

Environmental sustainability in Italian mega-universities: an analysis of plans and reports

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Abstract

Purpose – Awareness of environmental sustainability is gaining momentum. Universities have a strategic responsibility to contribute to the ecological transition of the communities with which they interact. Disclosure can enhance universities' legitimacy by improving communication with stakeholders about the concrete actions taken to promote environmental sustainability. This study investigates whether and how Italian public universities integrate environmental sustainability into their strategic vision and accounting documents.

Design/methodology/approach – A summative content analysis was used to identify environmental sustainability topics in mandatory plans and voluntary sustainability reports of all Italian public mega-universities. The research also identified role performance behaviors underpinned by the substantive management approach of the legitimacy theory.

Findings – The results show that universities are progressively increasing the degree of environmental sustainability disclosure. However, environmental topics appear more often in reports than in plans, suggesting that environmental sustainability is often overlooked in universities' strategic vision. Notably, some universities – mainly located in Northern Italy – link the same environmental information in both plans and reports. This alignment is an example of role performance behavior, reflecting a coherent disclosure of sustainability actions and objectives.

Originality/value – This study highlights that a genuine commitment to environmental sustainability by public universities requires alignment of environmental disclosure between planning documents and sustainability reports. It identifies preliminary role performance experiences in public universities, which may provide valuable insights for academics and managers as well as for other public sector entities. The findings also emphasize the need for institutional sustainability guidelines specifically designed for universities.

Keywords Universities, Environmental sustainability, Sustainability reporting, Environmental disclosure, Sustainability planning

Paper type Research article

1. Introduction

Universities play a critical role in advancing knowledge within their communities and in shaping future leaders, researchers, and policymakers by educating current and future graduates (Thomassen, 2023). Consequently, they are well-positioned to lead sustainable initiatives aimed at achieving the United Nations 2030 Agenda and its 17 Sustainable Development Goals (SDGs) (Guthrie *et al.*, 2020), particularly in addressing environmental, social, and governance (ESG) challenges. In this context, universities' contributions to sustainability and environmental stewardship are gaining increasing recognition and are a prominent topic among accounting researchers globally (Bebbington and Larrinaga, 2014; Stein, 2024). While their social role in regional development and in acting as a social elevator is well established in



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their institutional missions, greater emphasis should be placed on environmental responsibility to strengthen universities overall ESG commitment (Flórez-Parra *et al.*, 2021). University research can contribute to addressing critical issues such as climate change, biodiversity loss, and other forms of ecological degradation (Stein, 2024). Moreover, universities can actively foster environmental sustainability (ES) by promoting pro-environmental behavior on campuses and among students (Adams *et al.*, 2018). In this context, it is critical to examine how institutions engage with ES, understood as their overarching focus on environmental policies and practices (Barros *et al.*, 2020). Accounting and accountability mechanisms, along with sustainable innovation (Bebbington and Larrinaga, 2014), can enhance progress toward sustainable development. Universities should disclose environmental matters across their research, teaching, and third-mission activities. Such disclosures should be effectively communicated through reporting documents, strategic plans, and other formal dissemination channels (Saha *et al.*, 2021). University sustainability reporting could serve as a benchmark for other educational institutions and sectors.

Only recently have accounting scholars begun to explore environmental reporting in universities (Flórez-Parra *et al.*, 2021). Moreover, there is still a lack of sustainability reporting guidelines specifically tailored to the university context (Fonseca *et al.*, 2011; Lozano, 2011; Huber and Bassen, 2018; Moggi, 2023). The Italian RUS-GBS—comprising the Network of Universities for Sustainable Development (RUS) and the Study Group for Social Reporting (GBS)—has recently launched an initiative to support and monitor sustainability reporting in Italian universities (RUS-GBS, 2021; GBS, 2024). However, the planning of environmental initiatives within universities remains largely underexplored. Few studies have addressed sustainability planning and reporting together, and none have focused on environmental disclosure (Farinha *et al.*, 2019; Di Nauta *et al.*, 2020; Melles *et al.*, 2022). Research investigating the alignment between environmental disclosure in planning and reporting documents is currently limited. To the best of the authors' knowledge, no previous study has examined the coherence between environmental information in these two types of documents in the university setting. To address this gap, the present study investigates whether and how Italian public mega-universities incorporate the environmental dimension of sustainability into both their Integrated Plans (IPs) and Sustainability Reports (SRs) from the 3-year period of 2018–2020 to the period 2021–2023. The IP is a mandatory three-year planning document that outlines organizational and individual performance objectives, including environmental objectives, if available. In contrast, the SR is an annual, voluntary report that communicates sustainability-related activities and outcomes. Notably, environmental disclosure is not mandatory in either of these documents. Analyzing its presence can shed light on universities' actual commitment to ES. The inclusion of such information can enhance institutional legitimacy by demonstrating concrete efforts to meet societal expectations—that is, what Ashforth and Gibbs (1990) and Patten (2020) refer to as “role performance behaviors”. These behaviors, expressed through the integration of the same ES information in both plans and reports, increase transparency and accountability, thereby reinforcing universities' legitimacy (Brusca *et al.*, 2018). Within this framework, the study also seeks to identify cases of role performance underpinned by the substantive management approach of the legitimacy theory (Ashforth and Gibbs, 1990; Patten, 2020).

Two research questions (RQs) drive this research.

- RQ1. Whether and how have Italian mega-universities included environmental sustainability in their mandatory plans and voluntary sustainability reports?
- RQ2. Can cases of role performance be identified through the inclusion of environmental sustainability in both plans and reports of Italian mega-universities?

The findings underscore the growing prominence of the environmental dimension of sustainability within universities, aligning with the global intensification of environmental policy efforts (Stein, 2024), e.g. major initiatives such as the Next Generation EU program.

Notably, the Conference of Italian University Rectors established the Network of Universities for Sustainable Development in 2015 to support the implementation of the SDGs through the promotion of good practices and the development of indicators related to environmental impact.

Building on the Italian experience, this study offers a twofold contribution. First, it identifies prevailing trends and critical issues in the disclosure of ES within universities. Second, it provides practical implications for academics, practitioners, and policymakers seeking to address stakeholders' demands and foster the integration of ES in higher education, thereby strengthening the institutional legitimacy of universities.

The remainder of the article is structured as follows: [Section 2](#) reviews current literature on ES in university planning and reporting and introduces the theoretical framework. [Section 3](#) outlines the research methodology. [Section 4](#) presents the results of the content analysis, while [Section 5](#) discusses the findings and their broader implications. Finally, [Section 6](#) addresses the study's limitations and proposes avenues for future research.

2. Background and literature review

2.1 *Environmental sustainability in universities' plans and reports. The state of the art*

Universities play a pivotal role in advancing ES policies and objectives that align with the needs of the communities with which they engage ([Saha et al., 2021](#)). Moreover, the implementation of concrete ES actions represents an acknowledgment of the institutions' responsibility in responding to societal expectations. Actions include (1) reduction of energy consumption ([Bulunga and Thondhlana, 2018](#); [Barros et al., 2020](#)), (2) water accountability ([Egan, 2014](#)), (3) waste management strategies ([Nolasco et al., 2020](#)), (4) university greening initiatives ([Anthony Jr, 2021](#)), (5) implementation of sustainable mobility initiatives, reduction of carbon emissions, and other initiatives to combat global warming and respond to climate change ([Saha et al., 2021](#); [Baig et al., 2022](#)), (6) promoting research, conservation and education on biodiversity ([Liu et al., 2021](#)), and (7) dematerialization (i.e. replacing printed documents with digital ones) ([Chowdhury, 2012](#)). These actions align with the principles of the EU Circular Economy (CE) conceptual framework, which promotes circularity in production processes to foster the transition to a circular economy.

Faculty and staff leaders may significantly contribute to promoting campus sustainability ([An et al., 2020](#)), whereas collaboration among students, academics, and external stakeholders can support the development of a shared sustainability vision ([Srivastava et al., 2019](#)).

Studies on environmental disclosure at universities pertain to the broader literature debate on sustainability disclosure in higher education. Although interest in this area is growing, *sustainability reporting* remains in its early stages—both in terms of adoption rates and the quality of disclosures ([Lozano, 2011](#); [Alonso-Almeida et al., 2015](#)). When present, ES disclosure tends to focus on greenhouse gas emissions, carbon reporting, energy, water, biodiversity, waste recycling, and transportation reporting practices ([Fonseca et al., 2011](#); [Lopatta and Jaeschke, 2014](#); [Gamage and Sciulli, 2017](#); [An et al., 2020](#)). In Italy, as of 2023, half of public universities had adopted sustainability reporting practices, with mega-universities and universities located in the north of the country being the most engaged ([Soverchia, 2023](#)). Moreover, unlike social performance data, environmental aspects are largely overlooked on the websites of mega-universities ([Nicolò et al., 2021](#)). Similar imbalances between the environmental and social information disclosed have also been reported in public sector sustainability reporting across other European countries ([Greiling et al., 2015](#)).

Sustainability reporting in universities remains limited, primarily due to its weak integration into strategic planning and management processes ([Adams, 2013](#)). To address this challenge, [Adams \(2013\)](#) proposed a sustainability management framework that promotes the incorporation of sustainability into institutional strategies and planning documents.

Research on *sustainability planning* in higher education has demonstrated a link between a sustainability vision and its inclusion in strategic documentation (Larrán Jorge *et al.*, 2016; Bieler and McKenzie, 2017; Filho *et al.*, 2018; Şimon *et al.*, 2020). However, several studies have highlighted an overall lack of commitment to sustainability planning in universities (Melles *et al.*, 2022). In many cases, environmental strategies receive less attention than other sustainability dimensions do (Larrán Jorge *et al.*, 2016). Overall, the implementation of ES strategies in planning processes remains at an early stage (Bieler and McKenzie, 2017; Şimon *et al.*, 2020). As Filho *et al.* (2018) argue, the absence of structured planning constitutes a major barrier to advancing sustainability within universities worldwide. The Italian context reflects similar dynamics. Although universities have begun to consider sustainability in their strategic plans (Guthrie *et al.*, 2020; Caputo *et al.*, 2021), the adoption of concrete ES strategies remains limited (Di Nauta *et al.*, 2020). A case study by Fissi *et al.* (2021) on the University of Florence revealed that the institution's sustainability efforts are hindered by the lack of integration of sustainability goals into strategic planning.

While some research has examined the integration of *sustainability into both planning and reporting*, such studies remain sparse and often fail to focus specifically on the environmental dimension (Farinha *et al.*, 2019; Di Nauta *et al.*, 2020; Melles *et al.*, 2022). For example, Guthrie *et al.* (2020) reported that the University of Bologna incorporates various UN SDGs in its SRs in alignment with strategies and goals, and its strategic plan foresees a link with reporting. Melles *et al.* (2022) observed growing alignment between planning and reporting, particularly regarding campus carbon neutrality. In contrast, Farinha *et al.* (2019) reported that Portuguese public universities generally fail to integrate sustainability across both domains. Similarly, Di Nauta *et al.* (2020) reported that Italian universities provide limited environmental disclosure and lack concrete development strategies, despite growing awareness of their role in advancing the SDGs. Thus, the integration of ES into university governance remains an ongoing challenge, even as the number of environmental initiatives continues to grow (Baig *et al.*, 2022; Moggi, 2023).

Universities need to develop a sustainability culture that includes the tight link between sustainability reporting and planning (Adams *et al.*, 2018). Environmental aspects should be integrated into university planning and decision-making processes so that the management, staff, and entire organization can be involved in sustainability management and corporate operations. However, low financial resources are among the main barriers to sustainability in universities, which require planning, dedicated financial resources, and greater reporting actions (Filho *et al.*, 2018; Melles *et al.*, 2022). Furthermore, environmental disclosure remains voluntary in universities. This paper advocates for mandatory ES disclosure to be included in university plans and reflected in reports.

A further obstacle to effective ES disclosure is the absence of dedicated guidelines tailored to the higher education sector. While international standard-setting bodies such as the Global Reporting Initiative (GRI) and the International Integrated Reporting Council (IIRC) promote sustainability disclosure, their frameworks are not specifically designed for universities. The GRI 300: Environmental Standards provides global benchmarks for ES reporting, using performance indicators to evaluate outcomes. Some universities have adopted GRI guidelines in their sustainability reports (Huber and Bassen, 2018). Similarly, the IIRC's 2013 Integrated Reporting (IR) Framework encourages organizations to disclose holistic sustainability performance through a unified document. It outlines six types of capital—financial, manufactured, intellectual, human, social and relationship, and natural—of which environmental concerns fall under the natural capital category. This framework has been applied by both an Italian public university to support the implementation of various UN SDGs (Guthrie *et al.*, 2020) and a Spanish university (Brusca *et al.*, 2018).

More recently, the 2023 European Sustainability Reporting Standards (ESRS) were introduced to harmonize sustainability reporting across sectors. However, these standards, like their predecessors, are not tailored to the specific needs of higher education institutions. Their adequacy in addressing university-specific sustainability challenges remains questioned

(Moggi, 2023). The European Union has also launched the Circular Economy Action Plan. The plan emphasizes environmental policy integration in areas such as waste and food-waste reduction, the application of life-cycle assessment in public procurement, and strategies for achieving a sustainable built environment.

Other tools have been specifically designed for use in universities but are intended for narrower uses. For example, the *Graphical Assessment of Sustainability in Universities* (GASU) and the *American Sustainability Tracking, Assessment, and Rating System* (STARS) (Fonseca *et al.*, 2011; Lozano, 2011) have a regional rather than a global focus (Lubinger *et al.*, 2019). Accreditation agencies such as the “Principles for Responsible Management Education” (PRME), the “American Accredited School of Business” (AACBS), and the “European Quality Improvement System” (EQUIS) promote the inclusion of sustainable development policies and the implementation of SDGs, but they are designed for business schools. In 2021, the Italian RUS-GBS issued a preliminary standard to assist Italian universities in sustainability reporting, including the environmental impact of university activities (RUS-GBS, 2021), but its efficacy has yet to be evaluated because of its recent release. The GBS Observatory (2024) aims to monitor sustainability reporting and sustainability aspects disclosed in plans at Italian universities. Starting in 2025, the Observatory began a structured monitoring of the status and extent of sustainability practices at Italian universities. The results will provide valuable insights into the diffusion and evolution of these practices in the Italian academic context (GBS, 2024).

2.2 An overview of the legitimacy theory: the substantive management approach

This study draws on the legitimacy theory, which has been widely used in accounting research to examine organizations’ disclosures aimed at meeting societal expectations (Patten, 2020). According to this theory, organizations interact with society through a “social contract” by aligning their values and operations with stakeholders’ expectations to maintain organizational legitimacy (Deegan, 2002). In this context, organizations are also expected to be accountable for their actions by ensuring transparency and ethical conduct. Organizations seek to maintain or enhance their legitimacy through various strategies. The substantive management approach reflects real actions in corporate practices; conversely, the symbolic management approach aims to appear compliant with social expectations without implementing real changes (Ashforth and Gibbs, 1990). For example, in the hospital sector, the need to gain legitimacy from stakeholders has often led to the adoption of a symbolic management approach to reporting (Andrades *et al.*, 2021).

Sustainability efforts and related disclosures help universities increase their legitimacy within the community with which they interact (An *et al.*, 2020). However, to truly demonstrate legitimacy, ES reporting and accountability must be integrated into decision-making and management processes (Adams, 2013). This enables universities to demonstrate substantive rather than symbolic actions, which, in turn, merely respond to societal and regulatory pressures and do not reflect real actions. In line with the substantive legitimacy theory, this study posits that the disclosure of the same ES topic in both the planning and reporting stages reflects real actions genuinely undertaken. These actions constitute role performance cases within universities. In particular, the lack of coherence between planning and reporting documents may undermine the credibility of universities’ ES behaviors in the eyes of their stakeholders.

3. Materials and Methods

This study is based on a qualitative summative content analysis of IPs and SRs of all Italian public mega-universities to determine whether and how they disclose ES information and to identify role performance cases through the inclusion of ES in both plans and reports. The focus on ES-related information reflects the critical importance of environmental topics

among ESG factors. Moreover, while universities are social institutions and therefore the social (S) dimension is embedded in their core mission, their commitment to the environmental (E) dimension of sustainability requires planned actions.

For this study, our sample includes Italian mega-universities. Mega-universities have large academic communities comprising students, faculty, and staff. They also have larger spaces and conduct more complex activities on campuses than smaller universities, therefore they are likely to have a greater impact on the environment (Nolasco *et al.*, 2020). Furthermore, some authors have noted that large universities have extensive leadership teams and hold greater importance in the national context. Additionally, they emphasize that size is one of the main factors influencing universities' efforts to implement sustainability practices (Flórez-Parra *et al.*, 2021).

Mega-universities were selected according to the Italian Social Investment Studies Centre (CENSIS) classification, namely, those with a population of more than 40,000 students. These universities—ten at the time of this research—are among the oldest worldwide, with Bologna being the first in the world, founded in 1088, and Naples, founded in 1224, being the first state university ever. With such a legacy, Italian mega-universities hold their reputation, prestige, and legitimacy in high regard to society and stakeholders.

In addition, based on official data provided by the Ministry of University and Research, mega-universities accounted for approximately 40% of all 67 public universities in Italy (at the time of this study) in terms of the number of both students and academic staff. By focusing on mega-universities, this study captures valuable ES practices that may also be applicable to smaller universities.

3.1 Sample description and data collection

Forty mandatory three-year IPs and 24 voluntary SRs of mega-universities were collected. An assumption for data collection was that all the documents were published on university websites from October 2018 to May 2023. The IPs are published on the organizations' websites in the "transparent administration" section. Both IPs and SRs are approved internally by university bodies (e.g. Rector, general managers, and boards). Once published, these documents serve to communicate university activities that are open to evaluation by the public, including prospective students. SRs are voluntarily prepared by Italian universities and are not subject to external auditing, which may affect the credibility of sustainability disclosures.

The IPs evaluated cover four three-year periods (2018–2020; 2019–2021; 2020–2022; and 2021–2023). SR documents from the years 2018, 2019, 2020, and 2021 (when available) were considered to match the IP period. Different reports, either focused on the environment (i.e. environmental reports) or presumably containing environmental information (i.e. sustainability reports or social reports), were considered SRs for this analysis. Environmental reports are purposely designed to disclose information on the ES dimension, whereas sustainability and social reports cover a wider range of sustainability-related information, including the environment. Although the University of Catania did not publish SRs in the period considered, it was not excluded from the sample, as it published its IPs. Examining IPs and SRs from different periods allowed us to detect trends over time and to observe whether and how the attention that universities place on ES in their plans varied.

3.2 Content analysis

Content analysis is a research technique often used to analyze the content of environmental and social reporting. It systematically evaluates textual material by interpreting and coding this material (Krippendorff, 1980; Unerman, 2000). We used the summative content analysis, which complements the quantification of content, i.e. how many times the identified keywords appeared in the documents—with a qualitative interpretation of their meaning within the context in which they are used (Hsieh and Shannon, 2005). Keywords concerning environmental themes were analyzed in the context of the sentences to ensure the qualitative interpretation of the words

within the text. Keywords were identified by drawing on specific literature that addressed the areas of ES relevant to the university setting (see [Section 2.1](#)). Nine potential ES disclosure categories and the corresponding keywords were identified, which also match the RUS-GBS environmental topics outlined for the Italian context (e.g. energy and sustainable buildings, water, waste, and sustainable mobility). A coding scheme was constructed and used to code ES disclosure in IPs and SRs ([Table 1](#) and [supplementary Appendix 1](#)). It describes the main environmental themes relevant to universities (the categories), the most pertinent keywords for each category, and the selected references used to identify them. This approach enabled the coding of all the information the universities reported in each category.

As a qualitative method, content analysis is inherently subject to bias related to authors' subjectivity in data interpretation. To mitigate this bias, rigorous coding procedures were established *a priori*. The coding rules were defined before searching for keywords. To ensure the reliability of the coding procedure and to increase intercoder reliability ([Krippendorff, 1980](#)), the two authors defined the rules to be followed for manual interpretation and counting of keywords in the IPs and SRs before the analysis. They separately searched the keywords in a subsample of 13 documents—both plans and reports. Then, they met to compare and discuss the results and manage ambiguities using the coding scheme. Researchers focused especially on borderline cases to determine which category certain expressions should fall under (for example, the difference between “green” and “biodiversity”, or “gas emissions” and “mobility”). They discussed and jointly resolved these cases using contextual interpretation based on coding criteria. In subsequent documents (in addition to the subsample), it was sufficient to check the concordance of the number of occurrences to determine the validity of the data collected. The results were in complete agreement with both the numerical terms and the terms identified.

By analyzing the documents for the content analysis, the research also ascertained whether the documents had a section specifically dedicated to environmental information. Finally, the *preparers* who drafted and curated each document were identified.

4. Results

A total of 64 documents (40 IPs and 24 SRs) were analyzed. Given the significant variation in word count across the documents—from 8,508 (Catania IP 2019–2021) to 126,909 (Bari IP 2018–2020) and from 2,381 (Milan SR 2020) to 81,952 (Bologna SR 2019)—values in both IPs and SRs were standardized per 100,000 words.

4.1 Environmental sustainability in the integrated plans and sustainability reports

The content of the 40 university IPs was examined to identify the nine ES disclosure categories and keywords ([Table 1](#)). The term “environmental sustainability” appeared in the IPs of all universities starting from the 2020–2022 period. In the first period (2018–2020), four universities (Catania, Milan, Naples, and Rome) focused on isolated aspects such as dematerialization or energy and mobility policies but did not use the term “environmental sustainability”. Notably, their ES disclosure improved in subsequent periods ([Supplementary Table I](#)). The other six universities (Bari, Bologna, Florence, Padua, Pisa, and Turin) integrated ES information more coherently across all periods. Overall, all universities showed an increased level of ES goal disclosure in their IPs, although information on carbon emissions, biodiversity, and green and water policies remains marginal. [Figure 1](#) illustrates this trend in IP documents across the nine categories, enabling comparisons by university and across periods. All ten universities included some ES objectives in the third period examined, albeit not systematically. Notably, some universities allocated financial resources and set performance indicators and timelines.

A screening of institutional websites revealed that at least one voluntary SR document containing potential ES information was published by nine universities. The University of

Table 1. Coding scheme

ES disclosure categories	Category description	Literature references	Keywords (per ES disclosure categories)
Environmental sustainability (ES)	Overall approach, policy or vision toward ES	Barros <i>et al.</i> (2020)	“environmental sustainability”; “sustainability”; “responsibility” (associated with the environment in the same statement); “environmental impact”; “environment”; “environmental policy/policies”
Energy	Energy resource management (e.g. electricity consumption reduction; energy consumption management, energy-saving behaviors; use of renewable sources, energy and sustainable buildings)	Bulunga and Thondhlana (2018) , Barros <i>et al.</i> (2020)	“energy” (used both as a noun and as an adjective in the Italian language); “electricity”; “renewable”; “buildings”
Water	Water resource management (e.g. water consumption and pollution reduction; deployment of rainwater harvesting systems; water dispensers)	Egan (2014) , Barros <i>et al.</i> (2020)	“water” (including its synonym in the Italian language)
Green	Green campus initiatives/practices (e.g. green curricula, green heritage and spaces, green purchasing initiatives, etc.)	Anthony Jnr (2021)	“green” (in both English and Italian)
Waste	Resource and waste management (e.g. waste generation reduction, including food-related waste and packaging; encouragement of resource recovery and recycling; promotion of plastic waste recycling; implementation of waste disposal strategies and separate collection of recyclable waste material)	Barros <i>et al.</i> (2020) , Nolasco <i>et al.</i> (2020)	“waste”; “separate collection”; “disposal”; “recycling”; “circular economy”
Mobility	Transportation management, i.e. implementation of sustainable mobility initiatives (e.g. encouraging public transport, cycling and eco-friendly vehicles)	Barros <i>et al.</i> (2020) , Baig <i>et al.</i> (2022)	“mobility”; “sustainable mobility”; “transportation”
Carbon emissions	Contribution to a zero-carbon society building to address climate change (e.g. greenhouse gas/carbon emissions reduction; carbon footprint assessment)	Saha <i>et al.</i> (2021)	“emissions”; “carbon”; “gas”; “climate change”
Biodiversity	Biodiversity research, conservation, and education	Liu <i>et al.</i> (2021)	“biodiversity” (in both English and Italian)
Dematerialization	Dematerialization of processes or administrative procedures for paper consumption reduction	Chowdhury (2012)	“dematerialization”; “dematerialized”; “paper”

Source(s): Authors’ own work

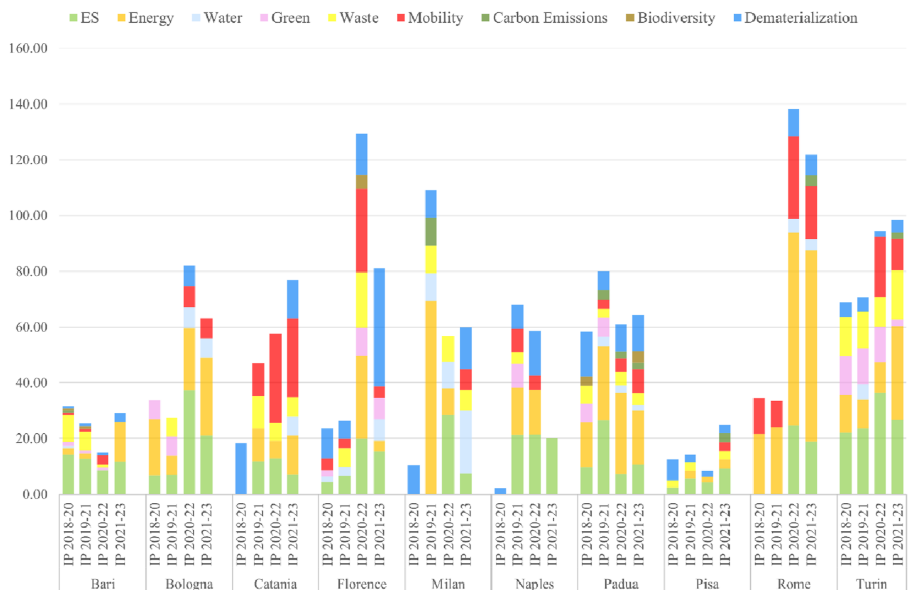


Figure 1. Stacked bar chart showing the trend of the ES disclosure categories in the IP documents over the 4 three-year periods., **Source:** Authors' own work

Catania has not yet published any SR document but has a webpage dedicated to ES. Bologna University was the first to publish an SR in 2012, followed by the universities of Turin and Florence. Bologna also produced specific UN-SDG reports, whereas most other universities include SDG disclosure in SRs. The environmental disclosure in SRs covered all nine categories identified, although with different levels of significance and minimal disclosure on dematerialization (Supplementary Table II). Many reports significantly disclose energy and/or waste issues. Overall, unlike IPs, SRs include data on carbon emissions, biodiversity, green, and water. While carbon emissions disclosure is virtually absent in IPs, it is significantly addressed in the SRs of various universities. Figure 2 shows the trends in environmental disclosure in reports across the nine ES categories, facilitating comparisons at both the individual university level and among universities.

The analysis revealed that universities use different approaches to ES disclosure in plans and reports. In IPs, ES information is dispersed throughout the document without a dedicated section, whereas in SRs, the information is slightly more structured, although it is not consistently organized across the documents. The methodological notes included in most SRs showed the lack of uniform reporting methodology. Some universities apply GRI standards, others use both GRI and Italian RUS-GBS standards, and others rely on the results of their participation in global university sustainability rankings such as the Green Metric. Information about document preparers was also recorded where available (Table 2).

4.2 A summary of ES in IPs and SRs with cases of role performance

Role performance cases were defined in this study as the disclosure of the same ES topic in both plans and reports. Clear cases of role performance were identified across the nine ES disclosure categories (Table 3).

4.2.1 General “environmental sustainability” category. The analysis of plans and reports revealed that all Italian mega-universities are now focusing on ES by providing environmental information. Specifically, recent IPs (i.e. 2020–2022 and 2021–2023) refer to the promotion of

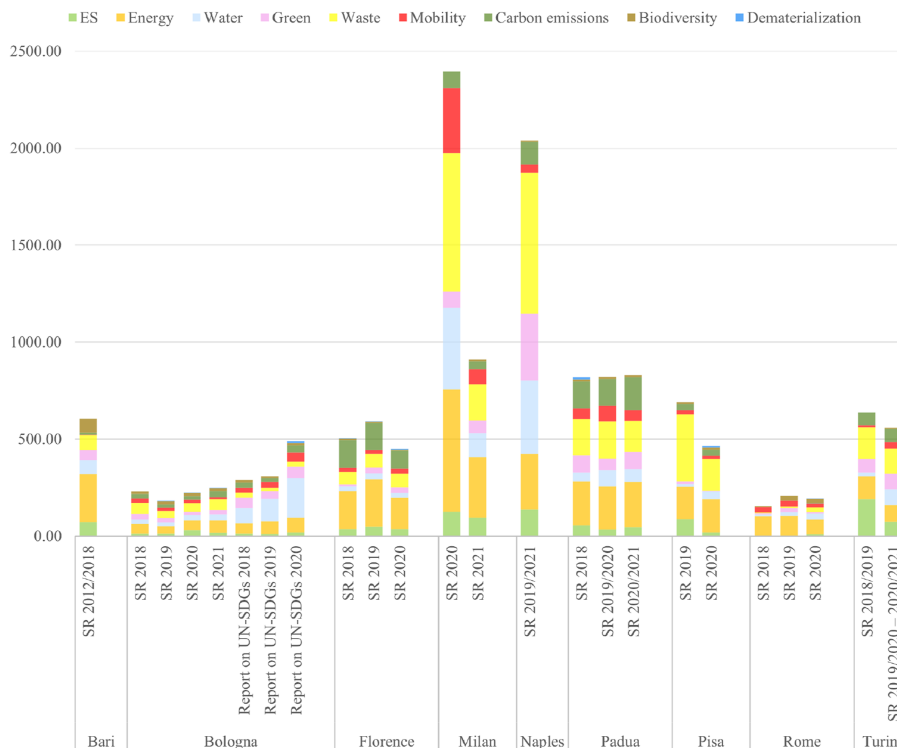


Figure 2. Stacked bar chart showing the trend of the ES disclosure categories in the SR documents. **Source:** Authors' own work

ES as a generic strategic objective or principle. However, information on planned ES interventions in IPs remains limited to a few performance indicators, namely, energy efficiency, separate waste collection, green purchasing policies, and public transportation incentives. Conversely, the SRs provide extensive disclosures on their ES vision and ongoing initiatives. SRs also highlight ES integration in teaching and research, with environmental subjects in courses and degree programs, and research projects and publications (Supplementary Table III). These differences may be attributed to the distinct functions of the documents and the greater level of detail on sustainability of SRs compared with IPs. While the IPs are designed to plan comprehensive university performance objectives, of which ES should be a part, the SRs are sustainability-specific reports intended to communicate the efforts made in this respect, including ES initiatives.

4.2.2 The “energy” category. The “energy” category is widely represented in both IPs and SRs and mainly concerns ES performance in terms of reducing energy consumption, redeveloping buildings to increase energy efficiency, and producing energy from renewable sources. Interestingly, all universities are engaged in sustainable building interventions to improve energy efficiency and meet consumption reduction goals. The corresponding energy targets were stated in their IPs. For example, the University of Bologna included energy performance targets in all its IPs (i.e. “+ 15% of electricity produced” and “keep 100% of electricity acquired from renewable sources”), and the related performance achieved is disclosed in its annual SRs. Similar cases of role performance have been identified for Florence, Padua, Rome, and Turin, as these universities provide energy disclosure that is coherently reported in their IPs and SRs. To reduce energy consumption, some universities

Table 2. Preparers of the IPs and SRs indicated in the documents of the ten Italian mega-universities

University	Documents: IPs and SRs	Offices/faculty members/technical and administrative staff involved in drafting and curating the documents
Bari	IPs Environmental report 2012/2018	NA* Rectorate and Cabinet Office. A working group coordinated by a faculty member was set up for the purpose
Bologna	IPs Social report 2018; Social report 2019; Social report 2020 Social report 2021 Report on UN-SDGs 2018; Report on UN-SDGs 2019; Report on UN-SDGs 2020	General Management; Finance and Subsidiaries Division; Staff Division Finance and Subsidiaries Division – Evaluation and Strategic Planning Unit Staff of the Rector and General Manager – Evaluation and Strategic Planning Unit AlmaGOALS – Communication Unit** ; Finance and Subsidiaries Division – Evaluation and Strategic Planning Unit
Catania	IPs –	NA* –
Florence	IPs Social report 2018; Social report 2019; Social report 2020	NA* Two faculty members. A working group was set up for the purpose
Milan	IPs The State University for sustainability 2020 Sustainability report 2021	NA* Different sustainability projects were coordinated by faculty members
Naples Federico II	IPs Sustainability report 2019–2021	NA* Working group of faculty members (Rector's delegate for sustainability policies, sustainability commission members, and technical support group)
Padua***	IPs Sustainability report 2018; Sustainability report 2019–2020; Sustainability report 2020–2021	General management; Finance and Planning Division Management Control Office Public Engagement Office – Involvement and Sustainability Unit of the Communication and Marketing Division The Mobility Manager and the Energy Manager and members of the <i>Network of Universities for Sustainable Development</i> also contributed
Pisa	IPs Sustainability report 2019 Sustainability report 2020	Institutional Communication Department Overall involvement of faculty and staff members University Sustainability Commission (team coordinated by a faculty member)
Rome “La Sapienza”	IPs Social and sustainability report 2018; Sustainability report 2019; Sustainability report 2020	Strategic Support and Communication Division – Strategic Support and Planning Office Strategic Support and Communication Division – Communication Office
Turin***	IPs Sustainability report 2018/2019; Sustainability report 2019/2020–2020/2021	Institutional Activities, Planning, Quality and Evaluation Department – Innovation, Planning and Development of Institutional Activities Staff Rector's Delegate for Communication with the collaboration of faculty and technical and administrative staff members

Note(s): * NA = Not Available. ** AlmaGOALS is a project for the overall commitment of Bologna University (also called Alma Mater Studiorum) to promote the SDGs of the UN 2030 Agenda. A specific website section is also devoted to AlmaGOALS. *** The Universities of Padua and Turin share a mail address for sustainability information

Source(s): Authors' own work

Table 3. Examples of clear role performance cases identified in relation to explicit performance targets

Category	University	Disclosure in IPs: Planned environmental performance objectives	IP document year	Disclosure in SRs: Reported environmental performance results	SR document year
Energy	Bologna	Targets: (i) + 15% of electricity produced; (ii) keep 100% of electricity acquired from renewable sources	2020/2022; and 2021/2023	(i) Energy is self-produced by photovoltaic plants for a total area of 8,443 m ² . Increase in the energy produced by the four complexes (1,258,260 kW-hours in 2021) (ii) All the energy acquired came from renewable sources. The renewable origin of the sources was certified	2020; and 2021
	Rome	Target: reduce energy consumption and invest in energy efficiency	2020/2022	In 2020, the University continued its commitment to energy efficiency. It by through energy redevelopment interventions that led to significant energy and cost savings	2020
Water	Milan	Target: installing water houses	2021/2023	The objective of reducing the use of plastic was achieved by installing four water houses that also dispense free and safe water	2021
Green	Turin	Target: consolidate and enhance the environmental sustainability policies implemented by the “Green Office UniToGO” and by the other relevant structures (Objective 1.3.4)	2021/2023	“UniTo Green Office” promotes environmental sustainability initiatives. The environmental sustainability strategy in the UniToGO Action Plan aims to promote the achievement of Objective 1.3.4. [...]	2019/2020–2020/2021
Waste	Florence	Target: strengthening the separate collection through Ecotappe* (waste collection points).	2020/2022	Containers for separate waste collection have been numerically enhanced	2020
	Padua	Target: new special waste collection and disposal service with particular attention to sustainability and energy recovery criteria	2020/2022	In 2020, 89.7% of the special waste produced in the University was sent for recovery (a value higher than 81.5% in 2019). With the new tender (2020–2021 and 2022–2023) it was established that at least 50% of the hazardous and non-hazardous special waste of chemical and sanitary origin produced in the University should be recycled	2020/2021

(continued)

Table 3. Continued

Category	University	Disclosure in IPs: Planned environmental performance objectives	IP document year	Disclosure in SRs: Reported environmental performance results	SR document year
Mobility	Florence	Target: feasibility study for the purchase of bicycles and setting up racks	2020/2022	Questionnaires were administered to systematically collect data about the move modes of the university community, the services, and the facilities of the campus	2020
	Rome	Target: creation of velo-stations	2018/2020	To promote the use of bicycles and car sharing, eight velo-stations were designed and installed	2018
Carbon emissions	Padua	Target: reduction of the carbon footprint, acting on energy sources and mobility	2019/2021; 2020/2022; and 2021/2023	The calculation of the University's carbon footprint is an initiative born in 2018 that aims to quantify the environmental impact and then effectively guide the actions undertaken to reduce and contain annual emissions. Compared to 2018, there was an 18% reduction in overall University emissions (SR 2019–2020). Compared to 2019, there was a 28% reduction in overall University emissions (SR 2020–2021)	2019/2020; and 2020/2021
Biodiversity	Florence	Target: enhancement and cataloging of museum botanical collections	2020/2022	The botanical collections are cataloged in paper or digital form. In 2020, 26,284 cards were completed. The staff of the Botanical Garden cared for 4,000 plants	2020
Dematerialization	Padua	Target: digitization of processes and dematerialization of documents	2018/2020	Thanks to the introduction of digital procedures, around 15 tons of paper were saved in 2018	2018
Source(s): Authors' own work					

have installed photovoltaic systems (Bologna, Pisa, Rome, and Turin) on their campuses, whereas Milan has implemented a trigeneration plant that also helps reduce greenhouse gas emissions. Padua and Pisa also appointed an energy manager to promote energy-saving interventions.

4.2.3 The “water” category. The ES information on water mainly focuses on reducing its consumption, providing drinking water dispensers on university campuses, and distributing eco-friendly water bottles as part of plastic-free initiatives. The Universities of Bologna, Florence, Milan, Padua, and Turin disclose the objectives for this category in their IPs aligned with the outcomes reported in the SRs. [Table 3](#) presents an example from Milan University. In contrast, Pisa and Naples do not include water management information in their IPs. Similarly, the Universities of Bari and Rome do not report water management performance targets in their IPs, but they disclose water consumption performance in their SRs. The University of Catania reported its first water-related target (i.e. “Interventions to adapt the rainwater network”) from 2021 to 2023 IP. In some cases, water-related disclosure also encompasses research projects to reduce water pollution.

4.2.4 The “green” category. The ES information within this category in the IPs and/or SRs focuses primarily on green purchasing practices, the creation and maintenance of green spaces, and the preservation of natural heritage. Green-related disclosure also concerns the creation of green offices for the promotion of eco-sustainable actions (Universities of Bari, Bologna, Florence, and Turin) and the implementation of creative initiatives such as plant-covered “green roofs” and the “Green Ribbon” film festival (Bologna University). The term “green” is also used to emphasize the implementation of degree programs and research projects on environmental themes (Universities of Milan, Padua, and Pisa). However, universities tend to provide such green practice information in their SRs, whereas information on planned objectives in their IPs is often generic, limited, or even absent. Overall, only a few universities show consistent green-related information between their IPs and SRs (see an example in [Table 3](#)).

4.2.5 The “waste” category. The information on waste pertains to ES initiatives and outcomes in waste management within university areas, covering special laboratory waste, food packaging waste, disposal, recycling, and separate waste collection. All universities provide sufficient details on waste management, reuse policies, and quantities disposed, mostly in their SRs. Waste information in IPs, when present, is limited to the improvement of separate waste collection (Universities of Bari, Florence, Milan, Padua, and Turin) and the reduction of plastic production (Universities of Milan and Naples). Information on waste is lacking or scant in the IPs of Bologna, Pisa, Rome, and Catania. The Universities of Florence, Milan, Padua, and Turin disclose coherent information in both IPs and SRs, thereby demonstrating role performance behaviors. For example, in its 2020–2022 IP, the University of Florence targeted “strengthening the separate collection”, and its 2020 SR reported that “containers for separate waste collection have been increased to promote waste recycling”.

4.2.6 The “mobility” category. All the universities provided some mobility information in both their plans and reports, thereby reflecting their awareness of addressing the polluting emissions caused by students and staff commuting on and around campus. This information refers to incentives for public transport use, alternative sustainable mobility solutions (such as car or bike sharing), and the use of university equipment such as electric or hybrid cars and bicycles for students and staff. While reports offer more extensive mobility project details than plans do, consistent disclosure is found in the IPs (for target mobility objectives) and SRs (for achieved performance) at the Universities of Bologna, Florence, Padua, Rome, Naples, and Turin. For example, in its 2018–2020 IP, the University of Rome planned to build velo-stations in 2018 and reported the installation of eight velo-stations in its 2018 SR. Mobility managers have been appointed at the Universities of Padua, Milan, Pisa, and Rome to oversee sustainable mobility plan development. Florence, Rome, and Milan also describe their involvement in urban mobility governance.

4.2.7 *The “carbon emissions” category.* Information in this category focuses on carbon/greenhouse gas emission reduction and assessment policies, covering both direct (linked to heating and transport systems) and indirect emissions (connected to energy consumption and the mobility of students and staff). Such disclosure is addressed in the SRs of Bologna, Florence, Padua, Naples, Pisa, and Turin. These universities also report inventory data on emissions impacting climate change, with Pisa “currently engaged in calculating direct and indirect emissions”. However, detailed target strategies are seldom reported in IPs. Only the University of Padua discloses coherent information in both IPs and SRs. In 2019–2021 IP, Padua targeted the “reduction of the carbon footprint, acting on energy sources and mobility”, and in 2019–2020 the SR reported a noteworthy 18% reduction in overall university emissions compared with 2018, which was attributed to reduced emissions from energy consumption.

4.2.8 *“Biodiversity” category.* Biodiversity disclosure is primarily found in SRs and is nearly absent in IPs. When present, it refers to botanical garden museums (Universities of Bari, Naples, and Padua) and a natural history museum (University of Florence) that promotes scientific research on natural heritage and plant biodiversity conservation. By addressing botanical collection care as a target for 2020, Florence also discloses coherent information in both its plan and report. Biodiversity information also includes research projects, conferences, and awareness campaigns for marine ecosystem protection (Universities of Bologna and Rome).

4.2.9 *The “dematerialization” category.* Dematerialization disclosure is reported more in IPs than in SRs. Although limited, it focuses on digitizing administrative services and procedures (e.g. Milan University’s digital library and Catania University’s research projects), staff documentation (Naples), and student career processes (Padua). The Universities of Florence and Padua present coherent information between their IPs and SRs by disclosing interventions to reduce environmental impact through the progressive “abolition of paper” and “reduction of printed products”.

4.3 ES trends in Italian universities

Key ES trends in Italian universities include energy-efficient buildings, green procurement, waste management, and sustainable mobility initiatives. These topics are prioritized with varying degrees of commitment. The focus on sustainable procurement and buildings reflects national specificities, particularly recent laws on public procurement and building energy performance, which mandate compliance with environmental criteria. As shown in [Figure 1](#), common weaknesses include limited target-setting in plans for water, green, waste, biodiversity, and carbon emissions. Moreover, climate change is only narrowly addressed, mainly in terms of emission impacts.

5. Discussion and perspectives

5.1 Discussion of the main results

The experience of Italian public mega-universities reveals that the disclosure of environmental topics is more common in voluntary reports than in mandatory plans. More recently, the disclosure of environmental topics in IPs has increased (particularly in the 2020–2022 and 2021–2023 periods). The trend observed in IPs may have been prompted by growing regulatory initiatives on environmental issues at the European and international levels, such as the Next Generation EU programs, ESRS standards, the EU Circular Economy Action Plan, and the UN’s SDGs. Consequently, Italian mega-universities have begun to integrate ES strategies in their planning documents ([Figure 1](#)). This encouraging finding marks a shift from earlier studies conducted in other countries, which reported poor sustainability integration and limited attention to environmental topics in university plans ([Larrán Jorge et al., 2016](#); [Bieler and McKenzie, 2017](#); [Farinha et al., 2019](#); [Şimon et al., 2020](#)).

Integrating environmental objectives into universities' strategies and plans is essential for improving ES practices (Adams, 2013). Nevertheless, ES strategies are still not systematically included in Italian universities' planning documents, and disclosure remains largely voluntary. For example, while information on teaching and research activities, projects and publications related to environmental themes was well documented in SRs, it was generally absent in IPs (Supplementary Table III).

Environmental themes are consistently covered in the SRs available on the websites of all the universities analyzed (Figure 2). This finding contrasts with that of Nicolò *et al.* (2021), who reported that ES disclosure was largely absent from the websites of Italian mega-universities. Interestingly, our findings are consistent with those of studies from other countries, which have shown that the environmental information in SRs reflects country policies and trends (Fonseca *et al.*, 2011; Lopatta and Jaeschke, 2014; Gamage and Sciulli, 2017; An *et al.*, 2020). It is plausible that the ES disclosure of Italian mega-universities reflects the national regulatory context. For instance, the consistent inclusion of green public procurement topics in all SRs may be influenced by Italian regulations on procurements in public institutions. Despite some similarities in the SRs, the absence of specific guidelines results in discretionary reporting practices, with only a few universities adopting the GRI guidelines. Furthermore, the lack of external auditing may undermine the credibility of ES disclosed in SRs.

As shown in Table 3 (examples of role performance cases), some good practices link sustainability reporting to planning. These represent cases of role performance (i.e. the disclosure of the same ES topic in both plans and reports) in line with the substantive management approach underpinned by the legitimacy theory (Ashforth and Gibbs, 1990). For example, consistent with Guthrie *et al.* (2020), our analysis confirms that the University of Bologna aligns its SR with the energy, water, and mobility targets set in its IPs. Moreover, in the introduction to the 2020–2021 SR, the Rector of Padua University stated, “The third edition of the sustainability report confirms the University’s commitment to monitor its performance in relation to the sustainability objectives defined in its programming tools”. Nevertheless, the integration of ES issues into university decision-making processes needs to be further developed and incentivized (Filho *et al.*, 2018) to become part of their mission. Convergence between planning and reporting drives substantive ES actions at universities, thereby genuinely increasing their legitimate role in society, in line with legitimacy theory (Ashforth and Gibbs, 1990). Conversely, the disclosure of ES results in SRs, without evidence of prior planning, may indicate symbolic practices aimed at enhancing the organization’s public image rather than reflecting a substantive strategic commitment (Andrades *et al.*, 2021).

In terms of role performance behaviors, universities are influenced by the maturity of the ecosystem and the context of the territories in which they operate (Stein, 2024). There is a biunivocal relationship between universities and their local ecosystems. Overall, good ES practices appear to be more common among universities in northern Italy, which is consistent with the findings of Soverchia (2023). The Universities of Padua and Turin, which operate in a context in which the ecosystems are characterized by environmental projects (i.e. the *Smart City* project and the *Social Impact* project, respectively), incorporate environmental issues in both plans and reports (Supplementary Tables I and II). The Universities of Florence and Bologna also include environmental information in plans, in addition to reports. These represent examples of good practices of role performance experiences. As shown in Table 3, role performance experiences can be found in North (Padua, Turin, Milan and Bologna) and in Central Italy (Rome and Florence), whereas no examples were found in Southern Italian universities, thereby highlighting the relationship between role performance behaviors and regional ecosystems.

To effectively communicate ES is critical to advancing local communities (Saha *et al.*, 2021). If ES issues are not communicated in plans and are not consistently disclosed in plans and reports, universities may fail to transfer an environmental culture to the territories in which they operate, even in the context of sustainability-aware ecosystems. Time continuity in both

plans and reports may also indicate a genuine effort to disclose data about environmental performance. For example, the continuity of SRs at some universities (e.g. Bologna and Padua) reflects a greater commitment to ES.

Interestingly, the *preparers* of the documents (Table 2) provide insights into the degree of commitment regarding ES disclosure. In particular, the IPs were drafted and curated by administrative staff (including general management and the staff division). This may suggest that IPs are treated more as a “bureaucratic tool” drafted for compliance rather than a strategic tool. In contrast, SRs are typically drafted and curated by members of the Rectorate Board and, in some cases, by working groups composed of faculty and administrative staff. They are at times coordinated by a Rector’s delegate for sustainability, thereby reflecting university governance’s increasing focus on ES disclosure.

5.2 Perspectives of the study

The most significant finding from the Italian experience is that ES disclosure in public mega-universities is progressively increasing, although it is not yet systematic. Based on the results of this study, some perspectives may be formulated at the macro and micro levels. At the *macro* level, addressing the fragmentation of ES disclosure in universities requires the development of sustainability guidelines specifically tailored for the higher education sector. Such guidelines would assist university governance in systematically planning and reporting environmental information, thereby strengthening the communication of environmental values to the territories in which universities operate (Lozano, 2011; Alonso-Almeida *et al.*, 2015; Huber and Bassen, 2018). These guidelines may be issued by university ministries, organizations of Rectors or other governmental authorities, depending on the country.

The adoption of institutional guidelines could also contribute to the standardization of ES information in terms of both format and content, thus improving comparability across universities and national contexts. Currently, neither IPs nor SRs include dedicated sections on environmental aspects, strategies, or performance. Guidelines should include sections dedicated to key environmental topics to enable more structured and comparable disclosure of sustainability strategies and performance. In Italy, the GBS Observatory is moving in this direction. In the UK, the GASU framework (Lozano, 2011) underscores the need to define sustainability areas relevant to universities—such as economic, social, environmental, and educational areas—by adopting GRI guidelines. Similarly, the STARS system developed in Canada (Fonseca *et al.*, 2011) provides a structured method for assessing university sustainability efforts. Guidelines tailored to universities could build on these pioneering experiences—originally developed as sustainability evaluation systems—by integrating comprehensive and universal reporting principles.

Furthermore, the meaning and relevance of environmental words currently differ across documents and are not defined in either plans or reports. University guidelines should include a glossary of ES terms. Planning and reporting environmental information should also become mandatory.

At the *micro* level, an innovative *hub and spoke* model could effectively support universities in integrating ES into their plans and reports. In this model, each university (spoke) should appoint a delegate for sustainability with the mandate to collaborate with other sustainability delegates and with local and regional public organizations to enforce joint actions and projects related to ES, in alignment with national government strategies (hub). This integrated approach to planning and reporting would promote a culture of ES by facilitating communication with society, stakeholders, and policymakers through documents and/or other tools, such as research projects and training activities on ES (i.e. degree courses, master’s degrees, projects and publications). The integration of ES into both planning and reporting reflects universities’ concrete commitment to sustainability, as demonstrated by the cases of role performance identified herein (Table 3). This behavior could enhance their long-term strategic positioning. Indeed, more sustainable universities may become more attractive

for partnerships, research funding, and student enrollment. In this scenario, more resources should be dedicated to university ES disclosure documents, and initiatives should be taken to enable universities to be awarded financial credit from the central government specifically for ES actions.

Regional governments, local institutions, and universities would coordinate the spokes committed to ES disclosure by interacting with the “Delegates for sustainability”. The hub and spoke model would also guide university executives and operators involved in ES disclosure, enabling alignment with national ES strategies (e.g. those of the Ministry for Sustainable Development) and with EU-level initiatives such as the Recovery Fund.

Furthermore, this model could also facilitate the transfer of universities’ sustainability contributions to society, especially in countries with strong ecosystems and environmental policy priorities. The proposed model could be replicated by universities in Europe and worldwide, as well as by other research and training institutions and other public entities.

6. Concluding remarks, limitations, and future research lines

This study highlights the importance of disclosing environmental issues in both plans and reports to demonstrate the university’s commitment to addressing urgent ecological challenges. Although ES is not yet completely embedded within universities’ strategies, Italian public mega-universities are progressively including environmental topics in their plans and reports, and good practices are emerging. Sustainability reporting can help promote a strategic vision in universities (Melles *et al.*, 2022), but a stronger alignment between planning and reporting needs to be consolidated. The inclusion of environmental objectives in planning documents is essential to foster an environmental culture among students, faculty, and staff and to support engagement with universities’ ecosystems. The theoretical implications of this study support the substantive approach of legitimacy theory. The results highlight substantive practices of role performance behaviors in Italian universities—specifically, the alignment of environmental information between planning and reporting documents. The findings suggest that universities demonstrating such alignment are predominantly located in northern Italy, indicating that substantive ES actions toward stakeholders are unevenly distributed across the country. These findings may help policymakers identify strategies to reduce regional disparities in ES engagement. Future research could investigate role performance cases in other public sector organizations.

The practical implications proposed in this study may also contribute to improving both the quantity and quality of ES disclosure in Italian mega-universities and to fostering stronger engagement with broader society. Strengthening universities’ commitment to ES actions – including their contribution to the EU CE Action Plan- and related disclosure efforts requires the involvement of stakeholders at all institutional levels. The adoption of institutional sustainability guidelines specifically designed for universities could support the standardization of the content and format of planning and reporting documents, and the *hub and spoke* model could encourage university governance to allocate more time and resources to environmental issues. Both this model and the role performance behaviors identified may inspire other public entities beyond the higher education sector.

This study has some limitations. The results are based on document analysis and focus exclusively on mega-universities. Future research could include interviews or focus groups and examine ES practices in public universities of varying sizes to identify potential differences between larger and smaller institutions. It is conceivable that good practices and valuable insights may emerge from smaller universities. Future research could investigate potential differences in ES behaviors at these universities because of lower operational complexity, resource availability, and campus community size. Another limitation of the study concerns the nature of SRs, which are voluntary documents and not subject to external auditing. The absence of third-party validation may weaken the credibility of ES disclosures. Further studies may also explore communication strategies in sustainability reporting, focusing on how planned actions

are implemented following role performance behaviors. To enhance the understanding of ES practices and role performance behaviors, longitudinal research could track changes over time, whereas comparative studies might examine how centralized versus decentralized governance models influence ES implementation in universities.

In conclusion, integrating disclosure on ES challenges into university plans and reports can significantly enhance transparency regarding the value universities create through their institutional activities. This practice contributes meaningfully to the achievement of the 17 SDGs outlined in the UN 2030 Agenda and reinforces the legitimacy and credibility of universities within society.

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Supplementary material

The supplementary material for this article can be found online.

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