Transdisciplinarity as a Pathway to Doing Good and Being Well: A Multiscale Model of Well-Being

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Abstract: *This study aims to examine whether transdisciplinary research constitutes a pathway to doing good and generating well-being. Using data from the World Happiness Report (2022—2025), correlation and principal component analyses were conducted to identify the structural determinants of well-being. In parallel, a bibliometric analysis based on Scopus data was performed, including co-occurrence networks, density visualization, temporal evolution, and source mapping. Results reveal a robust structure of well-being shaped by the interaction of social, economic, and institutional dimensions. Social support shows the strongest association with life evaluation ($r \approx 0.78$—0.83, $p < 0.001$), followed by GDP per capita and healthy life expectancy, while freedom presents moderate but significant relationships. In contrast, generosity shows no significant association at the global level, indicating its context-dependent nature. Bibliometric findings indicate that transdisciplinary research has evolved from environmental problem-solving toward integrating human and well-being dimensions, functioning as an articulating axis across domains. A multiscale model is proposed, showing that doing good does not automatically generate well-being, but under coherent conditions, both align and propagate through a multiplier effect across systems.*

Keywords: Transdisciplinary, doing good, Well-being, multiscale transdisciplinary model, Bibliometric analysis.

1 Introduction

In recent decades, humanity has been confronted with an increasing number of complex and interconnected global challenges, including pandemics, climate change, natural disasters, social inequality, poverty, food insecurity, environmental pollution, and social and armed conflicts (Rockström et al., 2009; 2024; Wiktor-Mach, 2020; Mc Gregor, 2023; United Nations, 2015). These problems affect people's daily lives and quality of life. In many cases, they even endanger human survival and that of the ecosystems in which we live, presenting significant technical and scientific challenges. It is therefore becoming increasingly clear that the complexity of today's world cannot be understood or addressed through traditional disciplinary approaches alone. Similarly, they cannot be tackled solely in schools or laboratories. There is a growing need to transcend disciplinary boundaries, engage the relevant stakeholders and work for the common good, putting people at the center of our concerns (Brenner, 2015; Nicolescu, 2002; Pohl, 2010). Various authors have emphasized that these challenges require an integrated approach focused on the common good and collective well-being. This approach should incorporate multiple stakeholders and levels of analysis to foster transformative processes. Some authors view the educational process as a catalyst for transformative change, enabling people to experience profound shifts in their self-perception (McGregor, 2015).

In the face of critical — and even multi-critical — scenarios, transdisciplinarity has emerged as an approach that seeks to integrate knowledge, stakeholders and ways of understanding, transcending disciplinary boundaries. This enables complex problems to be addressed from a systemic and inclusive perspective, bringing together scientific and empirical knowledge (Nicolescu, 2002; Lang et al., 2012). Beyond its methodological dimension, transdisciplinarity embodies a profound human ethos that has emphasized a vision centered on respect for life, human dignity, and the application of knowledge to the well-being of society since its origins in the 1970s (Bernstein, 2015).

In this sense, transdisciplinarity fosters genuine engagement with society by promoting the convergence of diverse forms of knowledge, experiences, and realities. It places the researcher in a position of connection with others, society, and the environment. The researcher thus becomes an agent who fosters dialogue, listening, and mutual learning (Scholz, 2001), while developing processes of self-observation, self-awareness, and personal transformation (Hernández, 2018; Hernández et al., 2020). This approach involves developing skills such as systems thinking, collaborative working, reconciling perspectives and synthesizing knowledge, all of which are necessary for generating solutions to problems that, although manifested in local contexts, have global implications (Pohl, 2010). From this perspective, research is no longer an isolated activity, but rather a practice that unfolds through interaction with the "great laboratory of the lived world," where real-world problems, the people experiencing them, and multiple stakeholders converge (Nicolescu, 2002; Lang et al., 2012). In this context, research challenges researchers intellectually, emotionally, and morally as they engage with realities that affect others and the environment directly. This aligns with approaches that emphasize the ethical and relational dimensions of knowledge (Levinas, 1969; Morin, 1999). Similarly, this interaction can be understood as a process of co-creating knowledge for the common good, where efforts converge in the search for sustainable solutions (Jacobi et al., 2021).

In this context, "doing good" ceases to be merely an abstract ethical notion and becomes a guiding principle of transdisciplinary research, understood as the intention to generate social, environmental, and human benefits through scientific knowledge (Nicolescu, 2002; Max-Neef, 1991). In recent years, researchers have consistently documented that actions aimed at the well-being of others benefit not only those who receive them but also those who perform them (Dunn et al., 2008; Aknin et al., 2013; Lyubomirsky et al., 2005; Post, 2005). This phenomenon fosters closeness, interaction, and support with the target population, strengthening processes of mutual understanding and the joint development of solutions (Lang et al., 2012).

The relationship between prosocial behavior, doing good, and well-being has been examined from various psychological and social science perspectives. Research has shown that subjective well-being depends not only on external conditions, but also on individuals' actions in their interactions with others and with the world around them (Lyubomirsky et al., 2005). It has also been demonstrated that behaviours aimed

at benefiting others can positively impact people's mental and physical health and sense of purpose (Post, 2005).

In their study, published in the journal Science, Dunn et al. (2008) demonstrate that prosocial spending significantly increases the subjective well-being of the giver. Through correlational and experimental studies, the authors found that people who allocated resources to others reported higher levels of happiness than those who used the resources for themselves. This demonstrates that giving is a direct mechanism for generating well-being.

These findings have been confirmed across various cultural contexts. Aknin et al. (2013) analyzed data from multiple countries with varying socioeconomic levels, including regions in North America, Africa, and Asia, and found that the relationship between prosocial behavior and well-being remains consistent across different cultures. These results suggest that "doing good" is a universal aspect of the human experience. 'Doing good' affects not only those who receive acts of kindness, but also those who perform them (Dunn et al., 2008; Aknin et al., 2013; Lyubomirsky et al., 2005; Post, 2005). However, these findings also open the door to a deeper level of analysis, in which acting for the benefit of others and feeling interconnected with them becomes a process of recognizing the generated impact — action-response generated.

The impact of transdisciplinary research, characterized by its participatory approach and pursuit of the common good (Asburg, 2014; Merçon, 2022), can be understood in two dimensions. Firstly, it has a social and environmental impact on other individuals, communities and systems. Secondly, it has an individual impact in terms of well-being, sense of purpose and personal transformation (Aknin et al., 2013; Post, 2005). The interplay of these two dimensions suggests that well-being stems not only from the action itself, but also from the awareness of its impact, in line with approaches that integrate knowledge and awareness in understanding reality (Nicolescu, 2002). Recent studies in transdisciplinary fields highlight that awareness is a key element in health, transformation and well-being processes, integrating the physical, mental and spiritual aspects of human beings (Martins et al., 2025).

Awareness enables intervention to transcend its immediate scope and become a reflective experience in which the researcher recognizes their role within a network of social and environmental interconnections. This recognition is linked to ethical responsibility towards others (Levinas, 1969) and shapes a process whereby the impact on others and the environment is internalized, giving rise to a form of well-being that is relational and contextual, not merely individual (Lyubomirsky et al., 2005). Similarly, this perspective recognizes the interaction between the knowing subject and the reality being studied as an interdependent process in which different levels of perception and reality are articulated in the construction of knowledge (McGregor, 2023; Martins et al., 2025; Nicolescu, 1996).

Despite these advances, coordination between transdisciplinary research, awareness of the concept of 'doing good', and the promotion of well-being remains limited. Several authors have noted that transdisciplinarity is a vision of humanity, human knowledge, and human relationships (Cicovacki, 2003). It is particularly important to understand how research can contribute to social well-being and how this process affects researchers, as well as the potential ripple effect resulting from their involvement in the systems under study.

In this context, the present study aims to conduct a bibliometric analysis of transdisciplinarity and well-being. The study will also correlate happiness indicators from over 140 countries from 2022 to 2025. The global happiness indicators include GDP per capita, social support, healthy life expectancy, freedom to make life choices, generosity and Happiness score (Life Ladder). The study will also distinguish the relationships between these variables in countries with the highest and lowest levels of happiness. Finally, based on this study, a transdisciplinary multiscale model is developed that demonstrates that transdisciplinarity is a path to "doing good" and "being well."

1.1 History of the Research

From a transdisciplinary research perspective, the concept of "doing good" can be understood as the result of philosophical, ethical, and scientific considerations. Over time, various authors have reflected on the relationship between the individual, their actions, society, and the environment through these considera-

tions. Rather than an isolated act, "doing good" is a progressive process of expanding consciousness in which individuals recognize their connection to others and take on greater responsibility for them. As Levinas said, "When I see you, I feel intrinsically responsible for you", capturing the depth of thought and the problem of humans feeling responsible for one another's actions. Classical philosopher Aristotle (384–322 BC) posited that all human action is directed toward an ultimate end associated with the good and human flourishing (eudaimonia). This establishes a profound relationship between virtue, action, and well-being. Centuries later, Comte (1851) introduced the concept of altruism as a fundamental principle of social life. He proposed that humans find meaning in living for others. Thus, he opened the possibility of understanding well-being not only as an individual experience but also as a shared construct.

In the Stoic tradition, the expansion of care towards others is represented by the concept of concentric circles. According to Hierocles (Long and Sedley, 1987), the individual's sense of belonging progressively extends from themselves to their family, community, and humanity. This helps us to understand that well-being is achieved when the individual recognises themselves as part of a broad network of interdependencies.

In the realm of science, concern for the common good has also been a constant presence. Einstein (1879-1955) noted that scientific knowledge must be directed toward the well-being of humanity and not limited to merely technical or instrumental ends, reminding us of that science, ultimately, is at the service of life. Along these same lines, Merton (1973) established that scientific practice must be governed by ethical principles oriented toward social benefit, highlighting disinterestedness as one of the pillars of the scientific ethos. Subsequently, Jonas (1984) expanded on this dimension by proposing the principle of responsibility, noting that scientific and technological development entails an ethical obligation to consider its effects on present and future generations—an obligation that partly reflects the aspirations of sustainability.

Contemporary approaches have revisited the integration of knowledge and responsibility from perspectives that acknowledge the complexity of today's world. Morin (1999) emphasizes the need for a science with a conscience that can recognize the interconnectedness of phenomena and the implications of human decisions. Nicolescu (2002) suggests that the connection between science and conscience is crucial for humanizing knowledge and promoting spiritual, religious, and cultural growth. This union of opposites integrates cognitive, emotional, and ethical dimensions into research processes. Max-Neef (1991) suggests a development approach that focuses on fundamental human needs. In this approach, knowledge is oriented toward holistic well-being rather than solely toward economic efficiency.

In addition, empirical research has provided a clearer understanding of the relationship between 'doing good' and well-being. Studies in positive psychology have shown that subjective well-being depends on both external conditions and the actions individuals take in their interactions with others (Lyubomirsky et al., 2005). Dunn et al. (2008), for example, demonstrated that allocating resources to others can significantly increase happiness, showing that the act of giving can directly contribute to well-being.

Aknin et al. (2013) corroborated these findings across different cultural contexts, demonstrating that the relationship between altruism and well-being remains consistent across countries with diverse socioeconomic conditions. Similarly, Post (2005) demonstrated that altruistic actions are associated with physical and mental health benefits, including reduced stress and a strengthened sense of purpose. From a neuroscientific perspective, Moll et al. (2006) found that prosocial behaviors activate brain regions associated with reward systems. This suggests that "doing good" is part of mechanisms deeply rooted in the human experience. In behavioral economics, Andreoni (1990) introduced the concept of the "warm glow", noting that people experience satisfaction when contributing to the well-being of others.

Taken together, these insights help us to understand that 'doing good' is not just an ethical or philosophical principle, but also an empirical and biological phenomenon that links action oriented towards others directly with individual well-being. The convergence of philosophical tradition and scientific evidence suggests that human well-being cannot be understood in isolation, but rather as part of a network of relationships, whereby the individual transforms themselves and encourages the transformation of others by acting upon the world.

In this context, transdisciplinarity is both a methodological approach to integrating knowledge and a way of directing research towards collective well-being and the transformation of the researcher themselves. Researchers propose solutions and influence others, acting with a strong sense of responsibility and com-

mitment. According to Otto Scharmer (2008), "the quality of attention and intention that a leader brings to each situation is what determines successful leadership. Two leaders in the same circumstances doing the same thing can generate completely different results, depending on their mindset. Researcher-leaders must be aware of their pivotal role in the transformation of systems and the individuals within them." While transdisciplinarity takes the researcher's inner space into account, they must also be aware of their own inner evolution to impact the outside world positively and foster well-being.

2 Methodology

This study adopts a transdisciplinary approach with the aim of integrating various dimensions of well-being into a broader, more interconnected understanding. Through bibliometric analysis and the analysis and comparison of well-being variables, it proposes a transdisciplinary multiscale model that demonstrates how transdisciplinary research has been applied to promote well-being and improve quality of life.

2.1 A Transdisciplinary Approach and the Development of a Multiscale Model: Transdisciplinary Research as a Path to Doing Good and Being Well

Figure 1 presents the methodological process for constructing the transdisciplinary multiscale conceptual model of transdisciplinary research as a path to doing good and being well. The process integrates bibliometric analysis (VOSviewer), empirical correlational and multivariate analysis, and theoretical integration based on transdisciplinary and systemic approaches (Nicolescu, 2004; Morin, 1988; Bronfenbrenner, 1979; Wilber, 2000; Scharmer, 2009, among others) for the construction of the model.

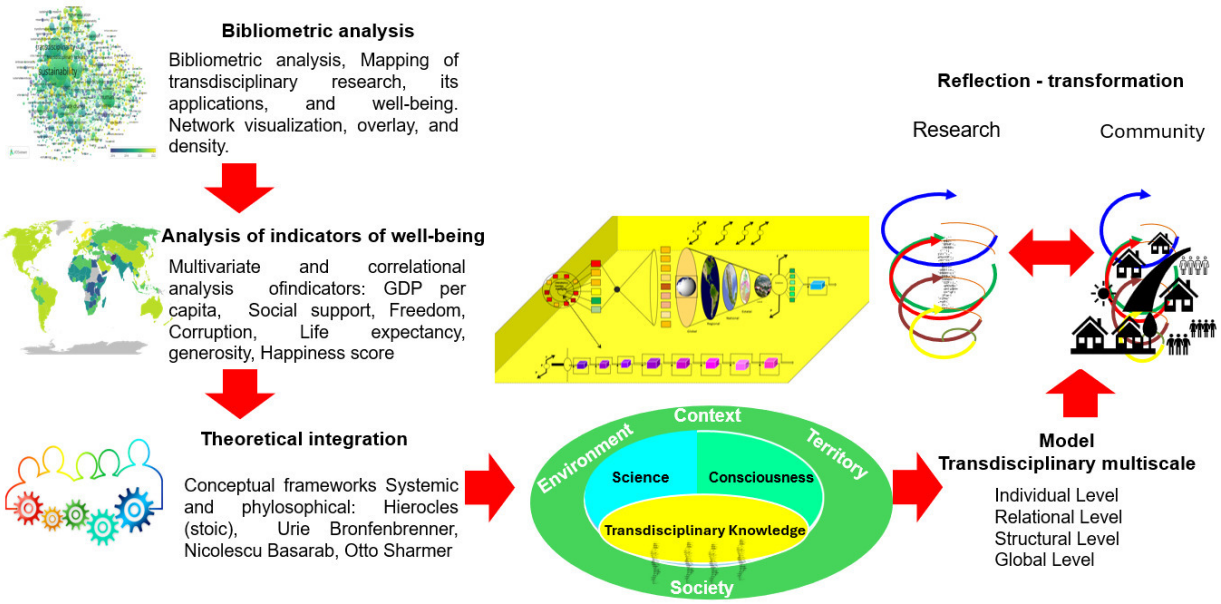


Figure 1: A transdisciplinary methodological process for developing a multiscale model of well-being.

2.2 Bibliometric analysis

A bibliometric analysis and network visualization were performed using VOSviewer software, version 1.6.20 (Van Eck & Waltman, 2010). The Scopus database was used for this purpose. The Scopus search strategy was structured using the following expression: (transdisciplin* AND ("well-being" OR "wellbeing"

OR "doing good" OR "prosocial" OR "altruism")). The records were exported in CSV format and analyzed using VOSviewer (version 1.6.20). Three types of analyses were conducted: keyword co-occurrence, density visualization, and overlay visualization. Co-occurrence analysis identified thematic relationships by distinguishing various clusters. Density visualization determined the concentration and relevance of themes. Overlay visualization analyzed the temporal evolution of themes. In addition, co-occurrence maps of scientific sources on transdisciplinarity, sustainability and well-being were created, along with a density map based on the geographical distribution of scientific output.

2.3 Correlation of global indicators related to human well-being

This study was conducted using a quantitative, descriptive and correlational approach. It analyses how well-being variables relate to happiness in different contexts between 2022 and 2025.

2.3.1 Data sources and indicators analyzed

This study utilized indicators from the World Happiness Report (Helliwell et al., 2022; 2023; 2024; 2025), which are based on the international Gallup World Poll (data that allow for the assessment of the population's subjective well-being in various countries). Data for the years 2022, 2023, 2024, and 2025 from more than 146, 137, 143, and 143 countries were analyzed, respectively.

The variables were classified into three dimensions of well-being — economic, social, and human — based on their conceptual nature and role within the system. The economic dimension includes variables such as GDP per capita. The social dimension includes variables associated with relationships, trust, and the institutional environment, such as social support, the freedom to make decisions, and the perception of corruption. The human dimension incorporates variables linked to subjective experiences of well-being, health, and prosocial behavior, such as life evaluation, healthy life expectancy, and generosity. Table 1 illustrates the classification of these variables and their relationship to the Sustainable Development Goals (SDGs), especially SDGs 3 (Good Health and Well-Being), 8 (Decent Work and Economic Growth), 10 (Reduced Inequalities), 16 (Peace, Justice, and Strong Institutions), and 17 (Partnerships for the Goals).

2.3.2 Data analysis

A principal component analysis was conducted on happiness indicators for the years 2022, 2023, 2024 and 2025. To deepen our understanding of well-being in different contexts, a comparative analysis was conducted for the year 2025, considering two groups of countries: the 50 countries with the highest levels of happiness (top group) and the 50 countries with the lowest levels (bottom group). Furthermore, Pearson's correlation coefficient (Freud et al., 1998) was used to determine the relationship between happiness indicators (e.g. happiness vs. GDP per capita, happiness vs. social support). Correlations were calculated across 143 countries using Origin software (version 2017). The correlation coefficient indicates the strength of the relationship between two indicators and specifies the confidence interval within which the coefficient is significant. Values closer to -1 or +1 imply a strong negative or positive correlation, respectively, meaning an increase in one indicator would lead to an increase in another, and vice versa (Djordjević et al., 2021).

2.4 Knowledge integration

We integrated various theoretical frameworks from systems thinking, transdisciplinarity, and the well-being sciences to strengthen the epistemological coherence of the proposed transdisciplinary, multiscale model. This enables us to perceive reality as an intricate, interdependent, and evolving system. Bertalanffy's General Systems Theory (1968) is based on the idea that phenomena cannot be analyzed in isolation, but rather as part of an interconnected whole. Meadows' (2008) systems dynamics approach complement this perspective by illustrating how complex systems (e.g., ecological, economic, and social systems) influence

Table 1: *Well-being indicators used in research and their description*

Dimension	Indicators	Description
Economic	GDP per capita **SDG 8**	Indicator of average per capita economic level. → Represents the average income and economic capacity → Basis for meeting basic needs
Social	Social support **SDG 3 y 16**	Perception of having social support in times of need → Support networks and social cohesion
	Freedom to make life choices **SDG 16**	Perceived degree of freedom to make decisions about one's own life → Ability to make decisions within the social system
	Perceptions of corruption **SDG 16**	Perceptions of corruption in public and private institutions → Institutional quality and social trust
Human	Healthy life expectancy **SDG 3, 10, 17**	Healthy life expectancy → Physical well-being and quality of life
	Generosity **SDG 3, 10, 17**	Level of prosocial behavior associated with donations and altruistic actions → Prosocial behavior and the ethical/emotional dimension
	Happiness score (Life Ladder) **SDG 3, 10, 17**	Subjective assessment of quality of life on a scale of 0 to 10, where higher scores indicate greater perceived well-being

Note: Variables derived from the World Happiness Report (Helliwell et al., 2023), based on data from the Gallup World Poll. `https://worldhappiness.report/`

one another. This approach shows that minor alterations within these systems can have significant consequences. Similarly, Capra (1996) reinforces the idea that living systems are organized into networks of relationships, which is fundamental to understanding the relational dynamics of the model.

Additionally, Bronfenbrenner's (1979) ecological model of human development offers a multiscale framework that organizes the model across interconnected levels ranging from the individual to the global environment. This perspective is enriched by Hierocles's philosophical tradition of concentric circles, which posits an expansion of the sense of belonging and responsibility from the individual to humanity. Within transdisciplinarity, Nicolescu (1996) establishes the basis for integrating knowledge across disciplines. He defends the etymological meaning of "beyond," emphasizing the importance of articulating knowledge, consciousness, and inner experience. He also emphasizes that human beings and society are situated within this framework. Max-Neef (1991) emphasizes the interdependence between human needs and social structures. Folke (2006) takes a socio-ecological systems approach, which encompasses the interdependence between human dynamics and natural systems. Both emphasize that well-being cannot be analyzed in isolation from the ecological environment.

From an ethical perspective, Levinas (1969) introduces the notion of responsibility toward others as a fundamental principle of human action. This notion reinforces the relational dimension of the model and its focus on "doing good." Empirical evidence from studies on prosocial behavior and well-being, particularly the work of Dunn et al. (2008), Aknin et al. (2013), and Post (2005), supports the hypothesis that actions aimed at benefiting others can have positive effects on the person performing them. These findings link the social dimension of the model to the individual experience of well-being and provide an empirical basis for the idea that "doing good does good."

3 Results and Discussions

3.1 Bibliometric analysis

Figure 2 presents the keyword co-occurrence network derived from bibliometric analysis, which allows us to identify the conceptual structure of the field of study surrounding transdisciplinarity, sustainability, and human well-being. In this visualization, each node represents a keyword; the size of the node is proportional to its frequency of occurrence; the lines indicate co-occurrence relationships between terms; spatial proximity reflects thematic affinity; and the colors group the terms into clusters representing conceptual communities.

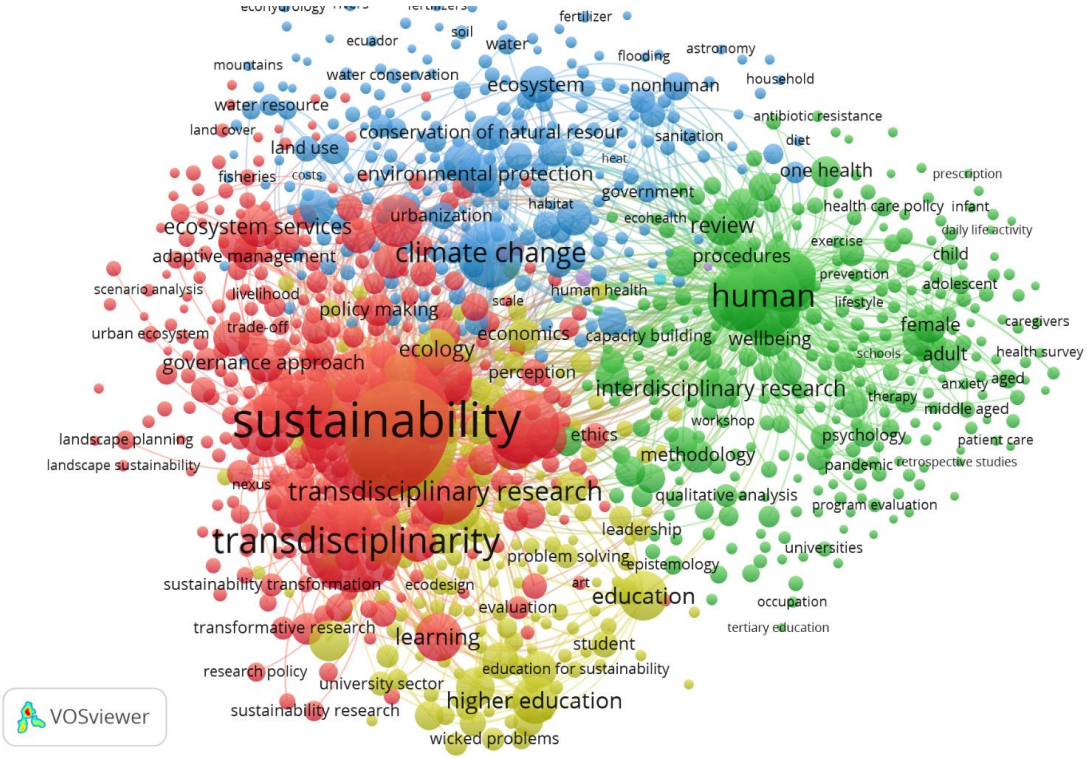


Figure 2: Keyword co-occurrence network in transdisciplinary research.

Figure 2 shows the co-occurrence network reveals four main thematic domains: **(1) Red cluster: Sustainability and transdisciplinarity**. This cluster is organized around the terms "*sustainability*" and "*transdisciplinarity*," accompanied by concepts such as "*transdisciplinary research*," "*governance approach*", "*policy making*," "*adaptive management*", "*ecosystem services*", "*urbanization*", "*landscape planning*", "*trade-off*", and "*livelihood*". Together, these terms reflect a systemic view of sustainability, integrating environmental, social, and economic dimensions. The presence of terms associated with governance and management (governance approach, policy making, adaptive management), as well as concepts such as policy analysis and stakeholders, indicates that research in this domain is oriented toward the implementation of solutions in real-world contexts. In this sense, knowledge is not limited to theoretical generation but translates into concrete actions through informed decision-making processes, public policy design, and the participation of social actors.

Likewise, the inclusion of concepts such as "*trade-off*" and "*livelihood*" suggests an acknowledgment of tensions between social, economic, and environmental objectives, highlighting the inherent complexity of the issues addressed. Complementarily, the proximity of terms such as "*ethics*," "*leadership*," "*problem solving*," and "*evaluation*" introduces normative and operational dimensions into the core, reinforcing the applied and ethically oriented nature of transdisciplinary research.

(2) Blue cluster: socio-ecological systems, climate change, and the biophysical basis. This cluster groups terms related to the ecological and biophysical dimensions of the system, including "*climate change*", "*ecosystem*", "*environmental protection*", "*conservation of natural resources*", "*resource*", "*land use*", "*biodiversity*", "*soil*," "*fisheries*", and "*flooding*". This domain represents the material foundation of sustainability, highlighting a strong emphasis on the understanding and management of natural systems.

The "climate change" node emerges as one of the most relevant within this cluster, confirming its central role in the contemporary scientific agenda. Its close relationship with other ecological terms suggests that climate change is addressed from a systemic perspective, integrating multiple components of the environment.

Likewise, the presence of terms such as "*resource*," "*soil*," and "*land use*" indicates the inclusion of aspects related to productive and territorial systems, linking this cluster to resource management and the ecological basis of human activities such as agriculture. The appearance of terms such as "nonhuman" and their proximity to health concepts reinforce a broader vision of sustainability, in which both human and nonhuman systems are considered.

In this context, the literature shows that a substantial portion of research focuses on the protection, conservation, and sustainable management of natural resources. Thus, "doing good" in this field is expressed as the search for solutions to mitigate climate change, preserve biodiversity, and ensure the functioning of ecosystems, recognizing their fundamental role in human well-being.

(3) Green cluster: human well-being, health, and quality of life. This cluster focuses on the term "*human*," accompanied by "*well-being*", "*quality of life*", "*psychology*", "*therapy*", "*anxiety*", "*lifestyle*", and "*prevention*", as well as demographic variables such as "*female*", "*adult*", "*child*", and "*middle-aged*". The centrality of the "*human*" node and its strong connection to "*well-being*" indicate that a significant portion of the literature is oriented toward the study of health, quality of life, and the social conditions of different population groups. The presence of terms associated with mental health (psychology, anxiety, therapy) suggests a particular focus on the subjective dimensions of well-being.

Furthermore, the inclusion of terms such as health care policy, prevention, and patient care reflects this cluster's connection to public health and health care systems, highlighting an applied orientation. This domain thus reflects the consolidation of research on human well-being within the field.

However, the network analysis suggests that, although well-being is a widely addressed topic, its connection to transdisciplinarity is not necessarily direct, indicating a certain degree of fragmentation in the literature. Despite this, the presence of intermediate terms such as interdisciplinary research, methodology, review, and qualitative analysis suggests a trend toward the progressive integration of human well-being into broader approaches to sustainability.

(4) Yellow cluster: education, learning, and training for sustainability. This cluster includes terms such as "*learning*", "*education*", "*higher education*", "*students*", "*education for sustainability*" "*curriculum*", "*evaluation*", "*epistemology*", and "*wicked problems*" representing the educational and training dimension of the field. The presence of "*education for sustainability*" and "*higher education*" indicates the central role of educational institutions in building capacities to address complex problems. The association with "*wicked problems*" suggests that education is conceived as a process oriented toward understanding and intervening in complex, multifactorial issues. Likewise, terms such as "*epistemology*" and "*evaluation*" reflect a reflective dimension regarding the production and validation of knowledge, consistent with transdisciplinary approaches that challenge traditional disciplinary boundaries. In this sense, education not only transmits knowledge but also contributes to the development of individuals capable of addressing complex challenges from integrative perspectives.

Within the clusters, nodes are identified that function as connecting elements, such as *"ecology", "economics", "perception", "capacity building", "ethics", "leadership", and "methodology."* These terms oc-

cupy intermediate positions within the network and highlight the existence of spaces for conceptual integration between different domains. The presence of *"interdisciplinary research"* in a transitional position between the human well-being cluster and the central core suggests a process of convergence between disciplinary and transdisciplinary approaches, particularly in relation to the integration of well-being within broader frameworks of sustainability.

The conceptual structure revealed by the keyword co-occurrence network is one in which multiple dimensions of knowledge converge: environmental, social, institutional and educational. The centrality of *sustainability* and *transdisciplinarity*, and their connection to *governance, health, education and ecological systems*, suggests that scientific literature focuses on understanding and addressing complex issues.

This configuration suggests that transdisciplinary research is an integrative approach within the scientific system that can bring together diverse areas of knowledge to address challenges related to sustainability and well-being.

Figure 3a presents a co-occurrence density map of keywords in transdisciplinary research, where the intensity of the color (from yellow to red) indicates the concentration and frequency of the terms within the scientific field under analysis.

It can be observed that the core of highest density is dominated by terms of *"sustainability"* and *"transdisciplinarity,"* which constitute the main axes of knowledge articulation. The high concentration in this region suggests that transdisciplinary research is primarily focused on issues related to sustainability, establishing itself as a key approach for addressing complex global challenges. In this sense, transdisciplinarity emerges as a foundation for the co-construction of solutions oriented towards the common good. Near to this core, terms such as *"climate change", "ecology", "environmental protection," and "ecosystem services"* emerge, indicating a strong focus on the environmental dimension and socio-ecological systems. This configuration reflects that a significant portion of scientific output focuses on the interaction between human activities and natural systems, particularly in the context of climate change and resource management. In addition, a second high-density cluster associated with the human dimension is identified, represented by terms such as *"human", "well-being," "psychology", "health," and "quality of life"*. Although this group exhibits slightly lower intensity compared to the environmental cluster, its structural proximity indicates a significant relationship between sustainability and human well-being, suggesting that the effects of transdisciplinary research extend beyond the environmental sphere to impact the quality of life and health of populations.

Likewise, terms related to *"education", "learning", "higher education", and "knowledge co-production"* appear with moderate frequency, serving as connecting elements within the system. These concepts reflect the role of education and the collective generation of knowledge as fundamental mechanisms for implementing transdisciplinary approaches and solving complex problems.

Finally, the presence of terms such as *"interdisciplinary research", "methodology", "leadership", and "systems analysis"* suggests a solid methodological foundation underpinning this field, highlighting the importance of integrative, collaborative, and action-oriented approaches characteristic of the transdisciplinary perspective. In this way, the thematic density distribution shows that transdisciplinary research is structured around a core strongly linked to sustainability, with clear extensions toward human well-being, education, and socio-ecological systems. This configuration suggests that transdisciplinarity not only contributes to the understanding of complex problems but also to the generation of knowledge with potential social, environmental, and economic impact, in line with the construction of the common good.

Figure 3b presents the temporal dynamics of the keyword co-occurrence network in transdisciplinary research, where the color gradient allows us to identify the evolution of the main lines of research that structure the scientific literature. Analysis of terms with shades from earlier years (blue) allows us to identify the initial lines of development in transdisciplinary research according to this bibliometric analysis and search terms in Scopus, which can be grouped into three main axes. First, an environmental-ecological dimension, represented by terms such as *"ecosystem", "biodiversity", "water", "water quality", "land use", "environmental protection," and "ecosystem services,"* indicating that transdisciplinarity emerges strongly linked to complex environmental issues, natural resource management, and socio-ecological systems.

Second, a theme related to **climate change and sustainability**, featuring terms such as *"climate*

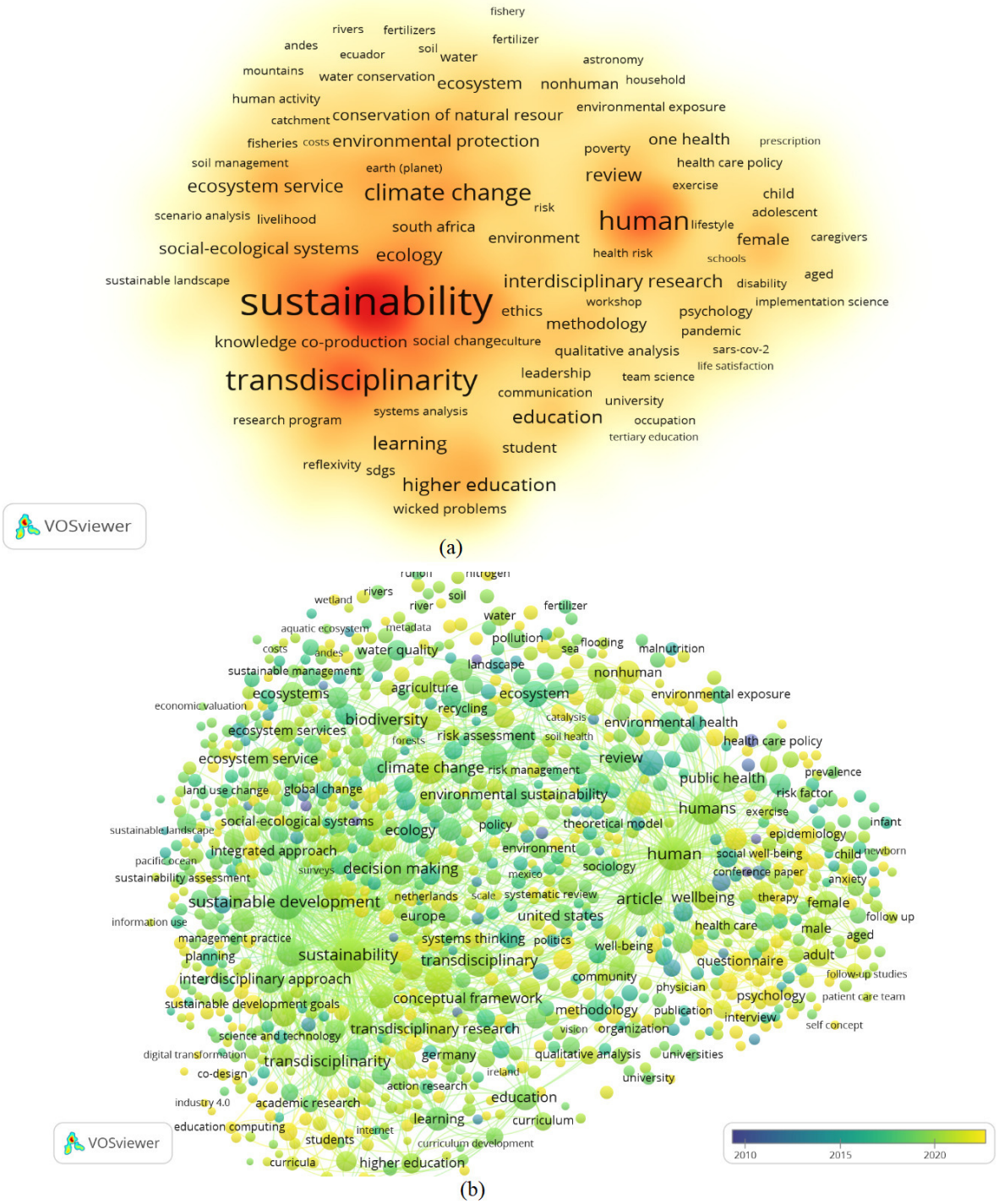


Figure 3: Visualization of keyword co-occurrences: a) term density (heat map) and b) temporal visualization (overlay).

change," "environmental sustainability," and "ecology," suggesting that these fields were among the first areas where the integration of multiple disciplines became necessary. Third, early systemic and methodological approaches are identified, evidenced by terms such as *"systems thinking", "integrated approach", and "decision making"* indicating that transdisciplinarity also emerges as a methodological response aimed at understanding and solving complex problems (*"wicked problems"*). In an intermediate position, structural concepts such as *"sustainability", "transdisciplinarity", "climate change," and "ecology"* exhibit nuances that reflect their consolidation within the scientific literature, acting as central themes that tie the topics together. For their part, the most recent terms, shown in shades of yellow, center on concepts such as *"human," "well-being," "public health," "psychology," "education," and "knowledge co-production."* This distribution reflects a gradual shift from predominantly environmental approaches toward greater integration of social, human, and educational dimensions. Likewise, it is observed that terms such as *"decision making," "policy," "governance," and "systems thinking"* have appeared more frequently in recent periods, indicating a growing orientation toward the application of knowledge in real-world contexts, particularly in public policy formulation and decision-making.

The spatial proximity between emerging terms linked to human well-being and those associated with sustainability suggests a recent thematic convergence, in which transdisciplinary research more explicitly integrates environmental and social dimensions. This pattern reflects a transition from approaches centered on understanding systems toward approaches oriented towards generating real-world impact.

Overall, the chronological overview shows that transdisciplinary research has evolved toward a more integrative approach, in which sustainability is increasingly linked to human well-being, education, and decision-making, reflecting a growing focus on the production of applied knowledge with social, environmental, and economic implications.

Figure 4 shows a density map of the geographical distribution of scientific output in transdisciplinary research. The intensity of the colour (from yellow to red) indicates the relative concentration of publications by country. The main clusters of higher density are concentrated in countries such as the United States and the United Kingdom, which stand out as primary centres of scientific output in transdisciplinarity according to the Scopus search results. This high concentration suggests an established leadership in knowledge generation, as well as a strong institutional and academic capacity to address complex problems through integrative approaches.

Secondly, European countries such as Spain, Belgium, Portugal and Switzerland are identified as exhibiting significant density, demonstrating their participation in the development of the field. This distribution indicates the robust consolidation of the transdisciplinary approach within the European context, particularly in areas related to sustainability, public policy, and socio-ecological systems.

In addition, emerging countries such as Brazil, China, and India are represented, as are various nations in Latin America (e.g., Mexico, Colombia, Argentina, Peru), Africa (South Africa, Kenya, Nigeria, Ethiopia), and Asia (Indonesia, Malaysia, the Philippines), albeit to a lesser extent. The participation of these countries, while still nascent in terms of volume, is particularly relevant, as many of the complex issues that characterize socio-ecological systems—such as inequality, environmental vulnerability, food security, and the effects of climate change—are concentrated in these contexts.

In this sense, the growing presence of emerging countries in the network suggests an expansion of the transdisciplinary approach toward contexts where the integration of knowledge is not only relevant but necessary. These territories represent key spaces for the application of approaches oriented toward the co-production of knowledge, social participation, and the implementation of context-specific solutions.

Furthermore, this distribution highlights an asymmetrical scientific output, with countries possessing stronger academic infrastructure accounting for most publications, while emerging countries participate to a lesser extent. Nevertheless, their inclusion in the network points to a trend toward the internationalization of the field and a gradual shift toward a more inclusive and context-sensitive science. It can be said that the density map reflects that transdisciplinary research is emerging as a field with global reach, concentrated in developed countries but with a growing incorporation of emerging countries, which reinforces its potential as an approach to addressing complex problems with social, environmental, and economic implications, particularly in contexts where these problems are most critical.

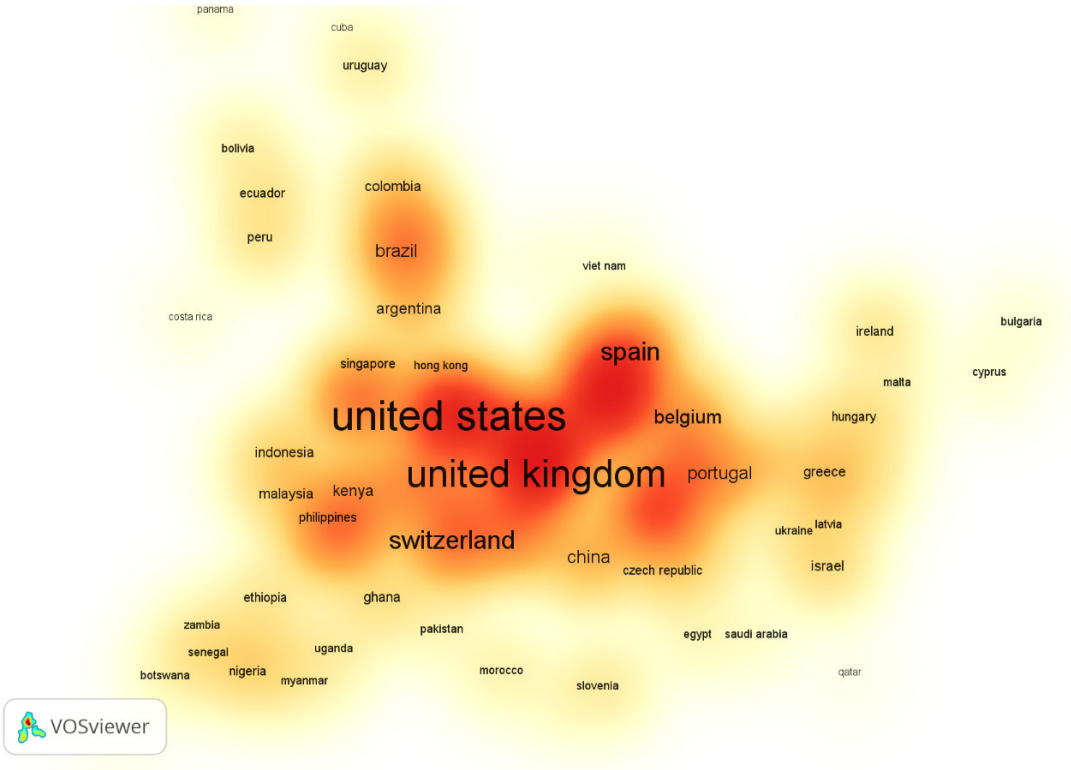
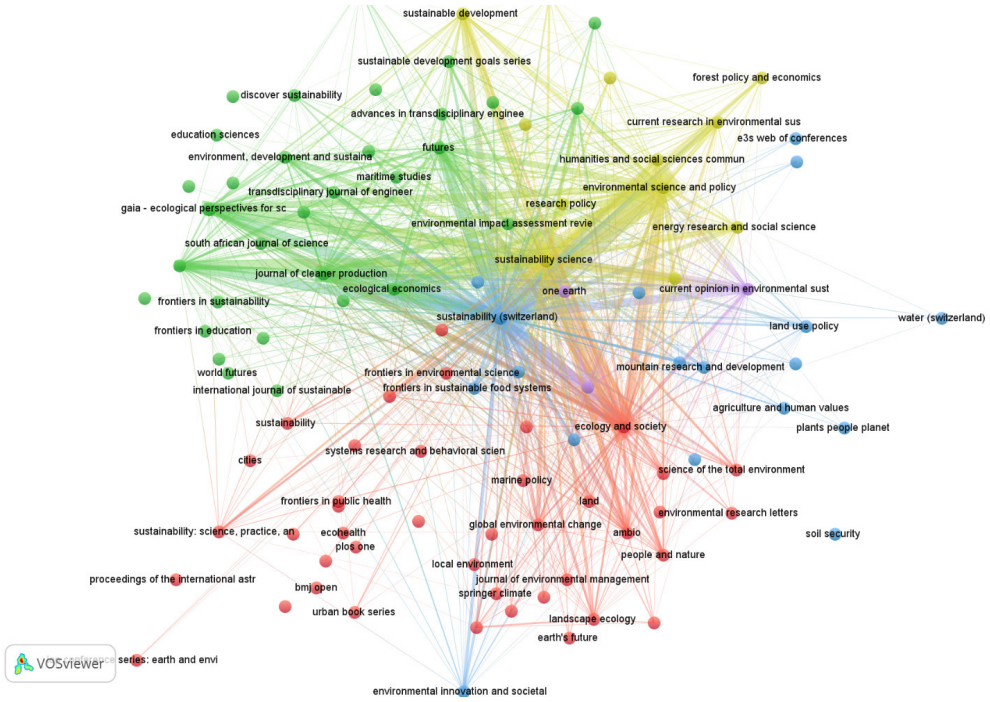


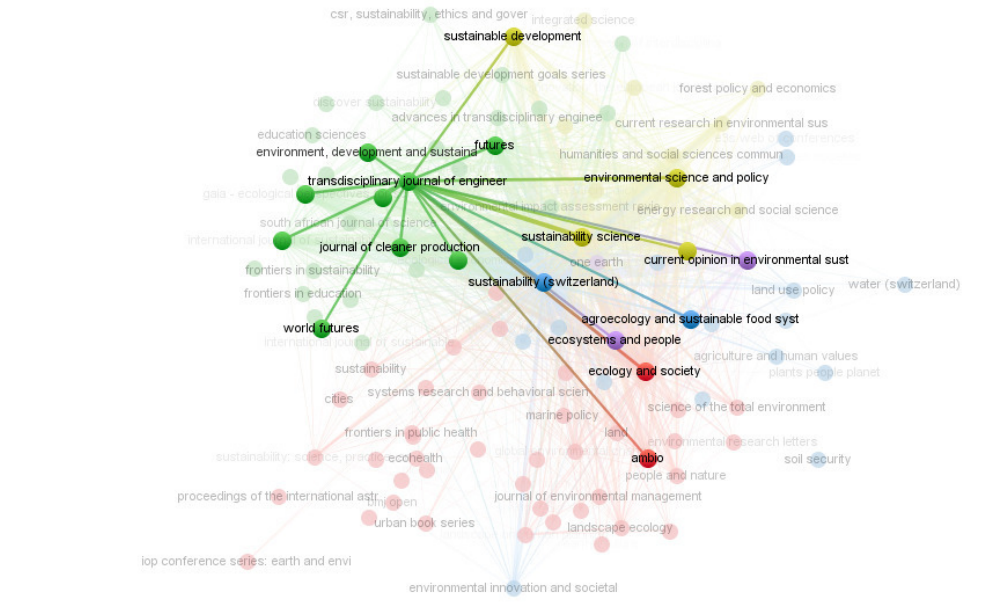
Figure 4: Density map of the geographical distribution of scientific output in transdisciplinary research.

Figure 5 shows the co-occurrence network of scientific sources grouped into five clusters. (1) The green cluster consists of journals that address integrative approaches to sustainability, such as the *Journal of Cleaner Production, Ecological Economics, Environment, Development and Sustainability, and World Futures*. Within this group, the ***Transdisciplinary Journal of Engineering & Science*** is identified, which exhibits high connectivity with other clusters (Figure 5b). This position suggests that transdisciplinarity fits naturally into this space as an approach oriented toward the integration of knowledge and the resolution of complex problems; (2) The yellow cluster corresponds to journals related to sustainability science, public policy, and governance, including *Sustainability Science, Environmental Science and Policy, and Sustainable Development*. This group is oriented toward decision-making, policy design, and the implementation of sustainable strategies, highlighting the role of research in generating impact at the institutional and social levels; (3) The blue cluster relates to the environmental and productive dimensions of sustainability, including journals such as *Land Use Policy, Water (Switzerland), and Agriculture and Human Values*. These publications emphasize natural resource management, land use, food systems, and the interaction between human activities and ecosystems, highlighting the material and territorial dimensions of sustainable development; (4) The red cluster focuses on the interaction between society, health, and the environment, encompassing journals such as *Ecology and Society, Ambio, Global Environmental Change, and Science of the Total Environment*. This group reflects socio-ecological approaches that address complex issues such as climate change, environmental health, and associated social dynamics, demonstrating a clear connection to human well-being and quality of life.

Finally, (5) the smaller purple cluster comprises specialized journals such as *Current Opinion in Environmental Sustainability and One Earth*, which are characterized by their focus on reviews, critical analyses, and trend projections. Their intermediate position within the network suggests a role in conceptual articulation across different domains, facilitating the integration of knowledge and guiding research toward



(a)



(b)

Figure 5: Co-occurrence network of scientific sources on transdisciplinarity, sustainability, and well-being: (a) complete network; (b) zoom on the Transdisciplinary Journal of Engineering & Science node and its inter-cluster links. The size of the nodes represents the frequency of occurrence of the sources, while the lines indicate the strength of the relationship between them; the colors correspond to thematic clusters.

new interdisciplinary and transdisciplinary approaches.

These findings suggest that transdisciplinary research is embedded in a sustainability-oriented scientific system, generating social, environmental, and economic impacts, which reinforces its potential as an approach to contributing to the common good.

3.2 Analysis of indicators related to well-being

Figures 6a-6d show the results of a principal component analysis (PCA) of well-being indicators for the years 2022, 2023, 2024 and 2025.

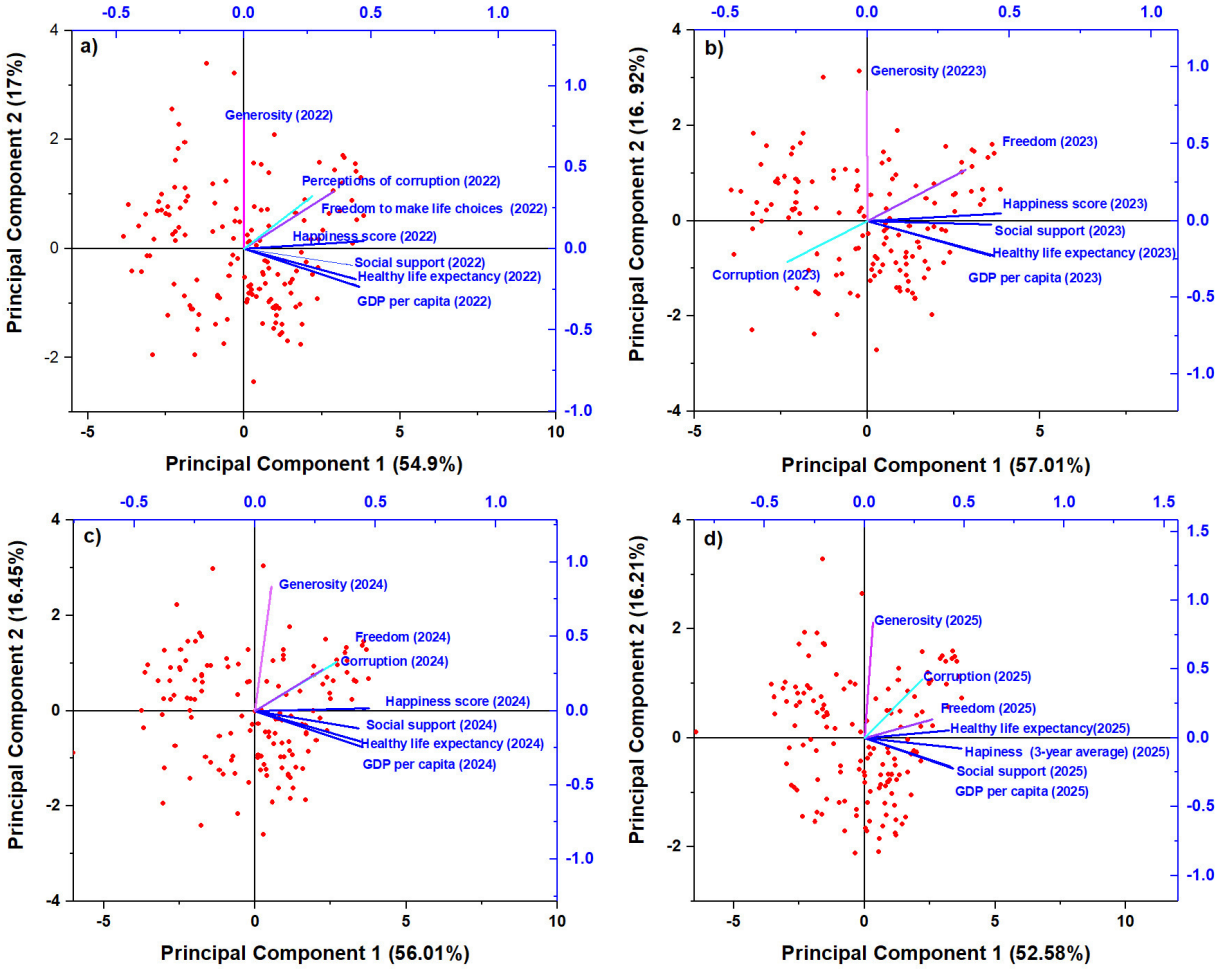


Figure 6: Multidimensional structure of global well-being: principal component analysis (2022–2025); (a) 2022, (b) 2023, (c) 2024, and (d) 2025. The red dots represent countries, and the vectors represent the well-being variables (happiness score, GDP per capita, social support, healthy life expectancy, freedom, generosity, and perceived corruption).

Together, these analyses enable us to observe the structure of well-being at a global level and its stability over time. The first principal component (PC1) consistently explains more than half of the total variance across the four analyzed years, while the second component (PC2) accounts for an additional 16–17%. Together, they account for approximately 70% of the system's variability. This consistency suggests that well-being has a relatively stable structure in which two principal dimensions are sufficient to describe

most relationships between variables.

The vectors in the figures show a clear pattern: the happiness score (life evaluation) clusters with variables such as GDP per capita, social support, and healthy life expectancy, all of which point in the same direction within the first component. This pattern indicates a strong positive association among these variables, suggesting that well-being is closely linked to economic, social, and health conditions. Among these variables, social support stands out due to its proximity to the happiness score, indicating an especially strong relationship. This result suggests that the perception of having support networks is one of the most important factors in explaining well-being.

In contrast, variables such as generosity project differently, primarily onto the second component (PC2), indicating that they form part of a distinct dimension of the system. This separation suggests that generosity is not directly aligned with the structural conditions of well-being but rather represents a dimension more associated with human and relational behaviors.

Similarly, the freedom to make decisions occupies a middle ground between the two components, indicating that it draws on both structural and human factors. Conversely, the perception of corruption tends to be negatively related to well-being. Taken together, these results demonstrate that well-being is composed of two dimensions: a structural dimension (economic, social and health) and a human or relational dimension, incorporating variables such as generosity.

Figure 7 shows the principal component analysis (PCA) of the variables associated with well-being. Figure 7a presents the analysis for the 50 countries with the highest levels of happiness in 2025. In these countries, the structural variables are clustered more tightly, suggesting that economic, social, and health conditions are relatively homogeneous. In other words, these countries share a solid structural foundation. A particularly interesting finding is that generosity is more closely correlated with the happiness score, indicating a stronger relationship between the two variables in these contexts. This suggests that, once structural conditions are met, prosocial behaviors play a greater role in explaining well-being. Likewise, variables such as freedom and corruption help differentiate countries within this group, indicating that, in contexts of high well-being, factors related to institutional quality and decision-making capacity become more relevant.

Figure 7b shows the analysis for the 50 countries with the lowest levels of happiness in 2025. Unlike the previous group, in this case there is greater dispersion among the variables. The first component explains a smaller proportion of the variance, indicating that the system is less structured. The variables do not cluster clearly, suggesting that well-being in these contexts is more unstable and less predictable. In this group, although generosity is present, no clear relationship with well-being is observed. This indicates that prosocial behaviors do not directly translate into higher levels of happiness in contexts where structural conditions are limited. Meanwhile, the perception of corruption takes on greater relevance, highlighting the negative impact of institutional conditions on well-being.

A clear difference in the structure of well-being becomes apparent when comparing the two groups of countries with the highest (top) and lowest (bottom) levels of happiness. In countries with high levels of happiness, the system appears more integrated and coherent; in countries with low levels, it is more fragmented. Similarly, the relationship between generosity and well-being varies depending on the context. In countries with high well-being, generosity is more clearly associated with happiness; in countries with low well-being, however, this relationship is less evident.

Overall, the results show that well-being has a stable global structure, but its configuration varies depending on the country. In environments with favorable structural conditions, well-being is consolidated and complemented by human dimensions; however, in contexts with structural limitations, the system becomes fragmented, and these dimensions fail to translate into higher levels of well-being.

Table 2 presents the correlation coefficients (r), their statistical significance (p-value), the strength of the relationships, and their link to the Sustainable Development Goals (SDGs) for the period 2022-2025. A consistent pattern of behavior can be observed over the years.

The correlation analysis revealed statistically significant associations between well-being (life evaluation) and the structural variables examined. Overall, social support showed the strongest and most consistent relationship ($r \approx 0.78$-0.83; $p < 0.001$), followed by GDP per capita ($r \approx 0.74$-0.78; $p < 0.001$)

Table 2: *Relationship Between Well-being, Structural Variables, and Their Contribution to the Achievement of the Sustainable Development Goals (SDGs)*

Year	r	p	Intensity	Relationship to the SDG
Social support				
Related SDGs: SDG 3 (Good Health and Well-being), SDG 16 (Peace, Justice, and Strong Institutions)				
2022	0.778	<0.001	Strong	Reflects social cohesion, support networks, and social capital
2023	0.835	<0.001	Very Strong	Indicates societies with high levels of interpersonal trust
2024	0.814	<0.001	Very Strong	Strengthening of social connections as a basis for well-being
2025	0.805	<0.001	Very Strong	Structural stability of social support
GDP per capita				
SDG 8 (Decent Work and Economic Growth)				
2022	0.764	<0.001	Strong	Economic development as the base for well-being
2023	0.784	<0.001	Strong	More access to resources
2024	0.769	<0.001	Strong	Sustained economic stability
2025	0.744	<0.001	Strong	Material conditions as enablers of well-being
Healthy life expectancy				
SDG 3: Good Health and Well-being				
2022	0.740	<0.001	Strong	Access to healthcare and quality of life
2023	0.747	<0.001	Strong	Improved health conditions
2024	0.759	<0.001	Strong	Enhanced physical well-being
2025	0.677	<0.001	Moderate-a	A slight change, but it remains a key factor
Freedom to make life choices				
SDG 16 (Strong institutions and good governance)				
2022	0.625	<0.001	Moderate	Individual decision-making capacity
2023	0.663	<0.001	Moderate	Autonomy within social systems
2024	0.644	<0.001	Moderate	Stability of rights and freedoms
2025	0.639	<0.001	Moderate	Functional governance
Perception of corruption				
SDG 16 (Transparency and solid institutions)				
2022	0.416	<0.001	Moderate	Indirect structural impact
2023	-0.472	<0.001	Moderate	Expected relationship: higher corruption, lower well-being
2024	0.451	<0.001	Moderate	Nonlinear relationship
2025	0.392	<0.001	Moderate	Lower relative influence
Generosity				
SDG 10 (Reduced Inequalities), SDG 17 (Partnerships and Cooperation)				
2022	0.063	0.44	Weak	No evidence of a structural impact
2023	0.044	0.61	Weak	Prosocial behavior with no effect on well-being
2024	0.130	0.13	Very weak	Non-significant trend
2025	0.041	>0.05	Very weak	No relationship

Correlations with $p < 0.001$ are considered statistically significant. ns: not significant ($p > 0.05$). The strength of the correlation was classified as: very weak (< 0.2), weak (0.2–0.39), moderate (0.4–0.59), moderate-high (0.6–0.79), and strong (> 0.8).

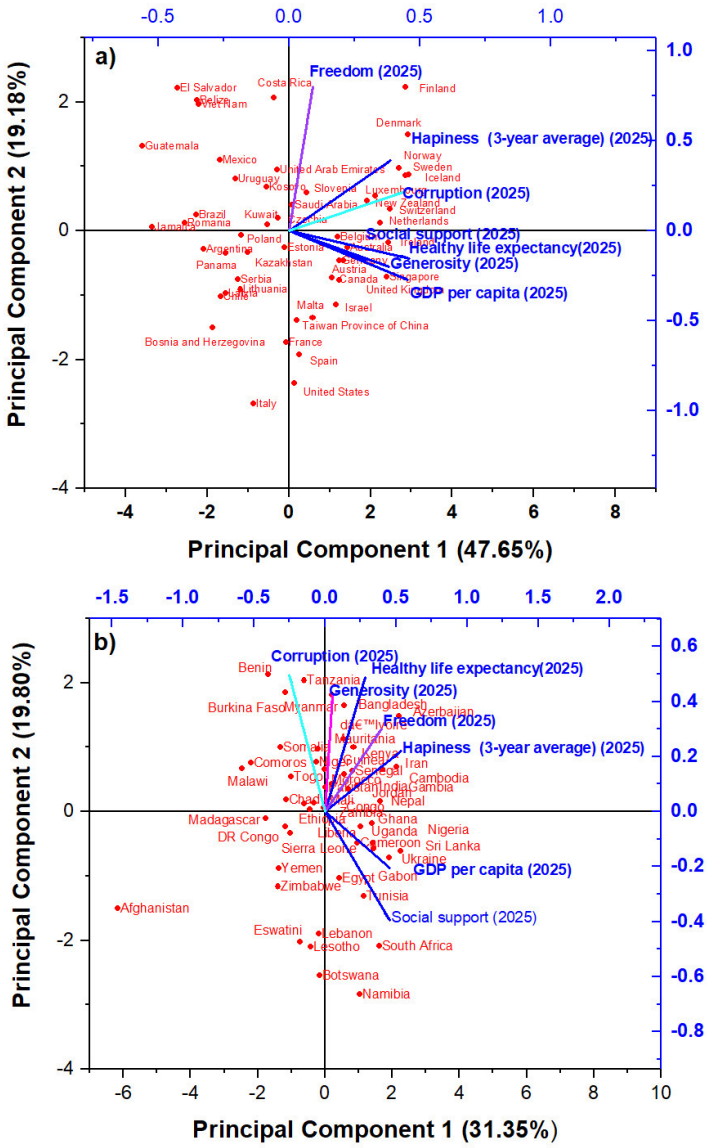


Figure 7: A comparative analysis of well-being in countries with high and low levels of happiness (2025): (a) Principal component analysis (PCA) of happiness variables for the top 50 countries with the highest levels of happiness and (b) the bottom 50 countries with the lowest levels of happiness.

and healthy life expectancy ($r \approx 0.67$-0.76; $p < 0.001$). Freedom to make decisions showed a moderate but significant relationship ($r \approx 0.62$-0.66; $p < 0.001$), while perceived corruption showed moderate associations that varied across years. In contrast, generosity did not show significant relationships with well-being in the global analysis ($p > 0.05$), indicating that its effect depends on the context.

Social support is particularly strongly associated with well-being across all years, with correlations ranging from strong to very strong. This clearly suggests that well-being is built on the quality of relationships, trust, and the ability to rely on others, in line with SDGs 3 (good health and well-being) and 16 (peace, justice, and strong institutions).

Per capita GDP also maintains a significant and consistent relationship, reflecting the fact that economic conditions are an important pillar of well-being, enabling the fulfilment of needs and access to

opportunities and creating stability, in line with SDG 8 (decent work and economic growth).

Healthy life expectancy also shows a strong and consistent correlation with well-being, indicating that living longer is not enough; those extra years must be lived with quality. This reaffirms the central role of health in human well-being (SDG 3).

Freedom to make decisions, meanwhile, shows a moderate-to-high and significant association, demonstrating that well-being also involves the ability to choose and shape one's own life within an enabling environment (SDG 16).

Regarding the perception of corruption, a moderate and significant relationship is observed, although there are variations year by year, notably in 2023 where the correlation is negative ($r = -0.472$). This suggests that the impact of corruption on well-being is not linear but depends on the institutional context (SDG 16).

Finally, generosity does not show a significant relationship with well-being, exhibiting weak or virtually nonexistent associations. This finding suggests that, although it represents a fundamental value and aligns with SDGs 10 (reducing inequalities) and 17 (partnerships), its effects do not directly translate into well-being when there are no structural conditions to support it.

3.3 A Transdisciplinary Multiscalar Model of Well-being: Research as a Path to Doing Good and Being Well

The proposed model consists of four interconnected levels (Figure 8): the individual, the community, society, and humanity. This structure can be understood as the progressive expansion of the individual (or the self) toward others. This concept aligns with Hierocles's proposal of concentric circles of belonging ranging from the self to humanity. Hierocles invite us to bridge the gap between these circles through empathy and ethical action (Long and Sedley, 1987). Thus, the model represents levels of analysis and a process of expanding consciousness and responsibility.

At the individual level, the starting point is one's state of consciousness. This state grows through the individual's capacity for self-observation, self-inquiry, transformation, and reflection on responsibility and commitment. The individual aligns their actions with a purpose oriented toward the common good. At this level, the transdisciplinary perspective generates knowledge and processes of transformation. In the case of the researcher, they become both the subject and object of knowledge and change (Morin, 1988). This perspective aligns with Nicolescu's (2004) proposal that transdisciplinarity integrates knowledge, inner experience, and consciousness.

Scharmer (2009) argues that it is not possible to transform systems without transforming the consciousness from which one acts. In this sense, the transdisciplinary process also involves an evolution in the way we perceive and relate to reality, particularly through the development of different levels of listening: from "unloaded" listening, based on prior judgments, through listening to facts and empathetic listening, to ultimately achieving generative listening. It is at this level that a profound transformation of the researcher occurs, as they cease to be the same person they were at the beginning of the process, connecting with a deeper understanding of themselves, others, and emerging possibilities. Thus, "doing good" ceases to be merely an external action and becomes a coherent expression of consciousness, intention, and action.

At the relational level, the model incorporates interaction with others, where knowledge is constructed collaboratively and situated within the context of space, time, and place. It is in this space that social support—empirically identified as the variable most strongly associated with well-being ($r \approx 0.78$-0.83; $p < 0.001$)—takes on a central role, demonstrating that well-being is built on the quality of relationships, on trust, and on the possibility of relying on others.

The structural level encompasses the conditions that enable or limit the translation of "doing good" into well-being. Variables such as per capita gross domestic product, healthy life expectancy, freedom to make decisions, and perceptions of corruption shape an environment that can either enhance or restrict the impact of human actions. At this level, the model recognizes the interdependence of the economic, social, and environmental dimensions, in line with the Sustainable Development Goals (SDGs), demonstrating that well-being requires structural conditions to sustain it.

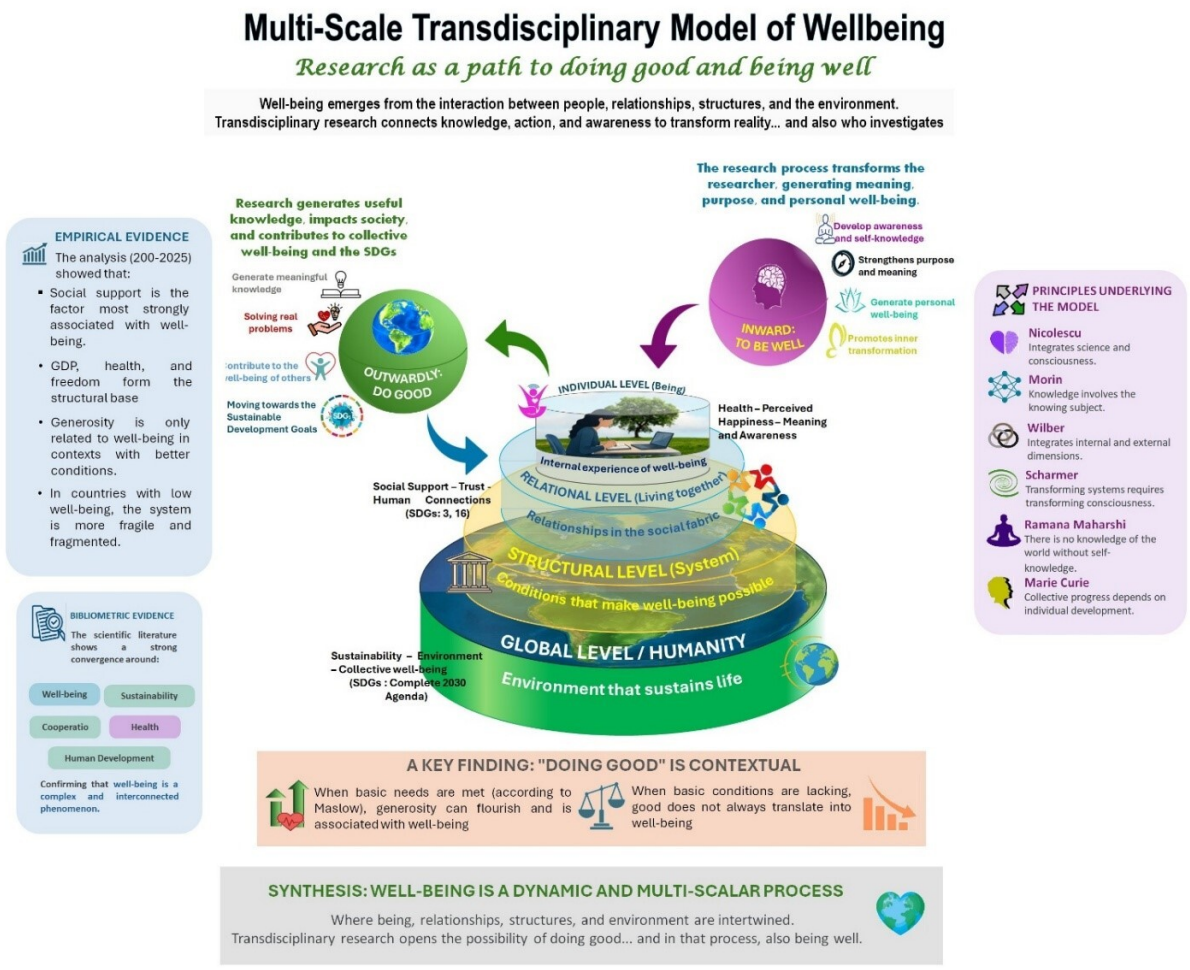


Figure 8: A transdisciplinary multiscale model as a path to doing good and being well.

Finally, the level of humanity represents the integration of all previous levels into a collective consciousness oriented towards the common good. Bibliometric analysis shows that transdisciplinarity has evolved from approaches focused on sustainability toward a growing emphasis on human well-being, establishing itself as an approach capable of addressing complex problems from an integrative perspective.

The model also incorporates a two-way dynamic. Externally, the researcher contributes to solving real-world problems and to the well-being of others; internally, this process impacts their own consciousness, sense of purpose, and personal well-being. This dual dynamic reflects that "doing good" not only transforms the environment but also the researcher themselves, creating a multiplier effect when they sow seeds of awareness with others in the real world (whether within their discipline or beyond).

However, it must be noted that this reciprocal dynamic in the research process depends on the research context and the researcher's awareness. In contexts with favorable structural conditions, well-being variables are integrated in a coherent manner, allowing "doing good" to translate into well-being. In contrast, in more vulnerable contexts, this relationship weakens, demonstrating that generosity, on its own, is not enough if there are no conditions to sustain it. Hence the importance of the researcher's role in their awareness and their dignified role in the research process and the contributions they can make. Because they must know that they have the opportunity to do good and feel good and thus evolve in virtuous

circles that lead to continuous improvement in society.

In this way, the diagram visually illustrates that well-being emerges from the interaction between levels, where "doing good" translates into "being well" when appropriate structural conditions converge with a level of consciousness that allows for the integration of intention, action, and meaning. Of this sense, the transdisciplinary multiscale model positions research as a space of convergence between action, knowledge, and transformation, proposing that transdisciplinary research constitutes a path to doing good and, under certain conditions of context and consciousness, that doing good also does good.

4 Discussion

According to statistical and multivariate analyses of happiness indicators, there is notable consistency in the structure of well-being. Two major dimensions consistently converge: a structural dimension and a human or relational dimension. In the structural dimension, variables such as social support, GDP per capita, healthy life expectancy, and happiness scores consistently cluster together. This confirms that well-being requires a foundation. This finding aligns with classical literature on subjective well-being, which acknowledges economic, social, and health conditions as essential determinants (Diener, 1984; Helliwell et al., 2023). However, beyond confirming the expected results, one clear finding emerges: the importance of social support.

The fact that social support exhibits the highest and most consistent correlations across all years analyzed suggests that well-being is built on the quality of relationships, trust, and the ability to rely on others, not in isolation. Thus, well-being is not solely an individual experience, but rather a relational and shared process in which social interactions serve as a central axis. This finding is consistent with approaches focused on social capital and community cohesion, and aligns with the Sustainable Development Goals, particularly SDG 3 (good health and well-being) and SDG 16 (strong institutions).

Furthermore, strong and consistent correlations between economic and health variables—such as GDP per capita and healthy life expectancy—demonstrate that well-being requires both structural and biological conditions. It is not enough to want to be well; the conditions to achieve it must exist. Thus, the results reflect the interdependence of the economic, social, and health dimensions, which are the fundamental pillars of sustainable development (Sachs et al., 2019).

Freedom introduces a relevant dimension associated with the capacity for choice. Although its relationship with well-being is moderate, its presence is significant because it allows people to shape their own lives within a supportive environment. In this sense, well-being implies not only having or being, but also the capacity to be.

One of the most significant findings concerns generosity. Overall, this variable does not show a significant relationship with well-being, which challenges the notion that "doing good" leads to well-being. However, when analyzed by levels of well-being, a key nuance emerges in happier countries, generosity is associated with well-being; in less happy countries, this relationship weakens considerably.

This result suggests that doing good is not an automatic process but rather one that is deeply contextual. It depends not only on the action itself but also on the conditions under which it occurs. In environments where basic needs are not met, the act of giving does not necessarily translate into subjective well-being. Maslow's theory (1943) supports this interpretation, positing that basic needs must be satisfied before higher-level dimensions such as self-actualization or transcendence can emerge.

Furthermore, when countries with high and low levels of well-being are compared, a clear structural difference emerges. In countries with high levels of well-being, the variables come together to form a coherent system. In countries with low levels of well-being, however, the system appears fragmented, with weaker and more unstable relationships. This fragmentation suggests that well-being depends not only on individual factors, but also on the coherence of the system (as a whole).

At this point, a bibliometric analysis provides a complementary dimension that broadens the interpretation of the empirical results. Keyword co-occurrence networks reveal that transdisciplinary research is organized into distinct thematic clusters, including sustainability, socio-ecological systems, health, human

well-being, and education. This configuration demonstrates that scientific output addresses well-being in relation to complex global issues rather than in isolation.

Thematic density analysis reinforces this idea, showing that the terms "sustainability" and "transdisciplinarity" are at the core of the greatest concentration. Other dimensions, such as climate change, ecology, health, well-being, and education, branch off from this core. This suggests that sustainability is a dominant theme and the primary space of convergence for transdisciplinary knowledge. As is well known, transdisciplinarity is the foundation of sustainability.

For its part, the temporal visualization reveals a clear evolution in research lines. The earliest terms focus on the environmental and systemic dimensions—ecosystems, biodiversity, land use, climate change—suggesting that transdisciplinarity initially emerged as a response to complex environmental issues and "wicked problems". However, at a later stage, there is an expansion into the human and social dimensions, incorporating topics such as well-being, health, education, psychology and collaborative knowledge. This transition highlights a shift in focus from understanding systems to generating social impact. In other words, transdisciplinarity evolves from understanding the world to transforming it.

An analysis of co-occurrence in scientific sources reveals that transdisciplinarity does not function as an isolated field but rather as a unifying axis within the scientific system. Journals such as the Transdisciplinary Journal of Engineering & Science exhibit high inter-cluster connectivity, forming connections with areas such as sustainability, public policy, socio-ecological systems, and food systems.

This structural position suggests that transdisciplinarity functions as a bridge between domains of knowledge, facilitating the integration of knowledge and the development of solutions for complex problems. Taken together, these findings demonstrate that well-being cannot be explained by a single dimension, but rather must be understood as a multiscale, systemic phenomenon in which the individual, relational, structural, and global levels interact. This is precisely where the proposed transdisciplinary multiscale model comes into play.

The model is based not only on theory but also on observed empirical evidence. It helps us understand that well-being is built simultaneously at different levels: within the individual, in their relationships, in the structures that surround them, and in the broader context. Within this framework, social support acts as a unifying force, structural conditions provide a foundation of stability, and the broader context serves as a frame of reference. The transdisciplinary model incorporates a dimension that is often absent in traditional approaches: the researcher's consciousness. In line with Nicolescu (2004), Morin (1988), Scharmer (2009), and Wilber (2000), it is recognized that it is not possible to separate knowledge from the knower, nor to transform systems without transforming consciousness. In the same vein, Ramana Maharshi (1998) suggests that self-knowledge constitutes a fundamental path to knowledge of the world.

The findings of this research show that, while necessary, inner transformation aimed at doing good and being well is not sufficient on its own. Well-being emerges from the interaction between the individual, their relationships, and their environment. In other words, well-being emerges from the interplay of being, doing, and environment. Within this framework, transdisciplinary research is revealed to be more than just a methodology; it is a path. It connects knowledge with action and action with meaning. It is a path in which the researcher not only observes but is also transformed. Thus, "doing good" becomes a process of personal transformation as well as an action toward others. It is in this dual direction—toward others and toward oneself—that a deeper understanding of well-being emerges. In this way, transdisciplinary research contributes to doing good and does good in the process with a multiplier effect that contributes to social well-being and the construction of a better world.

5 Conclusion

The results of this study lead to well-being cannot be understood as an isolated or exclusively individual phenomenon, but rather as a structured system that emerges from the interaction between economic, social, human, and institutional dimensions. Based on an analysis of data from the World Happiness Report (2022-2025), a consistent structure of well-being over time was identified, characterized by the

convergence of two main dimensions: a structural dimension and a human or relational dimension.

Within this structure, social support stands out as the factor most strongly associated with well-being in the years 2022-2025, with correlation coefficients ranging from $r \approx 0.78$ to 0.83 ($p < 0.001$). This consistency and high statistical significance demonstrate that the quality of relationships, trust, and the ability to rely on others constitute the central axis upon which well-being is built. In this sense, it is concluded that well-being is, in essence, a profoundly relational phenomenon.

Similarly, variables such as GDP per capita ($r \approx 0.74$-0.78; $p < 0.001$) and healthy life expectancy ($r \approx 0.67$-0.76; $p < 0.001$) show strong and statistically significant relationships with well-being, confirming that economic and health conditions represent a necessary structural foundation for its consolidation. Likewise, freedom to make decisions shows a moderate but significant relationship ($r \approx 0.62$-0.66; $p < 0.001$), indicating that the capacity for choice within a functional social system contributes to well-being.

Regarding the perception of corruption, moderate and statistically significant associations are observed ($|r| \approx 0.39$-0.47; $p < 0.001$), although with variations in the direction of the relationship across years, suggesting contextual behavior. This result indicates that institutional quality influences well-being, but its effect depends on the specific dynamics of each context.

One noteworthy finding is that, in the overall analysis, generosity does not show a significant relationship with well-being ($r < 0.15$; $p > 0.05$ in most years). However, when analyzing distinct contexts, it was observed that in countries with high levels of well-being, generosity approached the happiness score. In more vulnerable contexts, its effect was limited. These results suggest that "doing good" does not automatically lead to well-being; rather, it depends on structural conditions that enable it.

Similarly, comparing countries with high and low levels of happiness shows that well-being depends on both the magnitude of the variables and the coherence of the system. Countries with higher well-being exhibit a more integrated and consistent structure of variables, while countries with lower well-being show greater dispersion, reflecting a lower capacity of the system to generate well-being stably.

Bibliometric analysis complements these findings by showing that transdisciplinary research has evolved from approaches focused on environmental systems and ecological issues toward a growing integration of human, social, and well-being dimensions. This evolution demonstrates that science has shifted from an understanding of complex systems toward the pursuit of social impact.

Additionally, it is concluded that transdisciplinarity does not constitute an isolated field but rather serves as a unifying axis within the scientific system, facilitating the integration of knowledge from different areas and acting as a bridge between domains such as sustainability, health, education, and governance.

This study proposes a transdisciplinary multiscale model of well-being, which is based on the integration of empirical evidence, bibliometric analysis, and theoretical foundations. The model helps us understand that well-being is constructed across interconnected levels: individual, relational, structural, and global. The model shows that well-being is not the result of a single variable but rather the dynamic interaction of multiple dimensions.

Importantly, the model incorporates the dimension of the researcher's consciousness. This allows us to conclude that transdisciplinary research generates external impacts and produces effects on the researcher. However, the results show that this relationship is not automatic; "doing good" does not guarantee well-being. For this relationship to materialize, coherence must exist between action, consciousness, and context.

Transdisciplinary research not only contributes to the common good but, under certain structural and contextual conditions, also generates well-being. Furthermore, this process can be amplified through a multiplier effect, in which actions aimed at the common good spread through relationships and systems, generating impacts that transcend the individual and reach social and global dimensions.

This study provides statistical evidence ($p < 0.001$ in most structural relationships) that allows us to understand transdisciplinary research not only as a methodological approach but as an integrative process that articulates knowledge, action, and consciousness. From this perspective, well-being emerges as a multiscale construct in which doing good and being well are not independent processes, but rather interrelated dynamics that, in appropriate contexts, can mutually reinforce one another.

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