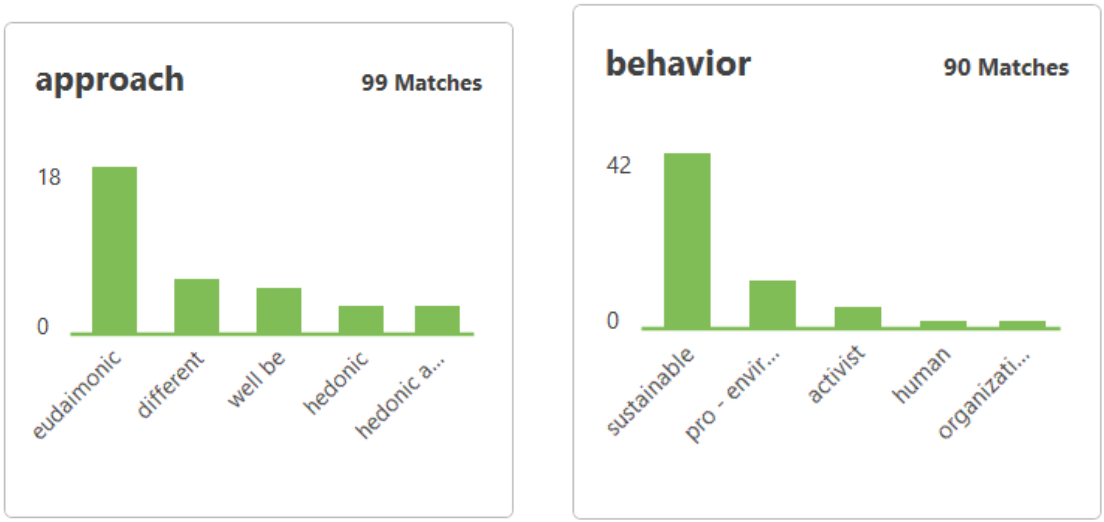


Figure 39. Opinion mining - frequent concepts
Source: own representation

Concepts associations**:** 961 quotations, 12 codes

Most frequent codes of dimensions: subjective well-being, social connections, environment quality
Less frequent codes of dimensions: housing, safety

		Civil engagement Gr=72	Environment quality Gr=304	Health Gr=215	Housing Gr=46	Income and wealth Gr=235	Knowledge and skills Gr=262	Safety Gr=36	Social connections Gr=366	Subjective well-being Gr=389	Well-being Gr=616	Work and job quality Gr=83	Work-life balance Gr=66
2	Civil engagement Gr=72	0	45	20	7	36	47	2	66	62	76	12	19
3	Environment quality Gr=304	45	0	133	33	130	154	23	215	175	323	31	31
4	Health Gr=215	20	133	0	26	77	109	23	148	121	228	40	30
5	Housing Gr=46	7	33	26	0	26	31	5	39	19	46	9	9
6	Income and wealth Gr=235	36	130	77	26	0	119	26	160	141	251	38	31
7	Knowledge and skills Gr=262	47	154	109	31	119	0	16	197	190	274	60	43
8	Safety Gr=36	2	23	23	5	26	16	0	23	11	43	10	5
9	Social connections Gr=366	66	215	148	39	160	197	23	0	259	378	56	46
10	Subjective well-being Gr=389	62	175	121	19	141	190	11	259	0	405	51	54
11	Well-being Gr=616	76	323	228	46	251	274	43	378	405	0	90	68
12	Work and job quality Gr=83	12	31	40	9	38	60	10	56	51	90	0	22
13	Work-life balance Gr=66	19	31	30	9	31	43	5	46	54	68	22	0

Table 3. Frequency of codes associations (12 codes, 961 quotations)

Level of quotations associations between the concept of well-being and the analyzed dimensions:

1. Subjective well-being (405)
2. Social connections (378)
3. Environment quality (323)
4. Knowledge and skills (274)
5. Income and wealth (251)
6. Health (228)
7. Work and job quality (90)

8. Civil engagement (76)
9. Work-life balance (68)
10. Housing (46)
11. Safety (43)

Other relevant co-occurences between the dimensions

Subjective well-being	social connections (259), knowledge and skills (190)
Work life balance	subjective well - being (54)
Work and job quality	knowledge and skills (60)
Knowledge and skills	social connections (197)
Social connections	subjective well-being (259), environment quality (215)
Safety	income and wealth (26)
Income and wealth	social connections (160)
Environment quality	social connections (215), knowledge and skills (154)
Housing	social connections (39), income and wealth (26), health (26)
Health	social connections (148), environment quality (133)
Civil engagement	social connections (66)

Table 4. Relevant co-occurrences between the dimensions

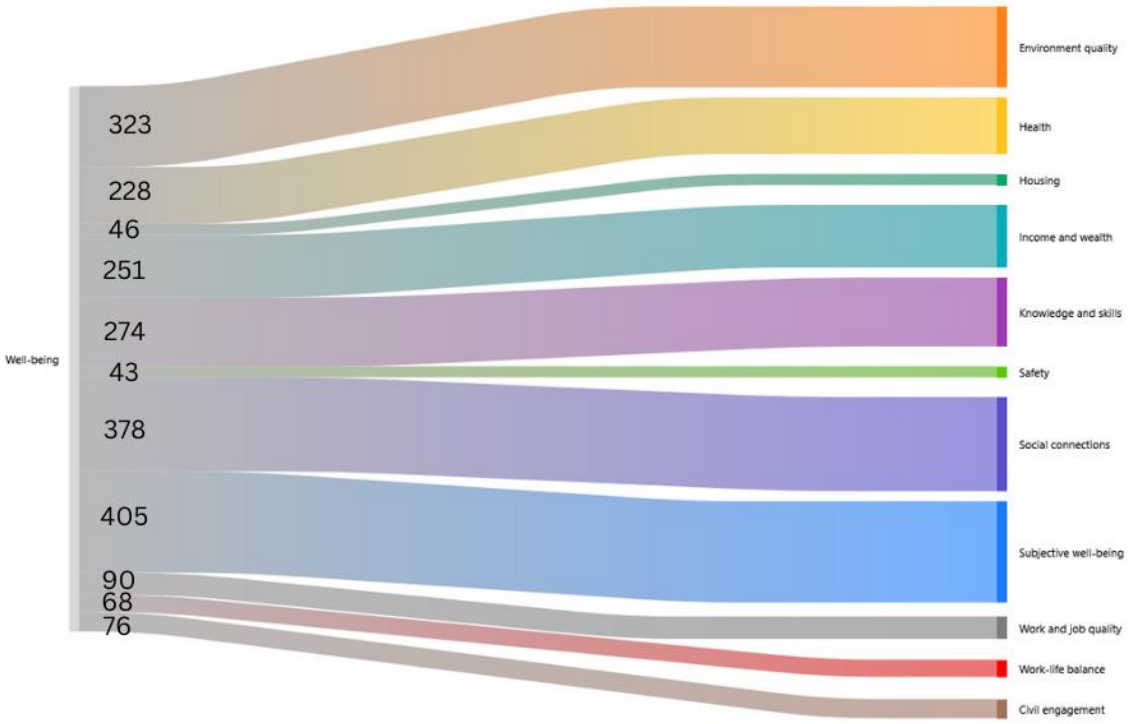


Figure 40. Well-being concept - frequency of associations
Source: own representation

The most relevant codes for well-being:
Subjective well-being (405)
Social connections (378)
Environment quality (323)
Knowledge and skills (274)
Income and wealth (251)
Health (228)
Work and job quality (90)
Civil engagement (76)
Work-life balance (68)
Housing (46)
Safety (43)

Relevant dimensions: natural, economic, human, social

Relevant concepts: well-being, emotional being, eudaimonic approach, sustainable development, sustainable behaviour

Most frequent codes: subjective well-being, social connections, environment quality

Less frequent codes: housing, safety

Limitations of the bibliometric analysis

Source: research articles published in a scientific journal (books, conference proceedings, book chapters, public papers were excluded)

Limitation on data range: A time span of 24 years was selected and thus articles had to be published between 2002 and 2024

English language

Type of access: Articles should be open access.

The in-depth literature review study is subjected to a limited number of 25 research papers

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