How to manage sustainability in healthcare organizations? A processing map to include the ESG strategy

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Abstract

Purpose – This paper aims to identify the key issues that healthcare knowledge-intensive organizations (KIPOs) should focus on to define themselves as socioenvironmentally and governance responsible for integrating environmental, social, and governance (ESG) logic into their business strategy. At the same time, this provides an understanding of how healthcare KIPOs contribute to achieving the Sustainable Development Goals of the 2030 Agenda.

Design/methodology/approach – Taking a cue from the model developed by the World Economic Forum, an "ESG Processing Map" was constructed to identify qualitative disclosures that a healthcare company should consider when implementing sustainability logic. The aspects investigated were processed, considering national and international standards, frameworks and disclosures. The social network analysis technique was used to systemize and combine the outcomes of these processes and analyze their consistency with sustainable development.

Findings – Through the "ESG Processing Map," 13 areas of action and 27 topics specific to the health sector were defined on which to intervene in sustainability in order to concretely help HCOs to place specific corrective and improvement actions over time concerning socioenvironmental and governance aspects.

Originality/value – The paper provides contribute, on the one hand, to enriching and updating the academic literature on ESG logic in a still underexplored field and, on the other hand, to provide these types of organizations with a "compass" to guide and orient their business strategies towards sustainability.

Keywords Knowledge-intensive public organizations, Healthcare organizations, ESG strategy, SDGs, Sustainability

Paper type Research paper

1. Introduction

Knowledge is an essential driving force for business success and competitiveness, especially in "knowledge-intensive organizations" (KIOs), whose core business is to create and sell knowledge (Mas-Machuca, 2014). KIOs are, in fact, organizations in which knowledge is the primary input and output. Within the concept of KIOs, we do not exclude a reference to organizations operating in the public sector. In recent years, several authors have begun to refer to "knowledge-intensive public organizations" (KIPOs), understanding them as organizations focused primarily on accumulating, creating or disseminating knowledge (Grossi *et al.*, 2020) and offering specialized knowledge-intensive services to create public value (Bos-Nehles *et al.*, 2017). Moreover, given their economic, social, and environmental impact, they are also involved in achieving sustainability.

In this perspective, healthcare organizations (HCOs) are an archetype of KIPOs. In the field of public health, HCOs can be identified as highly "knowledge-intensive" contexts because of the

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peculiar characteristics of the highly specialized personnel working in them and the quality of the services provided (Fiorani *et al.*, 2022). This knowledge represents a precious asset that must be valued, consolidated and continuously updated and developed. For this reason, healthcare organizations must be seen and considered as areas of service and performance delivery and as areas that use, produce and form knowledge (Baccarini *et al.*, 2008).

Due to the characteristics described above, HCOs have several peculiarities whereby they are involved in environmental, social, and governance (ESG) and sustainability logic while contributing to public value creation. However, among the sectors that seem indifferent to considering sustainability as a strategic asset functional to the survival and competitive development of the organization, healthcare is undoubtedly one of the most emblematic examples of this unwarranted lack of commitment. It is only recently that the growing attention to the issue of sustainability has increasingly affected the healthcare sector, as it is embedded in a broad ecological, economic, and social context.

For these reasons, the paper aims to identify the key issues that public HCOs should focus on to define themselves as having socioenvironmentally and governance responsibilities. The above contribution aims to answer the following research questions:

RQ1. What key themes ensure the integration of ESG logic within the corporate strategy of Italian healthcare KIPOs?

RQ2. How can integrating ESG logic in Italian healthcare KIPOs contribute to achieving the SDGs?

In order to achieve the goal, the research is based on defining a processing map consisting of 27 themes and a set of qualitative, health sector-specific KPIs. This one will allow us to take an overall picture of the state of the art of sustainability in health KIPOs and to understand the impacts of the health system on the Sustainable Development Goals (SDGs). By implementing the described methodology, health KIPOs will be able to integrate sustainability logic annually more efficiently and consciously and appreciate their evolution toward the highest possible value. After the introduction, the second section reviews the literature on HCOs as sustainable knowledge-intensive organizations. The third section is devoted to the methodology development; Section 4 analyzes and discusses the results. Social network analysis (SNA) enables the assessment of alignment between the SDGs and the identified topics, thus configuring the footprint of health KIPOs on the 2030 Agenda. Finally, section 5 concludes the research paper by highlighting the main critical issues/limits of the discussion/future perspectives.

2. Literature review

In recent years, the relevance of types of "knowledge-intensive organizations" describing the specific activities and attributes of some organizations has emerged. However, as presented in the literature, the concept of "knowledge-intensive organizations" (KIOs) and "knowledge-intensive firms" (KIFs) are multidimensional with a variety of different meanings (Makani and Marche, 2010). Although it can be said that all organizations resort to knowledge to remain competitive (Nonaka and Takeuchi, 1995; Brown and Duguid, 1998; Abell and Oxbrow, 2001), not all firms can be considered knowledge-intensive (Lloyd and Sveiby, 1987; Starbuck, 1992; Robertson and Swan, 1998; Swart and Kinnie, 2003; Alvesson, 2004; Ichijo and Nonaka, 2007; Deng, 2008). Although there is a general acknowledgment among scholars that KIOs may have distinctive characteristics due to the nature of the work and workers they employ (Lloyd and Sveiby, 1987; Starbuck, 1992; Robertson and Swan, 1998; Swart and Kinnie, 2003; Alvesson, 2004; Deng, 2008), the phrase knowledge-intensive organization and knowledge-intensive firms do not appear in the literature until Starbuck introduced it in 1992.

First, there is no widely used or agreed definition of KIOs or KIFs. In fact, according to a review of the literature conducted by Makani and Marche (2010), there needs to be more consensus among scholars and practitioners on the definition of this type of organization and the factors that characterize them.

Starting with the seminal work of Starbuck (1992, 1993), several authors, in their definition of KIOs/KIFs, place emphasis on the substantive number of knowledge workers within the organization, characterized by formal education and highly skilled (Alvesson, 1993, 2004; Swart and Kinnie, 2003; Baptista Nunes *et al.*, 2006; Benbya, 2008; Deng, 2008). The author himself defines KIFs as firms in which one-third of the experts have the equivalent of a doctoral degree in formal education and experience. Some authors, on the other hand, rather than focusing on the level of education of workers, argue that the ability of workers to solve complex problems is the distinguishing factor of KIOs (Sheehan, 2002; Ichijo and Nonaka, 2007; Deng, 2008; Greenwood, 2009). Therefore, it is not formal education that characterizes this type of organization, but rather the application of skills and the tasks performed by staff contribute to value creation in KIOs (Starbuck, 1992; Alvesson, 1993, 2004; Swart and Kinnie, 2003; Baptista Nunes *et al.*, 2006; Benbya, 2008; Deng, 2008). KIOs are characterized by the ability to solve complex problems through creative and innovative solutions (Jenssen and Nybakk, 2009). They depend on employees' knowledge, creativity and innovative efforts to achieve this goal.

Other authors dwell on the output and define KIOs as organizations that produce and sell knowledge-based products (Lloyd and Sveiby, 1987; Alvesson, 1993, 2004; Ichijo and Nonaka, 2007) or create value through the application of knowledge (Swart and Kinnie, 2003; Deng, 2008). Therefore, according to these authors, the distinguishing characteristic of "knowledge-intensive organizations" is how they employ and transfer/transform "know-how."

According to Makani and Marche (2010), a key element emerges in the heterogeneity of definitions: for an organization to be called a KIO, knowledge must be its output. As Greenwood (2009) argues, being "knowledge-rich" the input does not necessarily mean that the organization can be considered knowledge-intensive. KIOs are a "product of the structures, relationships, and dynamics of organizations, not of how much knowledge they contain, the education level of staff, or their sectoral location" (Greenwood, 2009, p. 35).

Within the concepts of KIO and KIF, reference is not excluded to organizations operating in the public sector as well such that, in recent years, several authors have begun to refer to "knowledge-intensive public organizations" (KIPOs) meaning them as organizations focused primarily on accumulating, creating or disseminating knowledge (Grossi *et al.*, 2020) and offering specialized knowledge-intensive services to create public value (Bos-Nehles *et al.*, 2017). The goal of KIPOs is to improve public services and the ability to solve complex problems. However, as Greenwood (2009) stated, organizations must creatively change their structures, behavior and alignment with the environment to be called knowledge-intensive public organizations. Indeed, since KIPOs essentially involve transferring knowledge-intensive services, these organizations must process knowledge effectively (Richards and Duxbury, 2015). Classic examples of such organizations in the public sector can be considered higher research institutes (universities) and hospitals.

However, how is knowledge employed and managed within these organizations? Within the healthcare sector, HCOs can be identified as highly "knowledge-intensive" contexts because of the peculiar characteristics of the highly specialized personnel working in them and the quality of the services provided (Fiorani *et al.*, 2022).

This knowledge represents a precious asset that must be valued, consolidated, continuously updated and developed. For this reason, HCOs must be seen and considered as areas of service and performance delivery and as areas that use, produce and form knowledge (Baccarini *et al.*, 2008).

According to the proposed classification of KIOs suggested by Makani and Marche (2010), who identify the worker dimension and the organizational/unit dimension (Figure 1), it is possible to define HCOs as "organizationally oriented, innovation-driven firms" in which the use of knowledge for innovation is inextricably linked to the strategy of these organizations.

Healthcare workers are called upon to perform complex, unique and dynamic tasks and are highly responsible for their decisions. As such, they exhibit high levels of innovative skills and complex cognitive abilities that they employ to innovate and create additional new knowledge. In addition, they are characterized by a high degree of interdependence, resulting from the need to integrate their respective skills to analyze complex work problems effectively.

On the side of the organizational dimension, workers have a high degree of utilization and production of esoteric knowledge within healthcare facilities, as knowledge is central to the company's survival.

2.1 HCOs as sustainable knowledge-intensive organizations

Because of the characteristics described above, HCOs have several peculiarities such that they are involved in ESG and sustainability logic.

Although the concept of sustainable development has been widely debated, surprisingly little attention has been paid to the relationship between environmental change and human health and between HCOs and their roles and responsibilities related to sustainable development (Ulhøi and Ulhøi, 2009). Among the sectors that seem indifferent to considering sustainability as a strategy or goal, healthcare is undoubtedly one of the most emblematic examples of this unwarranted lack of commitment. It is only recently that the growing attention to the issue of sustainability has increasingly affected the health sector as it is embedded in a broad ecological, economic and social context.

Numerous authors (Berry and Bendapudi, 2007; Ostrom *et al.*, 2015; Benedettini, 2022) are studying the correlation between sustainability and the healthcare sector to identify factors that can foster or hinder a sustainable approach. However, the health sustainability programs proposed in the literature must be more consistent and cohesive (Pluye *et al.*, 2004). There needs to be more analysis of them through empirical research (Gruen *et al.*, 2008).

There is no unambiguous definition of sustainability in healthcare in the literature (Fischer, 2014; Braithwaite *et al.*, 2019; Cimprich *et al.*, 2019) as the available content points to a more unbalanced approach to sectorial at the expense of the cross-cutting nature inherent in the concept of sustainability itself. According to Mohrman and Shani (2011), sustainable healthcare is about being more effective in preventing and minimizing the impact of disease, which depends not only on healthcare performance occurring within facilities but also on

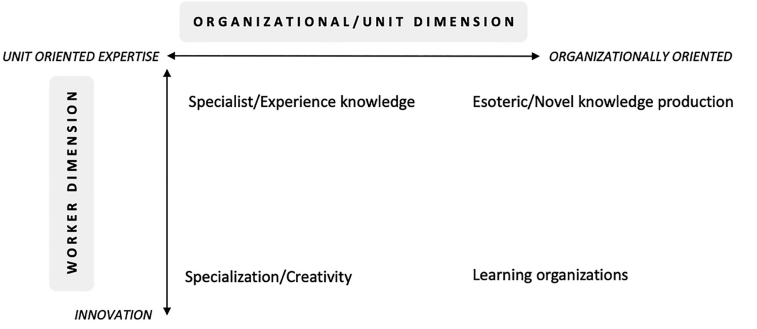

Figure 1.
Categorizing knowledge-intensive organizations

Source(s): Authors' elaboration adapted from Makani and Marche (2010)

improving the health status of the entire community. Fruitman (2004), on the other hand, argues that a sustainable healthcare system must both control costs and provide adequate healthcare. For Lifvergren *et al.* (2008), sustainable health systems must balance stakeholder interests over the long term and have the capacity for continuous improvement, innovation and development from economic, social and environmental perspectives. Finally, according to Ulhøi and Ulhøi (2009), a sustainable health system is based on an interdisciplinary dialogue rather than a highly specialized approach, which would allow intervention in isolated and independent fields. Hospitals occupy a relevant role in the broad network of the health system, where, as active elements of society, they influence and are influenced by their surroundings. They also occupy a prominent position in the surrounding community as they influence it economically, socially and culturally. Fischer (2014) in his study shows how "in spite of the different ways to define sustainable healthcare systems, and regardless of whether the three-pillar model or the integrated understanding of sustainability is applied, all approaches seem to have in common that a comprehensive approach with a long-term focus and a need to balance economic, social, and ecological interests needs to be used in the discussion of sustainable healthcare systems" (Fischer, 2014, p. 298). In addition, the introduction within the 2030 Agenda of Goal 3: "Health and well-being" testifies to the growing importance of the health system as a necessary element in pursuing sustainable development.

The ESG approach is adopted to address the issue of sustainability to highlight the relevant aspects of each of the three pillars of ESG and their implications in the healthcare sector.

As promoters of preventive healthcare, hospitals must lead toward environmental awareness and protection. There are ecological, economic, ethical and social reasons to engage in environmentally sustainable behaviors. Indeed, HCOs are significant users of energy and natural resources (MacNeill *et al.*, 2021), as well as substantial waste producers, coming to represent one of the most polluting sectors in the world (Cimprich *et al.*, 2019).

However, the strongly socially oriented core business considers environmental protection too marginal in organizational-management strategies (Weisz *et al.*, 2011).

In this context, it must be recognized that sustainability represents an issue natively interconnected with that health and well-being. Healthcare systems aim to provide services and products to ensure people's right to health, help preserve the quality of life and enable individuals to live independently by providing social support services (Pereno and Eriksson, 2020). Health KIPOs are, in fact, critical to community well-being because their services have long-term outcomes. They are facilities that invest heavily in research and development (R&D), and the results obtained are transformed into solutions to improve the prevention, diagnosis and treatment of human diseases. In addition, the professional skills of healthcare professionals (Eiriz and Figueiredo, 2005) enable them to respond effectively and efficiently to the needs of citizens in terms of improving the quality of services provided.

Finally, in terms of health governance, the "One Health" approach identifies a cooperative strategy that can lead to "harmonious development that respects the balance between natural, social and institutional spheres, global compatibilities and the needs of future generations" (ASviS, 2020).

HCOs are increasingly careful in minimizing costs and consequences on the ground while at the same time trying not to compromise service efficiency, comfort and safety of patients and employees.

2.2 The organization of the Italian healthcare system

There are different attributions of responsibility in protecting the right to health (Figure 2).

The first level is vested in the State, which must ensure that all citizens have access to the Essential Levels of Care, either free of charge or through the payment of a co-payment.

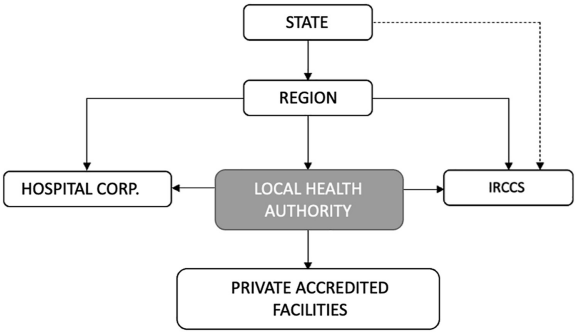

Figure 2.
Hospital care providers

Source(s): Authors' elaboration

The second level is represented by the Regions, whose tasks are: to issue regulations to ensure the provision of services homogeneously and to organize the various care services, both hospital and territorial. The regions are in charge of financing the local health authorities (ASLs) and territorial hospitals, exercising, in addition, the function of monitoring and evaluating the quality of services offered to citizens.

The ASL, also known as AUSL (Local Health Authority Unit) or ASP (Public Health Authority), is the public body, or rather, the primary operational tool the NHS uses to deliver health services. Art. 3 of Legislative Decree 502/1992 gives the ASLs public legal personality and entrepreneurial autonomy, which allows them to organize healthcare in the relevant territory and deliver it through accredited public or private facilities. Healthcare for ASLs includes the population's prevention, diagnosis, treatment and rehabilitation services.

A Hospital Corporation is a hospital facility converted into a company, thus having autonomous and independent management. Specifically, they are autonomous in management, organization, accounting, administration, asset management and technical management. University Hospitals (Polyclinics with the Faculty of Medicine inside) are considered hospitals of rational and high specialization importance, established by the same bodies as ASLs. Also included in this case is the AUSL Hospital Facility, which can be assimilated into a Hospital Company but need more financial, managerial and technical autonomy.

The Scientific Institute for Research, Hospitalization and Healthcare (IRCCS) is a type of Hospital Company with public or private legal status that carries out clinical research on particular pathologies of national importance and management of health services. Public IRCCSs are public entities controlled by the regions and the Ministry of Health. They can be transformed into an IRCCS Foundation in the region where the entity resides to carry out its research activities. Private IRCCSs, on the other hand, are characterized by greater freedom of their actions.

An Accredited Facility is a private facility that has granted an agreement with the National Health Service. It provides health services to the population through the payment of a co-payment. An administrative concession of public service represents accreditation and covers all public and private entities that perform hospital and specialty care, residential and semi-residential district care and healthy transportation. It includes outpatient clinics, private testing laboratories, dental offices, private nursing homes, Residential Centers for the Elderly and Assisted Health Care Residences.

For the discussion, the following can be identified as healthcare KIPOs: the ASLs, Hospital corporations and IRCCSs of a public nature.

3. Methodology

The following contribution aims to identify the key issues that HCOs should focus on to define themselves as socioenvironmentally and governance responsibilities.

To meet this purpose, an "ESG Processing Map" was constructed, taking cues from the "Stakeholder Capitalism Metrics" model of the Word Economic Forum's International Business Council, developed in collaboration with the Big Four: Deloitte, EY, KPMG and PwC (WEF, 2020).

The elaborated map is developed through a tree structure of the three ESG pillars, each consisting of selected "categories" and "topics" that take into account typical characteristics of the healthcare sector.

Each topic is fundamental to a complete understanding of the related pillar and groups one or more corresponding qualitative disclosures to understand the areas of action that should be considered when implementing sustainability logic within HCOs. All disclosures are drawn from national standards, frameworks and disclosures (i.e. GBS, "La rendicontazione sociale delle aziende sanitarie – Documenti di ricerca n. 9"; "La Carta degli Ospedali Sostenibili"; "Il Piano Nazionale per l'Energia Sostenibile e l'Efficienza Energetica"; "La Guida alla Sostenibilità per le Aziende Ospedaliere"; "Linee guida per la redazione e l'implementazione dei Piani degli Spostamenti Casa-Lavoro") and international ones (i.e. SASB, "SASB Health Care Industry Research Briefs"; EFRAG, "SEC1 Sector classification standard"; GRI, "GRI Standard2) available.

It should also be emphasized that although the "ESG Process Map" (illustrated in Section 4) is designed for public health organizations, it refers to Italian reality, considering the peculiarities affecting the national context. The choice of themes and categories, therefore, takes this into account, which is why some of them have been omitted as they already find regulation in the national legal system (including: "Piano Uguaglianza di Genere", "Carta dei diritti dei pazienti" and Ministry of Health Decrees regarding the management of particular hazardous and non-hazardous waste, energy, and water consumption, the management of contaminated sites, and the protection of the rights and dignity of the sick person).

In summary, the map is designed to (1) provide a framework for understanding sustainability in all areas of Italian public health, (2) create a tool for direction and continuous improvement toward sustainability and (3) provide a starting point for possible adaptations to other sectors.

Finally, each topic is aligned with the UN SDGs in order to substantiate how HCOs are progressing toward the aspirations enshrined in the 2030 Agenda and, thus, understand how the healthcare sector is contributing or can contribute to the achievement of the goals set in international sustainability agendas.

4. Results

The "ESG Processing Map" (Table 1) is a valuable tool for highlighting areas and business processes that need improvement and implementation from a sustainable perspective.

Process maps provide detailed information about a process and help teams brainstorm ideas for improving the process, helping to improve communication and providing documentation related to the process. Business process flowcharts help define process boundaries, process properties, process responsibilities and measures of effectiveness or process metrics.

The process map developed for the following paper is contextualized to the healthcare sector, specifically addressing the healthcare KIPOs identified in the previous section, for which thirteen scopes were selected that characterize the three ESG pillars. Each domain was then declined into themes deemed relevant to healthcare KIPOs.

It consists of a guide to help HCOs understand the way forward in the sustainable sphere.

Table 1.
The ESG processing map

ESG	CATEGORIES	TOPICs	DISCLOSURE	SDGs (target)
ENVIRONMENTAL	Environmental management system	Environmental Certifications	Have you obtained certifications related to the Environmental Management System? *Multiple answers choices* *ISO 14001* *Emas* *ISO 14064* *ISO 50001* *ISO 20400* *Other (specify)*	9.4
	Climate Change	CO_2 Emissions	Do you have a formalized environmental policy on emissions management? *Answer yes/no*	9.1 9.4 9.5 9.b 11.6 11.b 13.1 13.2
			What mechanisms are in place regarding greenhouse gas emissions? *Multiple answers choices* *Team member awareness campaigns* *Team member training programs* *Purchase of carbon offset credits/campaigns* *Audits* *Other (specify)*	
			Which emission do you calculate? *Multiple answers choices* *Scope 1* *Scope 2* *Scope 3*	
			Indicate the percentage of services that are delivered by telemedicine: *Multiple answers* *None (0%)* *Few (up to 30%)* *30-50%* *51-99%* *All (100%)*	
		Energy Efficency	Do you have a formalized environmental policy on efficient energy resource management? *Answer yes/no*	7.2 7.3 7.a 7.b 9.4 12.2 13.1
			What mechanisms do you put in place regarding energy management? *Multiple answers choices* *Team member awareness campaigns* *Team member training programs* *Audits* *Renewable energy purchase/generation* *Measurement and monitoring of consumption* *Architectural and infrastructure interventions* *Other (specify)*	

(*continued*)

			What initiatives do you put in place to facilitate user travel? *Multiple answers choices* *Dedicated bus/shuttle line* *Car sharing comventions* *Integrated mobility conventions* *Parking conventions* *Other (specify)*	
		Mobility	What measures do you take to promote sustainable mobility among your employees? *Multiple answers choices* *Dedicated bus/shuttle line* *Car-sharing agreements* *Car-pooling platform* *Incentives/discounts for public transportation* *Infrastructure interventions* *Agile work planning* *Other (specify)*	11.2 11.3
	Natural Resource Protection	Procurement of materials and services	Do you include criteria for evaluating environmental impacts in the bidding process? *Multiple answers* *Yes, always* *Yes, only for tenders with the most economically advantageous offer* *No, never*	8.4 9.1 9.b
			What aspects of environmental sustainability do you evaluate when purchasing? *Multiple answers choices* *Possession of environmental certifications (ISO 14001, Emas, ...)* *Presence of a code of ethics* *Presence of a sustainability/decarbonization plan* *Presence of a sworn sustainability report* *Other (specify)*	12.2 12.5 12.7
		Water withdrawal	Do you have a formalized environmental policy on water consumption management? *Answer yes/no*	
			What mechanisms do you put in place regarding water resource management? *Multiple answer choices* *Team member awareness campaigns* *Team member training programs* *Audits* *Infrastructure interventions* *Other (specify)*	6.4 6.5 6.b
		Waste and Pollution	Do you have a formalized environmental policy on healthcare waste management? *Answer yes/no*	
		Management of municipal and assimilable waste	Do you have a formalized environmental policy on hazardous medical waste management? *Answer yes/no*	11.6 12.4 12.5
			What mechanisms do you put in place for waste management? *Multiple answer choices* *Increasing the separation of waste conferred*	

(*continued*)

Table 1.

Table 1.

			Increased traceability of conferred waste *Recovery of economic value from the conferred waste* *Reuse of materials and tools* *Other (specify)*	
			Do you have innovative technologies to reduce, recycle, or reuse waste (including hazardous waste)? *Answer yes/no*	
			Do you have technologies or processes for effective disposal? *Answer yes/no*	
		Wastewater management	Do you conduct laboratory testing of wastewater quality? *Answer yes/no*	6.3
			Do you conduct destination monitoring? *Answer yes/no*	
		Hazardous substances	Do you carry out controls/analysis/monitoring to reduce chemical risk? *Answer yes/no*	3.9 6.3 12.4
SOCIAL	Human Rights	Human rights policies	Do you have a policy for the protection of human rights? *Answer yes/no*	
			What aspects, referring to the protection of human capital, do you consider? *Multiple answer choices* *Healthfulness in the workplace* *Fair and favorable working conditions (working hours, remuneration)* *Discrimination and harassment* *Freedom of association and collective bargaining* *Other (specify)*	5.1 8.7 8.8 10.3 16.1
	Diversity and Inclusion	Equal Opportunities	Do you implement actions and projects aimed at encouraging the reduction of gender asymmetries while at the same time valuing all diversity-related (e.g., the variables of age, culture, physical ability, sexual orientation, multilingualism)? *Answer yes/no*	
			Indicates the percentage of female health care personnel (physicians, residents, nurses) in the company: *Multiple answers* *None (0%)* *Few (up to 30%)* *30-50%* *51-99%* *All (100%)*	5.1 5.5 8.5 10.2 10.3
			Indicates the percentage of employees with disabilities employed in the company: *Multiple answers* *None (0%)* *Few (up to 30%)* *30-50%* *51-99%* *All (100%)*	

(*continued*)

			Do you implement actions regarding job growth? *Multiple answer choices* *Performance management process* *Reward mechanisms* *Skills training* *Realignment of company positions* *Other (specify)*	
		Growth and employment stability	Indicates the average number of years of company seniority: *Multiple answer* *Less than one year* *Two to five years* *Six to ten years* *More than ten years*	8.5 8.8 10.3
			What are the levels of absenteeism (due to 104, burnout, parental leave, vacation)? *Multiple answers.* *Up to 30%* *From 31% to 60%* *Greater than 60%*	
	Protection of Human Resources		What corporate welfare initiatives do you provide for your employees? *Multiple answer choices* *Health care plan* *Various conventions* *Retirement and supplementary pension fund* *Other (specify)*	
			Do you periodically monitor the satisfaction level of your employees? *Multiple answers* *Yes, monthly* *Yes, quarterly* *Yes, semiannually* *Yes, once a year* *No, never*	3.9
		Team member well-being	What are the issues for which you conduct monitoring? *Multiple answer choices* *Welfare programs* *Work-life balance* *Wage equity* *Career development* *Human rights* *Diversity and inclusion* *Sense of belonging* *Other (specify)*	8.8 9.1
			What forms do you put in place for listening to and involving your employees to improve your services? (KIPOs) *Multiple answers* *Self-assessment questionnaires*	

(*continued*)

Table 1.

Table 1.

			Interviews *Surveys* *Focus groups* *Other (specify)*	
		Training and updating	Do you annually prepare the training plan reserved for employees? *Answer yes/no*	4.3 4.4 4.5 9.5
			Do you promote initiatives to raise awareness and update on sustainability issues? *Multiple answer choices* *Social* *Environmental* *Governance*	
			What training programs are reserved for employees? *Multiple answer choices* *Anti-corruption* *Use of computer and management applications and tools* *Handling of personal data* *Conflict of interest* *Sexual harassment* *HR policies* *Intellectual property* *Other (specify)*	
			What is the average number of hours of training per employee per year (excluding training aimed at acquiring CME credits and safety courses)? *Multiple answer range* *less than 5 hours* *between 5 and 10 hours* *more than 10 hours*	
	Health and Safety	Protection and safety of workers	What initiatives do you put in place for the protection and safety of workers? *Multiple answer choices* *HSE training* *Information campaigns* *Use of personal protective equipment* *Periodic inspections and maintenance of environments and equipment* *Other (specify)*	3.9 8.8 9.1
	Quality of Care	Accessibility to care and user satisfaction	Do you monitor user satisfaction? *Answer yes/no*	1.4 3.8 3.b 3.d 9.1 10.3 11.5
			What parameters do you take into account to monitor satisfaction? *Multiple answer choices* *Reception services* *Adequacy of infrastructure* *Competence of health care staff* *Waiting times for service delivery* *Quality of service* *Other (specify)*	

(*continued*)

		Telemedicine	What is the predominant origin of the users to whom telemedicine services are provided? *Multiple answers* *within the city* *within the region* *outside the region*	3.8 9.1 9.5 9.c
	Management and Protection of Privacy	Data management and processing	Does the company apply the following policies to manage data use and privacy issues? *Multiple answers* *Does the company have a publicly available policy on data use and privacy* *The company informs all users about the type of information it collects, how long it retains it, how it is used, and whether and how it is shared with other entities (public or private)* *Customers have the option to decide how their data may be used* *All email list-building and corporate email strategies are GDPR compliant* *Measures to protect user data from unauthorized access or disclosure* *Other (specify)*	12.8 16.3 16.10
	Global Citizenship	Local community involvement	What initiatives do you put in place to engage the local community? *Multiple answers plus answer choices* *Awareness campaigns* *Organ, tissue, and blood donations* *Fundraising* *Facilities and conventions* *Other (specify)*	3.8 9.1 9.5
		Social attractiveness	Concerning the Facility's health mobility, for the year under review, record a balance: *Multiple answers* *Active* *Passive* *Null*	11.2 11.3
		Supply chain responsibility	What initiatives do you put in place regarding supplier social responsibility? *Multiple answer choices* *Code of conduct for suppliers on CSR issues* *Integration of social clauses into contracts* *Evaluation of suppliers (e.g., surveys)* *Supplier inspections of workplaces* *Training of purchasing department employees on social aspects*	8.8 12.7
GOVERNANCE	Quality of the Governing Body	Governance goals	Have you had a Sustainability Plan in the last three years? *Answer yes/no*	12.8
		Corporate Bodies	What is the percentage of women in senior roles? *Multiple answers range* *None (0%)* *1-25%* *26-50%* *51-75%*	5.1 5.5 5.c 8.5 10.3 10.4

(*continued*)

Table 1.

Table 1.

			76-99% *100%*	
			Do you set performance-related remuneration targets? *Answer yes/no*	
			With a view to the gender pay gap, do you conduct analyses to monitor wage gaps? *Answer yes/no*	
		Risk management	Is there a risk management officer within the facility? *Answer yes/no*	
			Does the company detect, manage, and account for near misses? *Answer yes/no*	
		Sustainability reporting	Indicates, for the last three years, when the reporting document was published: *Multiple answers choices* *2020* *2021* *2022*	
			What national or international reporting standards were used to prepare the report? *Multiple answer choices* *GRI* *SASB* *IIRC* *GBS - research paper #9* *Other (specify)*	12.6 12.8
	Ethical Behavior	Business ethics and anti-corruption	Do you have a grievance system for reporting behavior that deviates from its Code of Ethics? *Answer yes/no*	
			Do you have an anti-corruption policy? *Answer yes/no*	
			What measures do you put in place to prevent corruption and bribery? *Multiple answer choices* *Training in corruption prevention* *Corruption and bribery risk assessment* *Audits to periodically monitor the effectiveness of ethics and compliance control systems* *Approval procedures for sensitive transactions (e.g., gifts, travel)* *Other (specify)*	16.5
			Have you adopted Model 231? *Multiple answers* *Yes* *No* *Partially*	
		Transparent administration	What information do you make available? *Multiple answer choices* *Transparent communication of financial performance* *Publication of the Annual Report* *Publication of the Code of Ethics* *Other (specify)*	16.10

Source(s): Authors' elaboration

5. Discussion

To facilitate understanding of the information included within the "ESG Processing Map," the following section discusses the contents.

5.1 Environmental

Although the primary goal of healthcare KIPOs is to provide high-quality care, it is becoming increasingly clear that such organizations impact the environment in many ways. Considering the environmental dimension, it can be said that the health sector has an essential impact because of its size (Cimprich *et al.*, 2019). The "Environmental" pillar addresses factors such as building management, energy and water use, antibiotic use, laboratory testing, construction work and handling hazardous chemicals that can generate emissions and waste (Cimprich *et al.*, 2019; Benedettini, 2022).

5.1.1 Environmental management system. The environmental management system (EMS) is a voluntary tool that any healthcare institution can implement to manage its environmental processes and ensure that national and international legal requirements are met. An efficient EMS minimizes the health system's negative impacts on the environment regarding waste generation, use of natural resources (e.g. energy, water), and emission of pollutants (e.g. for heating and transportation).

5.1.2 Climate change. Health organizations, whose goal is to promote and restore health, contribute in no small way to one of the most severe threats to human well-being and health: the climate crisis. Indeed, the health sector is estimated to contribute 4–5% of total greenhouse gas emissions to the atmosphere (Pichler *et al.*, 2019; MacNeill *et al.*, 2021). However, despite the significance of the problem, the attention of healthcare KIPOs to the ecological footprint appears to be relatively low. So, in order to contribute to the efforts put in place by the community to address the climate emergency, HCOs can implement numerous initiatives, such as maximizing the energy efficiency of buildings, replacing fossil energy sources with renewable energy, promoting digitalization and telemedicine and reducing the overutilization of unnecessary healthcare services.

5.1.3 Natural resource protection. Improving ecosystem quality and promoting sustainable management of natural resources is one of the main challenges facing HCOs in the Italian landscape. These entities are, in fact, vast users of energy, water, food, chemicals, metals and minerals, fibers (e.g. paper, textiles, wood) and other resources in general. For this reason, a rethink is required in health KIPOs, starting with the supply chain, so that procurement becomes an opportunity for the organization to accelerate the achievement of its environmental goals and meet the need for services and products more effectively.

5.1.4 Waste and pollution. The proper management of medical waste and wastewater is necessary and desirable to avoid a range of biological, chemical and radioactive risks that can affect both those working in the field, patients and visitors to healthcare facilities, and, more generally, the entire community.

Waste from HCOs is a relatively complex element of environmental sustainability to manage; suffice it to say that it is classified into multiple categories, and each of these must be disposed of using dedicated procedures. Differentiating medical waste correctly would prevent nonhazardous municipal waste from being disposed of along with chemical or infectious waste as it is appropriately sorted; in addition, proper sorting would allow for more remarkable recycling of materials (Mortimer *et al.*, 2018).

5.2 Social

The "Social" pillar considers different categories of stakeholders (patients, employees, communities, suppliers).

Among the main stakeholders of a HCO, it is necessary to take into account patients to whom health protection must be ensured, not only as an inalienable right of the citizen-user but as an interest of the entire community (Art. 32, Italian Constitution), of which the guarantee of care and its gratuitousness is an essential part (Flick, 2010; Denora, 2022). It is also important to keep in mind that KIPOs are characterized by the set of "knowledge" possessed by the people who work there, the organizational ways in which it is managed, and the relationships they have with their stakeholders (Baccarini *et al.*, 2008; Fiorani *et al.*, 2022). In this sense, employees and providers assume a central role in the delivery of care and the management of the HCO, as the quality of performance and the level of care provided depend directly on their activities (Bosco *et al.*, 2022).

Therefore, HCOs must commit to managing relationships and implementing sustainable strategies consistent with the expectations of each stakeholder.

5.2.1 Human rights. Human rights are those recognized by man simply based on his membership in the human race. Protecting these rights must be guaranteed regardless of the context, whether cultural, religious or other (UN, 1948).

The information generated by this category in the Human Rights Policy topic provides an overview of the capacity of HCOs to address and promote the protection of human rights for all people working in its "value chain".

5.2.2 Diversity and inclusion. The concepts of diversity and inclusion are closely interrelated. Specifically, in the work context, we refer to the company's commitment to achieving and maintaining maximum diversity to create a work environment where everyone feels valued and can achieve their full potential.

Therefore, in addition to a qualitative disclosure describing the company's policies and programs in the area of D&I, the topic "Equal Opportunity" is associated with disclosures designed to provide a quantitative measure of diversity within a hospital organization.

5.2.3 Protection of human resources. Protection of human resources refers to the central role of people and the common goal of their enhancement as an indispensable and strategic element for the development and success of the enterprise. In this regard, in addition to the careful selection and training of the organization's employees, a hospital organization should be concerned with listening to and involving them with a view to continuous service improvement that starts from the bottom up.

5.2.4 Health and safety. "Health and Safety" at work refer to a set of ideal conditions for workers' health, safety, and well-being that can be achieved by adopting appropriate preventive and protective measures. A health organization can avoid or minimize workers' exposure to work-related risks through these measures, reducing or eliminating occupational injuries and illnesses (Legislative Decree 81/08).

Health KIPOs, based on the latest legislative references, must update and promote the adoption of the latest safety regulations.

5.2.5 Quality of care. Quality of care can be defined as the complete satisfaction of those most in need of care, according to professional knowledge at the time, at the lowest possible cost to the organization and within limits set by health authorities and payers (Paccaud, 1993). The parameters that HCOs consider in assessing the quality of care are effectiveness, efficiency, appropriateness, legitimacy and equity.

Quality of care is also linked to the use of innovative technologies that also allow for the reduction of healthcare distances and performance inequity. Regarding social sustainability, healthcare should become more effective, efficient and equitable by optimizing production processes, using available technology, involvement of patients in care processes and understanding how to ensure holistic quality for all stakeholders involved (Kumbani *et al.*, 2012).

5.2.6 Management and protection of privacy. Consistent with European legislation, the national framework has also provided special protection for sensitive data and, in this

species, for health-related data (Comito, 2021) in order to reasonably regulate the relationship between the right to health and the right to privacy. The goal is to ensure a proper balance between the free movement of information functional the protection of health and privacy.

It is also appropriate for health KIPOs to have a cybersecurity system, given the IT evolution and digitization of health information (e.g. electronic health records and computerized medical record).

5.2.7 Global citizenship. "Global citizenship" refers to belonging to a broader community beyond the stakeholders who populate a HCO daily, encompassing the entire catchment area where KIPOs operate. The concept also includes political, economic, social and cultural interdependence and local, national and global interconnectedness. Establishing good relationships with external stakeholders enables the dissemination of knowledge and learning and the development of innovation. The institutional role and purposes at the head of public health KIPOs make stakeholder relations a crucial point in planning sustainability goals and in identifying operational arrangements for their pursuit and monitoring (Baccarini *et al.*, 2008).

5.3 Governance

Finally, the governance pillar itself constitutes an essential function, governance being fundamental to any type of organization as it defines the structure of decision-making processes within it.

5.3.1 Quality of the governing body. Clinical governance is a "strategy by which health care organizations hold themselves accountable for the continuous improvement of the quality of services and the achievement-maintenance of high standards of care, stimulating the creation of an environment conducive to professional excellence" (Stefanini and Zanichelli, 2002). For this reason, a sustainability strategy requires a definite orientation and "disruption" of the traditional organizational structure of healthcare KIPOs, where management is called upon to play an active role, taking responsibility for its decisions' social and environmental impacts.

5.3.2 Ethical behavior. The ethical and responsible choices that a HCO aims to make translate into the ability to combine the satisfaction of the highest standards of health and clinical research with other vital drivers such as environmental protection, business ethics, intellectual capital development, as well as the balancing of legitimate stakeholder expectations.

5.4 Social network analysis

Each of the topics considered in the "ESG Processing Map" has an essential bearing on an HCO's ability to generate sustainable shared value and is highly interdependent on the others. It is for this reason that these topics must be addressed in a familiar and shared vision. From this perspective, it is possible to identify the SDGs as an additional key to assess the alignment of each theme with sustainability aspects in the triple meaning of ESG. Granted that healthcare KIPOs can aspire to pursue ESG criteria, this study could offer initial evidence to support the claimed relevance of SDGs in healthcare KIPOs' disclosure policies.

To understand the impact of a sustainability strategy as applied to HCOs, the "ESG Processing Map" was analyzed in its entirety through the lens of the 2030 Agenda in order to (1) identify the links between the topics and the SDGs (2) and accrue awareness that the healthcare sector can strongly influence sustainability pathways. In addition, to analyze the positioning of HCOs sustainability topics analyzed in the "ESG Processing Map" concerning the 2030 Agenda Goals, *Social Network Analysis* was used, a methodology that allows visualizing the relationships between different variables in the form of a network (Wasserman and Faust, 1994; Otte and Rousseau, 2002). This approach is consistent with the "systemic" nature of the 2030 Agenda, which can be represented as a network of Goals

and targets (Le Blanc, 2015). It allows the interconnections between the SDGs and topics to be replicated, thus configuring the footprint of health KIPOs on the 2030 Agenda.

A graphical representation using UCINET software (Borgatti *et al.*, 2002) helps decipher the importance and relationship of the SDGs in the context of the topics. Specifically:

(1) the nodes of the network represent the SDGs of the 2030 Agenda and are marked by their respective icons. The size of the nodes is proportional to the number of times the SDGs are associated with the identified topics;

(2) the links between the nodes represent the connection between the SDGs. The thickness of the links is directly proportional to the relationship between Goals.

Figure 3 highlights how HCOs cover 13 out of 17 SDGs. These organizations aim to ensure universal access to equitable and equal healthcare delivery to all citizens (SDGs 3, 10, 16). They are, moreover, facilities characterized by the human factor by definition (SDG 8) because of the peculiar characteristics of the highly specialized personnel working in them and the quality of the services provided. It is for these reasons that it is necessary to invest in continuous learning and training processes (SDG 4), promote inclusive policies (SDGs 5, 10) and ensure the protection of workers (SDG 3).

As can also be seen graphically, SDG 9 appears to be a crucial Goal for HCOs, as the use of new technologies and investment in advanced infrastructure and R&D is an essential building block for improving the efficiency of services offered, reducing costs and increasing

Source(s): Authors' elaboration

Figure 3.
The impact of ESG processing map topics on the SDGs of the 2030 Agenda

the quality of care provided to patients. Finally, HCOs' consumption and production patterns influence natural resources, climate change and waste management (SDGs 6, 7, 12, 13). In conclusion, HCOs, given their size, the users served, and the economic and social importance of their activities can be considered "small communities" capable of producing direct and indirect impacts on the economy, society and the environment (SDG 11).

The study, moreover, highlights how the ESG Processing Map topics cover several SDGs simultaneously (63% of topics examined are associated with two or more SDGs). This analysis shows that more or less intense connections connect the Goals. Indeed, Figure 3 first highlights a strong connection between SDGs 3 and 9, in that the development of quality, reliable, sustainable and resilient health services by HCOs can support the well-being of individuals, with a focus on equitable and affordable access for all. Other strong connections are also evident between SDGs 5, 8 and 10: having policies for social accountability, human rights protection and diversity and inclusion enables HCOs to ensure decent work for women and men, including people with disabilities, and fair remuneration for jobs of fair value. Also, concerning the environmental sphere, it is essential to note the link between SDGs 9, 12 and 13, as reconfiguring the activities of HCOs from a more sustainable perspective allows for increased efficiency in resource use and cleaner and healthier industrial processes for the environment. It can be seen from this framework that the issues under consideration are cross-cutting and, if properly pursued, can contribute to the achievement of multiple targets found in the 2030 Agenda.

Table 2 shows how many times the Agenda 2030 targets are associated with each topic.

6. Conclusion

In recent years, public sector organizations have been facing common challenges and changes. Healthcare is directly and strongly linked to the quality of life of individuals and communities (Berry and Bendapudi, 2007). For these reasons, it must find innovative and efficient ways to meet the new needs of the population. At the same time, it must cope with financial cuts, budget deficits in public spending and the solid environmental impact associated with its activities. The transition of current healthcare systems is perceived as inevitable and necessary, and the ultimate goal is to increase their economic sustainability, reduce their impact on the environment and promote a new social perspective (Pereno and Eriksson, 2020).

Healthcare KIPOs are, therefore, influenced by these sustainability-related challenges. However, even today, due to a certain degree of indifference and a lack of literature on the topic, they appear to need more ability to integrate ESG logic within their business (Boone, 2012). The reasons for this delay lie, first of all, in the fact that since they are HCOs of a public nature, they are not subject to regulatory social reporting requirements, even in the face of the fact that the Corporate Sustainability Reporting Directive does not seem to address the "future" of public companies. Among the few contributions addressing sustainable accountability in the public context, the International Public Sector Sustainability Accounting Standard Boards has started a path to encourage sustainability implementation and reporting in public sector organizations (IPSASB, 2022). A further issue to consider is the need for more benchmarking among HCOs in service delivery because sustainability is not a discriminator for the survival and competitive development of healthcare KIPOs.

So, in order to answer the first research question (RQ1), the "ESG Processing Map" was developed as a tool capable of identifying the key issues specific to the healthcare sector, on which to intervene in sustainability in order to concretely help HCOs to place specific corrective and improvement actions over time concerning socioenvironmental and governance aspects.

Topics \ Targets	1.4	3.8	3.9	3.b	3.d	4.3	4.4	4.5	5.1	5.5	5.c	6.3	6.4	6.5	6.b	7.2	7.3	7.a	7.b	8.4	8.5	8.7	8.8	9.1	9.4	9.5	9.b	9.c	10.2	10.3	10.4	11.2	11.3	11.5	11.6	11.b	12.2	12.4	12.5	12.6	12.7	12.8	13.1	13.2	16.1	16.2	16.5	16.10	Tot Topics
Environmental Certifications																									1																								1
Other Emissions																								1			1																				8
Energy Efficiency																1	1	1	1	1			1		1	1																		1	1				7
Mobility																																1	1																2
Procurement of materials and services																				1				1													1		1										6
Water withdrawal													1	1	1																																		3
Management of municipal and assimilable waste																																			1														3
Wastewater management												1																																					1
Hazardous substances			1									1																											1										3
Human rights policies									1													1	1						1																			5
Equal Opportunities									1	1											1							1	1																			5
Growth and employment stability																					1		1						1																			3
Team member well-being			1																				1	1																								3
Training and upskilling						1	1	1																		1																						4
Protection and safety of workers			1																				1	1																								3
Accessibility to care and user satisfaction	1	1		1	1																			1					1					1												7
Telemedicine		1																						1		1	1																				4
Data management and processing																																														1		3
Local community involvement			1																					1		1																						3
Social attractiveness																																1	1														2
Sustainability responsibility																							1																1									2
Governance goals																																										1						1
Corporate Bodies									1	1	1										1								1	1																	6
Risk management																																																0
Sustainability innovation																																										1						2
Business ethics and anti-corruption																																													1			1
Transparent administration																																																1
Total targets	1	3	3	1	1	1	1	1	3	2	1	2	1	1	1	1	1	1	1	1	3	1	5	7	3	4	2	1	1	5	1	2	2	1	2	1	2	2	2	1	2	3	2	1	1	1	1	44

Source(s): Authors' elaboration

Table 2.
The correlation between ESG topics and SDGs targets

The tool, represented graphically as a flow chart, from a strategic point of view, can be interpreted as a "compass" that guides and orients the corporate strategy of health KIPOs toward sustainability.

The second relevant conclusion (RQ2) concerns introducing a multidimensional (ESG) assessment of healthcare KIPOs. Topics and disclosure on sustainability strategy should be considered in line with the SDGs of the 2030 Agenda. Through the SNA, the ESG Processing Map has been read as a network of SDGs. Through a topics-SDGs association, the aim was to assess the alignment between the content of the map and the 2030 Agenda target to more easily understand what extent the health sector can contribute to the pursuit of the SDGs. The analysis showed that 96% of the topics in the map are associated with at least one SDG; the studied topics cover 13 SDGs out of 17 (76%). It is also interesting to note the frequency with which each SDG is associated with each topic. Specifically, these are Goals 9 (Industry, innovation, and infrastructure), 8 (Decent work and economic growth), 12 (Responsible consumption and production), 3 (Good health and well-being), 10 (Reduced inequalities) and 11 (Sustainable cities and communities), in apparent analogy with the activities typically carried out by health organizations.

However, the study has a significant limitation that needs to be considered. The paper has a predominantly theoretical slant: due to the nature of the methodology conducted, the results that emerged need to indicate the degree to which ESG parameters are integrated into the strategy of HCOs. This limitation, however, is necessary because it allowed the authors to build a compass to guide sustainability strategies in a still underresearched sector. Future research perspectives include the need to overcome this limitation, using the map not only as a tool for guidance or improvement but also as a means of monitoring and verifying the state of the art of ESG practices integrated into the strategies of Italian hospital companies.

In conclusion, the proposed map has management implications as it enables the organizations under examination to have a more conscious and responsible orientation concerning the decisions and strategies to be undertaken with a view to sustainability. From a theoretical point of view, however, the proposed guidance tool will return, through the manuscript, replicable results. For this reason, it is considered adaptable to organizations of various sizes and operating in different sectors than public healthcare.

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