Audit Financiar, XXIII, Nr. 4(180)/**2025**, *760-777*
ISSN on-line: 1844-8801

Paper presented at the IX[th] Congress of the Romanian financial auditor profession

Auditors' Professional Judgment on Sustainability in the Age of AI: from Regulatory and Technical Challenges to Algorithmic Bias

Univ. Prof. Maria NICULESCU, Ph. D.,
Director, Centrul de studii avansate privind durabilitatea (CeSAD),
e-mail: maria.niculescu@durabilitate.ro

Emeritus Prof. Alain BURLAUD,
Conservatoire National des Arts et Métiers Paris,
e-mail: alain.burlaud@lecnam.net

Abstract

The accounting profession, and more specifically that of auditor, is one of the most impacted by the rise of artificial intelligence (AI) and sustainability information regulation. AI is profoundly changing traditional auditing methods, altering the role, approach and responsibilities of auditors, while requiring new skills.

This transformation is particularly striking in the specific field of sustainability auditing, which is becoming increasingly important in a context of heightened demands for corporate transparency and ESG accountability. AI enables the automation and rapid processing of large volumes of data from reporting or external databases, freeing auditors from repetitive tasks. In theory, this automation should allow them to refocus on interpreting results, exercising professional judgement, making critical decisions and managing ESG issues.

However, this new situation raises several major questions, centred on one key issue: what conceptual framework should guide the training of professional judgement by sustainability auditors in a context of regulatory and technological change?

As we do not yet have the necessary perspective on such practices, nor any consolidated empirical data, this article is intended as a conceptual essay aimed at exploring and enriching the existing framework for professional judgement. It proposes a conceptual framework for structuring judgement training in sustainability auditing practices, integrating both enhanced European standards and the disruptive transformations brought about by AI.

To cite this article:
Niculescu, M., Burlaud, A. (2025), Auditors' Professional Judgment on Sustainability in the Age of AI: from Regulatory and Technical Challenges to Algorithmic Bias, *Audit Financiar*, vol. XXIII, no. 4(180)/2025, pp.760-777, DOI: 10.20869/AUDITF/2025/180/022

To link this article:
http://dx.doi.org/10.20869/AUDITF/2025/180/022
Received: 15.08.2025
Revised: 18.08.2025
Accepted: 29.09.2025

The analysis is based on a critical review of academic literature, European and international regulations, and the authors' experience. It is complemented by a qualitative approach using focus groups, which aimed to validate the proposed analysis framework and identify the emerging skills that are essential in this new professional paradigm.

As part of this research, the authors used generative AI (GPT-4 version, 2025) to facilitate documentary research, particularly in the collection of empirical examples illustrating the contributions, technical challenges and algorithmic biases associated with these technologies.

Key words: *generative AI; audit; sustainability; judgement; algorithmic bias; conceptual framework;*

JEL Classification: *M41, M42, Q52*

"Without your expertise and ability to ask questions, I cannot produce such relevant and tailored insights."[1]

Introduction

The accounting profession, and more specifically that of auditor, is one of the most impacted by both the rise of artificial intelligence (AI) and sustainable development regulations. Auditors must not only keep pace with technological and regulatory developments, but also adapt to the ever-changing *reporting* requirements of the entities they audit.

The year 2025, the first year of implementation of the European CSRD (*Corporate Sustainability Reporting Directive,* EC 2024), marks a major turning point in sustainability *reporting*, which aims to harmonise and strengthen the quality of information produced by companies and reduce the risk of environmental and social misinformation. Companies are now required to publish accurate material information on their environmental, social and governance (ESG) risks, opportunities and impacts, in accordance with the principle of double materiality. This involves identifying and communicating not only the impact of ESG issues on the company's performance, but also the impact of the company's activities on the environment and people. Reports must comply with the new *European Sustainability Reporting Standards* (*ESRS)*, which introduce cross-cutting requirements while covering a wide range of environmental, social and governance issues. The CSRD requirement, which also mandates external audit by a statutory auditor or independent third party for limited assurance, gives auditors a key role in ensuring the reliability and transparency of sustainability statements, thereby promoting a more responsible and resilient economy. Putting sustainability *reporting* on an equal footing with financial *reporting* enhances the credibility of sustainability information and gives it a structuring role in the transformation of business models and strategies.

The broadening of the scope of auditing under the CSRD is accompanied by a profound transformation of practices, driven by digitalisation and the growing integration of artificial intelligence into *reporting* and audit processes. In this context, AI appears to be a major driver of innovation: it facilitates the collection, analysis and structuring of massive volumes of ESG data, accelerates the detection of anomalies and enables the generation of more reliable and faster synthesis. However, it also raises major challenges: mastering technical complexity, managing bias, interpretability of results, data governance and compliance with the ethical and regulatory requirements set out in the AI Act (EC 2025).

The changes in external auditing in the context of the CSRD (amended by the Omnibus Directive) (EC 2025) and the AI Act reflect a profound restructuring of practices, skills and responsibilities and raise questions about the professional judgement of auditors who are expected to provide limited assurance on sustainability statements. The sustainability information auditor is now facing novel challenges related to: the normative institutionalization of double materiality, the expansion of the reporting scope, the increasing sophistication of analyses, the connection between financial and sustainability information, and heightened governance and ethics requirements.

[1] ChatGPT – response to a prompt by the authors regarding the lack of relevance in the answers provided by ChatGPT, June 8, 2025

In this new environment, professional judgement must be established as the cornerstone of responsible auditing, capable of guaranteeing reliability and relevance and instilling confidence in sustainability statements in the digital age.

The interconnection between these developments forms the basis of our thinking. This is structured as follows:

1. Epistemological and methodological framework of the research
2. Pillars of auditors'professional judgement on sustainability
3. Normative and regulatory bases of sustainability auditing
4. Auditors' professional judgement on sustainability in the age of AI: a hybrid human-machine co-construction with underestimated risks
5. Towards a conceptual framework for auditors' professional judgement in the age of artificial intelligence
6. Research findings and discussion.

1. Epistemological and methodological framework of the research

Complex but of great topical relevance, the subject of our research is of concern to both the profession and academia and is centred on a key question: "What is the conceptual framework capable of guiding the development of professional judgment on sustainability in a context of profound regulatory changes and disruptive technologies?" This central question raises other questions, such as:

- What changes are being brought about in the auditing profession by European regulations on sustainability *reporting* and the accelerated use of generative AI?
- What are the main technical and ethical challenges facing auditors in a disruptive technological environment?
- What are the main trade-offs between the contributions of generative AI and the exercise of independent, critical and responsible professional judgement?

The authors have chosen to answer these questions in the form of a theoretical essay, in the absence of the necessary hindsight on CSRD-compliant sustainability audit practices (applicable from 2024 with the first sustainability statements to be published in 2025) and concrete data. It proposes a new conceptual framework for professional judgement in sustainability auditing practices, incorporating both emerging European law and the disruptive changes brought about by AI. This methodological choice will clarify key concepts, shed light on the tension between automation and critical analysis, and formalise the relationships between professional judgement on the one hand, and generative AI, technical challenges and algorithmic biases on the other, using an analytical framework. In addition, this article proposes a renewed conceptual framework for professional judgement in sustainability auditing practices, integrating both strengthened European standards and AI-based tools.

The research has a hybrid epistemological positioning, articulating two complementary approaches, constructivism and critical interpretativism, and drawing on a wide range of scientific theories. In general, from a constructivist perspective, the professional judgement of sustainability auditors is a social construct resulting from human interactions in a rapidly changing institutional, regulatory and technological context. The constructivist-interpretativist approach helps us understand how auditors subjectively construct their professional reality through their perceptions, interactions and practices. It emphasises meanings constructed locally within audit environments (Berger & Luckmann, 1966; Schutz, 1967; Niculescu & Galabov, 2019). The critical interpretativist perspective has enriched this approach by adding an analytical, critical dimension to the mechanisms of power, organisational structures and norms that shape, constrain or bias social constructions. It allows us to analyse how auditors socially and culturally construct their professional judgement in a context marked by norms, technologies (AI) and power relations (regulations, companies). This critical approach is particularly relevant for analysing the influences of AI and ESRS standards on professional practices and the construction of professional judgement (Habermas, 1984; Foucault, 1975).

This dual approach thus enables the development of a holistic understanding of professional judgement in the age of AI, taking into account both the meanings constructed by auditors and the structural and technological conditions that influence these processes.

Methodologically, this position justifies the adoption of a qualitative interpretative approach, combining documentary analysis, interviews with auditors in the form of a *focus group*, and a study of secondary data sources. Similarly, several examples from the specialist literature and professional reports were examined to illustrate the issues related to the professional judgement of sustainability auditors in a complex techno-regulatory context. This methodology makes it possible to grasp the complexity of the interactions between actors, technologies and regulatory contexts, while shedding light on the distributed cognitive dimensions of professional judgement.

To understand the professional judgement of sustainability auditors in the age of generative artificial intelligence, it is essential to use a multidimensional theoretical framework. Systems theory (von Bertalanffy, 1969, Lavalette & Niculescu, 1999) studies organisations and phenomena as complex systems interacting with their environment to reveal the dynamics of cooperation, influence and dependence between auditors and their technical environment. Socio-technical theory (Trist & Emery, 1973) helps us understand these complex interactions. The formation of professional judgement in sustainability auditing practices in the age of artificial intelligence is part of a broader perspective of constantly evolving socio-technical systems. As Gilles (1978) points out, technical progress cannot be viewed in isolation; it requires a favourable ecosystem where science, technology, social organisations and regulations interact and self-regulate. Institutional theory (DiMaggio & Powell, 1983) sheds light on the normative and regulatory pressures that shape audit practices, which we have transposed into the context of increased sustainability requirements.

Professional judgement, which lies at the heart of auditing, is part of a cognitive and contextual dynamic that is well described by audit judgement theory (Libby & Luft, 1993; Trotman, 2014), which has taken on a new dimension with the emergence of algorithmic biases specific to generative AI[1]. The ethical issues associated with the responsible use of these technologies are better understood through contemporary ethical frameworks (Beck, 1992; Floridi, 2019).

This framework is enriched by the use of distributed cognition theory[2], developed by Hollan, Hutchins and Kirsh (2000). It offers an innovative approach to understanding cognitive processes as being distributed across individuals, technological artefacts and the organisational environment. This perspective transcends the traditional view centred on individual cognition, emphasising interactions and the co-construction of knowledge within complex socio-technical systems. Applied to the context of sustainability auditing, where generative artificial intelligence (AI) is increasingly integrated, distributed cognition makes it possible to analyse how professional judgement is no longer solely a matter of individual competence, but is part of a dynamic network involving the auditor, algorithmic tools, databases and regulatory standards (Hollan, Hutchins & Kirsh, 2000).

This perspective is the basis for our thinking on the evolution of professional judgement from a new angle: it is no longer seen solely as a social construct, but also as a complex and dynamic hybrid co-construction between humans and machines. This sheds light on the tensions between automation and human control, between the speed of technology and the human capacity building required to manage technical and algorithmic challenges, and calls for a rethinking of training and decision support systems to ensure reliable and ethical professional judgement in a rapidly changing environment (Norman, 1993; Hutchins, 1995).

This rich theoretical framework sheds light on and anticipates developments in the professional judgement of sustainability auditors in the age of AI.

2. Pillars of auditors' professional judgement on sustainability

In its common usage, the word "judgement" means "the faculty of judging", i.e. the mental act of relating facts, norms and values. It is an act that occurs naturally in everyday life, through which we make choices or decisions, which may or may not lead to action.

All disciplines use the concept of judgement: philosophy, law, psychology, psychoanalysis, medicine, management,

[1] Barocas, S., Hardt, M., & Narayanan, A. (2019). *Fairness and machine learning.* https://fairmlbook.org This is a reference work on algorithmic bias in AI models, essential for understanding the formation and propagation of bias.

[2] In other words, it is about organizational or collective intelligence. See in this respect: Burlaud, A. (1995), *Management Control: The Development of Organizational Intelligence* (inaugural lecture delivered under the presidency of Louis Schweizer, President of Renault).

financial analysis, sustainability analysis, etc. It can be described in many ways: value judgement, moral judgement, professional judgement, ethical judgement, etc. It refers to the faculty of the mind that enables us to judge things that are not the subject of immediate, certain knowledge or rigorous demonstration. This meaning is appropriate in our context, where it is perceived as "the process of forming an opinion when certain knowledge cannot be attained" (Lalande, 1983). When uncertainty gives way to certainty, subjective opinion becomes objective truth.

More specifically, professional judgement can be defined as follows: "the ability of a member of a profession to assess a situation without knowing all the facts with certainty and to choose the acceptable course of action when professional standards allow for discretion. (...) The exercise of professional judgment requires the member of the profession to make an objective and prudent analysis based on their experience and knowledge (including knowledge of their own limitations) and an awareness of their responsibility to those affected by it consequences" (Ménard 2004). At the heart of these definitions lies uncertainty, because an entity produces its financial position or sustainability position by making a number of forecasts and assessments. Thus, professional accountants must make forecasts (e.g., calculate the present value of future cash flows), translate intentions (e.g., classify securities as equity investment or portfolio investments) and assess risks (e.g., calculate an allowance), i.e., provide a simplified yet accurate picture of a reality that they know only partially and uncertainly (Burlaud & Niculescu, 2016).

While uncertainty concerns the context of the action, it also concerns the outcome of the decision-maker's judgement. Thus, in the judicial field, decisions are never perfectly predictable and, as a result, generally involve an appeal process. However, while there is a personal element to judgement, personal judgement should not be confused with professional judgement. The former is freer than the latter, which is based on a set of rules and standards that have been adopted by a profession. Uncertainty is also reduced by social pressure. "We feel that we are not masters of our own judgements; that we are bound and constrained. It is public conscience that binds us." (Durkheim, 1911).

The evolution of accounting standards, which goes hand in hand with a more general evolution of law, is leading to the definition of principles that will be subject to deductive reasoning rather than detailed rules[1]. They therefore increasingly call on the judgement of professionals[2]. This is one of the characteristics of postmodern law.

For example, the term "professional judgement" does not appear in the Accounting Directive. It is mentioned only once in the CSRD, in connection with the work of auditors, and also only once in the IA Act, in connection with the compliance of AI systems. According to the CSRD, " The statutory auditor or the audit firm may continue to carry out the assurance of sustainability reporting of the public-interest entity only if he, she or it can justify, (…) that the provision of such services does not affect his, her or its professional judgement and the assurance report on sustainability reporting."[3]

Nevertheless, the need for professional judgement is implied by other concepts such as: "relevant", "material", "fair", "assessment", "estimation", "approximation", etc. The qualifier "relevant", for example, is often inferred from human intervention, which is necessary to assess the validity of a solution or make an informed choice. Thus, paragraph 2.4 of the IFRS *Conceptual Framework* states: "To be useful, financial information must be relevant and provide a true and fair view of what it purports to represent." In the same vein, the European sustainability reporting standard, ESRS 1, *General Requirements,* specifies: "To be useful, the information must not only represent relevant phenomena, it must also faithfully represent the substance of the phenomena that it purports to represent."[4] In both cases, it is up to the expert to say what is relevant, for whom and from what perspective.

The frequent use of the term "significant/material" in recent regulations is the result of the adoption of the principle of double materiality as a fundamental principle of corporate sustainability reporting, requiring companies to disclose information on their risks and opportunities related to sustainability issues, as well as their impact on

[1] See on this subject: Lakovic, T. and Puglister, J. (2013): The International Accounting Standards Board's Progress in Promoting Judgement through Objective-oriented Accounting Standards, *International Journal of Business and Social Research*, volume 3, no. 7, July, pp. 28-42.

[2] Sir David Tweedie, then Chairman of the IASB, stated on 24 October 2007 to the Subcommittee on Securities, Insurance and Investment of the United States Senate: "A principles-based standard relies on judgements."

[3] Directive 2022/2464, Art. 3, § 14, p. 69.

[4] ESRS 1, Appendix C Qualitative characteristics of information, QC5.

the environment and people. While the legislator imposes the principle and sets the framework for *reporting*, it is not the legislator who decides on the list of sustainability issues to be reported by a company, nor on the scope, content or material information to be disclosed. This decision is the responsibility of the company and its management, supervisory and governance bodies, which are required to establish processes for materiality analysis, value chain analysis or due diligence processes. Throughout these processes, the company makes assumptions, estimates and takes a position on a particular scenario by making choices based primarily on professional judgement. The sustainability auditor is expected to exercise professional judgement and express an opinion on the company's choices as part of a limited assurance engagement.

Professional judgement is at the heart of the decisions that auditors must make, particularly in complex, uncertain or innovative contexts, such as that of sustainability *reporting* assisted by generative AI. According to the theory of professional judgement in auditing (Libby & Luft, 1993), the determinants of judgement in auditing are cognitive factors (knowledge and expertise; ability to analyse, synthesise and interpret information; motivation and vigilance) ability to contextualise and organisational capacity (internal standards and procedures; training and professional development, team dynamics and supervision). However, professional judgement cannot be reduced to a simple mechanical application of rules; it is a complex process that includes critical analysis and the integration of complexity and contextual adaptation (Trotman, 2014). Against a backdrop of stable basic principles and ethics for auditors, the requirements in terms of skills have changed significantly, particularly in the context of the evolving regulatory and standards framework for sustainability and the use of AI.

The complexity of professional judgement in the new sustainability *reporting* framework can also be explained by the limitations of current methods for measuring and assessing impacts, risks and opportunities, as well as the difficulty in some cases of linking the two types of information: financial and sustainability. Aware of these difficulties, the European legislator states: "Currently, there is no commonly accepted methodology to assess or measure how material physical and transition risks may affect the undertaking's future financial position and performance. Therefore, the disclosure of these effects (…) will depend on the undertaking's internal methodology and the exercise of significant judgement in determining the inputs, and assumptions needed to quantify their potential financial effects."[1]

The development of professional judgement in the context of the rise of advanced analytical tools and generative models requires auditors to develop metacognitive skills (Flavell, 1979): the ability to reflect on one's own thought processes and regulate the influence of technological tools on one's reasoning. It enables the auditor to identify and question their cognitive biases when interpreting the results produced by AI, and to adjust their professional judgement according to the quality and limitations of the outputs generated. Krishnan & Wang (2024) argue that, in auditing, the absence of metacognitive reflection leads to blind dependence on AI-based tools, thereby increasing the risk of bias and errors of judgement.

In conclusion, in the context of the growing complexity of the regulatory and normative framework for sustainability information, technological disruption and the accelerated penetration of AI, metacognition and knowledge hybridisation are becoming pillars that guarantee the quality of the sustainability auditor's reasoning, the relevance of their conclusions and their ethical responsibility towards stakeholders and society.

3. Normative and regulatory bases of sustainability auditing

Sustainability auditing is a new field of application introduced by the CSRD in the "audit jungle".[2] We thus refer to financial, social, strategic, IT, acquisition audits, etc. In this case, the concepts and methodology are largely inspired by financial auditing, as it is a legal mission of public interest carried out by a regulated profession. In this particular context, an audit is defined as follows.

"With regard to financial statements or other financial information, examination of accounting records and other relevant evidence by a competent and independent professional in order to express an opinion on the regularity and fairness of the accounts, as well as on the true and fair view they give of the entity's assets, financial position and performance. (…) Critical examination of a

[1] ESRS E1, AR 66.

[2] According to Alain Mikol (1991), "Dans la jungle des audits" (In the jungle of audits), *Gérer et comprendre*, no. 25.

transaction, a particular activity or the overall situation of an entity, generally based on standards and techniques established and recommended by a professional body, carried out by means of studies, controls or verifications of management decisions and actions or their compliance with laws, established standards and rules, and generally leading the auditor to issue a written report at the end of their work in which they express an opinion, an assessment, a conclusion, or recommendations or measures to be taken." (Ménard, 2004).

These definitions show that a sustainability audit, like a financial audit, is based on standards known as a reference framework (1), is carried out by an independent professional (2), who expresses an opinion in writing (3).

3.1. Evolution of the normative and regulatory

As we have seen previously, auditing is an opinion-based task, which requires professional judgement based on standards specifying what the audited information should be. The auditor does not have to make moral judgements but must decide whether the information produced complies with standards and a code of ethics. This does not exclude the existence of ethical dilemmas and margins of discretion, as the law cannot foresee all possible cases, but the auditor's judgement is bound by a framework that is imposed on them.

The first and most important question is the choice of the applicable standard defining the content of the information and, more specifically in this case, sustainability information.

In the field of sustainable development, more than 50 years have passed between the awareness of environmental risks and the operationalisation of an information standard.

The UN has played an important pioneering role. In 1972, it organised the1st United Nations Conference on the Human Environment in Stockholm, which led to the creation of the United Nations Environment Programme (UNEP). In 1988, the World Meteorological Organisation (WMO) and the UNEP joined forces to produce scientifically validated information by creating the Intergovernmental

Panel on Climate Change (IPCC). On 25 September 2015, at a special UN summit in New York, the "Sustainable Development Goals: 17 goals to transform our world" were officially adopted. These positions cannot be said to have had no effect on public opinion, but the UN has no binding power.

On this basis, various private organisations and the academic world have taken up environmental challenges to produce "green" accounting or human resources accounting standards with considerable conceptual and operational difficulties, such as the definition of measurement units (metrics) and measurement processes. These have never been overcome in a sufficiently convincing manner to gain widespread acceptance. However, there are too many of them to present an overview here.

One of the most comprehensive frameworks remains that of the Global Reporting Initiative (GRI), whose initial guidelines date back to 2000 and whose first standard was published in 2016. This standard, along with those of other organisations, suffers from a fundamental flaw: it is only applied on a voluntary basis and, as a result, has not been able to achieve widespread adoption. However, the underlying idea, namely the power of information to change the world, inspired the European Community to publish its first directive in 2014: the Non-Financial Reporting Directive (NFRD). This was followed by the EU Taxonomy Regulation in 2020, the Corporate Sustainability Reporting Directive (CSRD) in 2022 and the Corporate Sustainability Due Diligence Directive (CSDDD) in 2024, to mention only the main legal texts. Of course, in 2025, the draft Omnibus Directive will mark a step backwards from the initial ambitions if it is adopted as it stands. Nevertheless, significant progress will have been possible because European law is binding on Member States and can result in penalties for non-compliance, not to mention extra-judicial sanctions, the "court" of public opinion, which can damage a company's reputation.

The transparency requirement is meeting with opposition:

– the rejection of obligations deemed bureaucratic and costly, which undermine the competitiveness of European companies vis-à-vis foreign competitors not subject to such obligations;

– ultimately, companies' fear of being penalised for the environmental and social damage they cause according to the "polluter pays" principle.

However, few companies are campaigning to explain that publishing information demonstrating that corporate social responsibility (CSR) is not just a buzzword but a transformative action that benefits the community and can

create a virtuous image that can be leveraged in the marketplace.

The draft Omnibus Directive of 2025 is the result of *lobbying* by numerous European companies to the European Commission, leading to a relaxation of the obligations imposed by the CSRD and the other legal acts mentioned above. European law and its national variations are currently far from stabilized. It is a body of law that is still under construction. Nevertheless, it should be noted that European law in this area is a model for the world and is the most ambitious. Furthermore, it has had the foresight to link environmental and social issues, echoing the movement of thought evoking a multi-stakeholder theory of the company, neo-institutional theory and CSR.

The importance of publishing sustainability statements is based on the assumption that information is effective in the capital market, the goods and services market and the labour market. In these three markets, disclosure is supposed to guide the choices of stakeholders and, as a result, create strong pressure on companies. However, for this assumption to be valid, the information must be credible and therefore audited.

3.2. Specific features of sustainability auditing

The audit of sustainability statements has many similarities with the audit of financial statements, which has a century of experience in Europe. In the financial sector, auditing practices are now well established, with the exception of the use of AI, with all the standards of the International Auditing and Assurance Standards Board (IAASB), which publishes the International Standards on Auditing (ISA), adopted almost worldwide[1]. Furthermore, because sustainability statements, like financial statements, are a public or common good[2] and a legal obligation, they must be validated (audited) by professionals who are members of a regulated profession. As a result, the audit standards applicable to sustainability statements and financial statements are largely the same. For example, the 219-page International Standard on Sustainability Assurance (ISSA) 5000 largely incorporates the ISAs. These commonalities cannot be discussed in detail here.

According to IASB[3], the **users** of financial statements are "investors, lenders and other current or potential creditors for the purpose of making decisions about providing resources to the entity. The ISSA 5000 differs from the IASB in that it broadens the scope of users of sustainability statements, as detailed in § A36: "Examples of intended users include shareholders, investors, lenders and other creditors who may use sustainability information to make resource allocation decisions. Other intended users who may be interested in the sustainability information reported by the organization include consumers, taxpayers, employees, competitors, prudential authorities, central banks and bodies in charge of financial stability oversight, those granting public contracts, partners, suppliers, community, Indigenous Peoples, government, regulators, and interest groups." Satisfying such a wide range of users, who necessarily have divergent interests, greatly increases the complexity of the exercise.

The **scope** of the information produced is not the same. Sustainability reports include the reporting company's value chain, whereas consolidated financial statements only include companies in which the reporting company holds all or part of the share capital, either directly or indirectly. Identifying the entities that make up the value chain is much more complex and requires an examination of the business model. "The reporting boundary for sustainability information may include activities, operations, relationships, or resources up and down the entity's value chain. An entity's supply chain is part of the value chain."[4] "Understanding the reporting boundary may require the analysis of complex organizational structures (e.g., multiple operating units in different jurisdictions), contractual relationships and activities within the entity's value chain."[5] The value chain refers to entities that may be upstream or downstream of the reporting entity's activities.

The **content** of sustainability statements is necessarily highly complex, as it includes information relating to environmental, social and governance (ESG) issues that

[1] The IAS and ISSA are key documents for linking the complexity of sustainability standards and professional judgement expectations.

[2] See on this subject: Burlaud, A. & Pérez, R. (2012), "La comptabilité est-elle un bien commun ?" (Is accounting a common good?"), *in Comptabilité, société, politique. Mélanges en l'honneur du professeur Bernard Colasse*, Economica, pp. 216-233

[3] International Accounting Standards Board (IASB), 2018, *Conceptual Framework for Financial Reporting, § 1.2.*

[4] ISSA 5000, § A41.

[5] *Idem.*, § A347.

are extremely diverse and difficult to measure. This is because sustainability statements are designed to support comprehensive public policy in response to issues that threaten the future of humanity. They are reflected in the United Nations Sustainable Development Goals (SDGs) and the European Union Green Deal.

Standardisation plays an important role in the process of institutionalising sustainability through conventions, policies, regulations, etc. It is a vehicle for enhancing market transparency and confidence in the information provided by companies, and a tool for objectively assessing, on a scientific and technical basis, their commitment to sustainable environmental and social practices. The setting of the SDGs, as a collective construct, highlights from the outset the normative orientation of sustainable development. This orientation is theoretically justified by the role of standardisation in reducing uncertainty, decreasing "opportunism" among actors, and, in terms of information, reducing *greenwashing* (Niculescu & Burlaud, 2025). The European regulatory framework for sustainability information, the ESRS, was designed to build on European achievements and international standardisation frameworks in the field of sustainable development. To date, twelve standards are operational, the first two of which (ESRS 1: *General requirements* and ESRS 2: *General information to be disclosed*) are cross-cutting, non-sectoral standards, i.e. they apply to all companies, regardless of the sector(s) in which they operate. They apply to sustainability issues covered by the ten thematic standards. With regard to the thematic standards, the European legislator, in consultation with stakeholders, has selected ten sustainability themes, including five environmental themes, four social themes and one governance theme. The thematic scope is very broad and gives balanced attention to different aspects of sustainability, in line with the major concerns of our society: climate, pollution, biodiversity, water, the circular economy, social issues and governance. Each thematic ESRS covers a sustainability theme, structured into sub-themes and, where necessary, sub-sub-themes.

The rise of a structured regulatory framework, such as the European Sustainability Reporting Standards (ESRS), is profoundly transforming sustainability auditing practices. By establishing common, precise and scientifically based requirements, this standardisation helps to enhance the reliability, comparability and transparency of the information published by companies. For auditors, the conceptual and substantive complexity of the regulatory framework requires this means upgrading their skills and adapting their methodologies so that they can rigorously assess compliance with the multiple, sector-specific and cross-cutting requirements of the ESRS. This framework reduces areas of arbitrary interpretation and limits the risk of greenwashing by imposing objectifiable criteria. Sustainability auditing thus becomes an essential lever in the corporate *accountability* process, while strengthening stakeholder confidence in the sincerity of companies' commitments. In short, standardisation is not only a regulatory tool, but also a catalyst for greater professionalism and credibility in sustainability auditing.

Quantitative information often cannot be produced by the entity's accounting and finance departments and checked by the statutory auditor due to a lack of technical expertise. The latter must therefore call upon, under their own responsibility, scientific experts in various fields, particularly engineering sciences. As a result, quantitative information is generally perceived as more rigorous, even scientific, and indisputably credible. (Burlaud, 2022) Furthermore, it lends itself easily to standardisation. The audit must cover the methodology used to produce the information, the underlying assumptions, the plausibility and consistency of the figures and the credibility of the sources. The data provided by AI, which comes from 'black boxes', is particularly prone to criticism.

Two-thirds of sustainability information is qualitative This information, the narrative, does not generally lend itself to direct observation. Furthermore, it is difficult to standardise. Its interpretation is therefore particularly subject to the judgement of the auditor, who must imagine the different interpretations by the various users of the information, particularly when AI provides translations. The question may also arise within the same language. Only the context allows the meaning to be rendered correctly, which the auditor must ensure.

Forward-looking information may be essential for making a diagnosis, but it is characterised by a particularly high audit risk. This issue arises both in financial statements (e.g. assessment of contingent liabilities) and in sustainability statements (e.g. impact of the company's activities on the environment). A distinction must be made between forecasts relating to intentions that are largely dependent on management and are expressed by them, and those relating to opportunities and risks that are more broadly dependent on the environment. The auditor's judgement must distinguish between "forecasts" (where a high risk of non-achievement is accepted) and

"predictions" (where near certainty about the future is expressed). "prophecy" is a prediction claimed to be inspired by God[1]. The auditor must judge the plausibility of information relating to the future and its consistency. The importance of forecasts for a diagnosis is illustrated by the occurrence of the word "future" in Delegated Regulation (EU) 2023/2772[2],which appears 50 times.

The concept of dual materiality of information is a central element of European regulations on sustainability reporting. It is also a distinguishing feature of the European approach promoted by the EFRAG (European Financial Reporting Advisory Group), which is based on a partnership approach involving companies, as opposed to the approach of the ISSB (International Sustainability Standards Board), which favours simple (financial) materiality, particularly useful for investors. The analysis and assessment of dual materiality is the starting point for corporate sustainability reporting and the cornerstone of a relevant and concise sustainability statement. The materiality of information means that only relevant information is retained, i.e. information that exceeds a threshold of significance by helping to reduce the complexity of sustainability statements and facilitating their analysis. This materiality is described as double because it requires describing, on the one hand, the risks and opportunities that the environment or social situation poses or offers to the entity, particularly their effect on the financial situation, and, on the other hand, the environmental and social impacts and impacts (externalities) of the entity's activities. Risks and opportunities are of particular interest to capital providers, and impacts are of interest to other stakeholders, whether identified (e.g. the impact of poor working conditions on workers' health) or not (e.g. greenhouse gas emissions). While the first category of information raises classic risk measurement issues in accounting, expressed in monetary units and integrated into the business model, the second category raises the question of how to measure the damage caused, in addition to how to identify it. One of the main problems is that there are multiple units of measurement: m^2, m^3, kW, degrees of temperature, hours, km, etc. This raises questions of metrology (Burlaud, 2022), engineering sciences, and life and earth sciences. But identifying impacts, i.e. the losers and beneficiaries is an additional difficulty. For example, replacing petroleum-based fuels with bio-based, and therefore renewable, fuels reduce fossil energy consumption but reduces the amount of agricultural land devoted to food crops. In conclusion, "nothing is simple"... and "everything is becoming more complicated"[3] in the audit of sustainability.

4. Auditors 'professional judgement on sustainability in the age of AI: a hybrid human-machine co-construction with underestimated risks

Since *the Encyclopédie ou dictionnaire raisonné des sciences, des arts et métiers* (Encyclopaedia or Reasoned Dictionary of Science, Arts and Crafts), published in 11 volumes between 1751 and 1772 under the direction of d'Alembert and Diderot, scientific knowledge has developed to such an extent that it is no longer even measurable. The answer to this complexity lies in the increasingly specialised nature of scientists worldwide. But problems are rarely single-discipline issues, so how can they be understood when knowledge is fragmented? AI offers a solution for producers and auditors of sustainability reports. They have been quick to adopt it, driven by economic and time constraints. For large groups, auditors have to respond to calls for tenders, which increases competition on fees. As for time constraints, these result from the need to publish financial and sustainability reports simultaneously, as soon as possible after the end of the financial year.

The use of generative AI offers a number of advantages for auditors, including:

– automation of the processing of large amounts of sustainability data. Generative AI makes it possible to quickly synthesise, structure and analyse massive volumes of heterogeneous non-financial data (reports, external databases, social media, etc.). This significantly reduces the time spent on repetitive tasks, while improving the coverage of the information audited;

[1] Robert, P. (1979), *Dictionnaire alphabétique et analogique de la langue française*. p. 1511, 1527 and 1547

[2] Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 *supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards*

[3] Sempé J.-J., (1963), *Tout se complique*. Denoël

– Improved detection of anomalies and ESG risks. Thanks to its contextual processing capabilities, generative AI can identify inconsistencies, improve the accuracy of analyses and the ability of auditors to identify risks (Zhang & Xu, 2022);
– assisting auditors in report writing by increasing their productivity in report writing, producing clear, consistent and uniform summaries that comply with standards (CSRD/ESRS);
– supporting decision-making through scenario simulation. In the climate field, ESRS require the presentation of scenarios chosen by companies. Generative AI is an effective tool for modelling different ESG scenarios by simulating the possible impacts of identified risks, which greatly enriches professional judgement by providing forward-looking perspectives (Brynjolfsson & McAfee, 2017)[1].

While the benefits of using artificial intelligence are becoming increasingly apparent, the risks involved are more subtle and often invisible at first glance. These include the opacity of algorithms, the reproduction or amplification of systemic biases, the dilution of human responsibility, and even a possible erosion of professional judgement.

AI relies on "black boxes" because the algorithm that transforms a mass of knowledge required to convert complex data into simple, understandable answers is not known to the person making the query. There is therefore no transparency.

AI can generate hallucinations[2] by presenting answers that are incorrect as correct. Generative AI, relying on resources that can be falsified, will produce errors that will feed into the available data, which will in turn be taken up by the AI, creating a snowball effect that amplifies the error, which will then appear to be increasingly "true". This raises the issue of the quality and reliability of responses. On average, AI reproduces false information in 26% of cases[3]. This is obviously huge, and an auditor cannot accept such a high proportion of errors.

The use of AI also raises the question of the auditor's responsibility. Faced with significant profitability and time constraints, auditors are pushed to automate their controls, become dependent on AI and reduce their level of vigilance. However, responsibility cannot be shared between the company that developed the AI model and the auditor. In the event of a major scandal, if false information validated by the auditor have been disclosed, only the auditor risks imprisonment! He is solely responsible for the conclusions of his report, even though he does not have the means to open the black box, i.e. to control the information production process. He must therefore resort to triangulation: testing the result by using several sources (ISSA 5000, § A35).

Faced with massive volumes of data, complex standards and the risks associated with algorithmic bias, auditors' professional judgement is deeply challenged. It is no longer just a matter of checking figures or evaluating isolated indicators, but of interpreting results from a dynamic interaction between humans and machines, in an environment marked by ethical, technical and regulatory issues. This new context requires sustainability auditors to develop specific skills, adopt critical and collaborative strategies, and rethink their analysis methods to ensure the reliability, transparency and accountability of the audits they perform. Their professional judgement must necessarily evolve to manage this growing complexity, while balancing the use of technological advances with the preservation of critical discernment, which is essential to the quality and integrity of the audit.

The hybrid co-construction of judgement, between human intelligence and artificial intelligence, although it carries risks, is likely to shape the future of sustainability auditing. However, reducing these potential risks requires strengthening the capabilities of auditors to:

- understand the functioning and technical limitations of generative AI tools;
- exercise critical analysis to interpret, validate and supplement automated results;
- combine these technological contributions with in-depth knowledge of regulatory and standard requirements, particularly those of the CSRD and ESRS.

[1] This article analyses technical challenges related to AI in business, including opacity and data dependency.
[2] See Martins, Seidel, & Beck (2023). This article specifically analyses technical risks and hallucinations in generative models.
[3] *Les Echos*, 16/7/2025, reprinted by *Le Canard enchaîné*, 23/7/2025. According to Perplexity, the hallucination rate (the percentage of false information reproduced by AI) is between 30% and 48% (25/7/2025).

5. Towards a conceptual framework for the professional judgement of sustainability auditors in the age of artificial intelligence

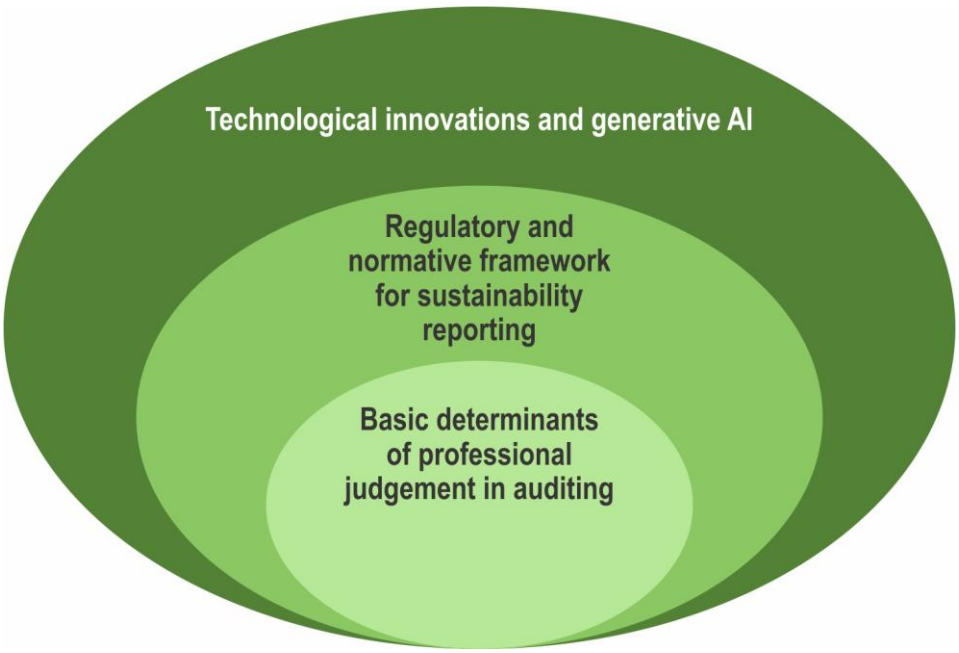
The statutory audit of accounts and sustainability information is a "public interest function" according to European terminology due to its essential role in economic transparency, corporate social responsibility and stakeholder trust.

As such, it draws on the professional judgement of auditors in all its complexity, at the intersection of three interdependent dimensions, as suggested and contextualised in the **Figure no. 1**.

The interconnection between:

- the classical dimension of professional judgment;
- the normative and regulatory dimension concerning sustainability information;
- and the technological dimension,
- forms the foundation of our proposed conceptual framework.

Figure no. 1. Determinants of professional judgement in sustainability auditing



Source: the authors

Those who perform this function are subject to professional standards of conduct that are set out in a global code, the *Code of Ethics for Professional Accountants* of the International Ethics Standards Board for Accountants (IESBA), one of the committees of the International Federation of Accountants (IFAC). This code is incorporated into European regulations and national legislation. Whether for financial statements or sustainability, the behavioural requirements are the same (Niculescu & Burlaud, 2025), namely: integrity, competence, continuing education, independence and objectivity, professional scepticism, confidentiality and professional secrecy. This is also the case for the three categories of determining factors which, according to the theory of Libby and Luft (1993), influence the quality of professional judgement in auditing: individual cognitive factors, contextual factors and organisational factors. These determinants form the basis for all decision-making in auditing, providing a structured framework for analysing, interpreting and acting on the information gathered.

In the specific context of sustainability auditing, where the issues are multidimensional and standards are constantly

evolving, these basic factors remain essential. Technical knowledge, analytical skills, understanding of the specific context of the company, and the support of a structured and collaborative organisation are essential to ensure the rigour and relevance of conclusions. For sustainability auditors, this cognitive, contextual and organisational basis remains the essential foundation on which specific skills related to the consideration of regulatory and normative requirements on sustainability information are built, and the premise for the relevance, transparency and credibility of sustainability audits.

The criteria well known in the literature on professional judgement in auditing are recontextualised in the **Table no. 1**, in order to better articulate the traditional dimensions of judgement with the emerging challenges of professional judgement in sustainability auditing in the age of AI:

Table no. 1. Dimension 1: Basic determinants of professional judgement by sustainability auditors

Criteria	***Associated key knowledge and skills***
1.1. Individual cognitive factors	*Technical knowledge and expertise:* - Theoretical knowledge required to carry out information assurance and ability to apply this knowledge in practice - Proficiency in financial and non-financial audit standards - Knowledge of sector-specific standards - Ability to apply best practices
	Ability to analyse, synthesise and interpret: - Critical thinking - Ability to structure complex situations - Ability to interpret discrepancies and weak signals
	Vigilance and personal motivation: - Rigorous and consistent work ethic - Proactive attitude - Sense of responsibility and personal ethics
1.2. Contextual factors	*Ability to contextualise audit situations:* - Understanding of the economic, social and regulatory environment - Analysis of issues specific to the entity - Adjusting judgement to the context
	Management of uncertainty and complexity: - Ability to formulate assumptions - Risk assessment in uncertain circumstances - Flexibility in adjusting tools
	Time pressure and external constraints: - Prioritising tasks - Ability to maintain quality under pressure - Resilience to stress
1.3. Organisational factors	*Application of internal standards and procedures:* - Compliance with internal methodologies - Rigorous documentation - Ability to fit into an organisational framework
	Training and continuous professional development: - Regular updating of skills - Involvement in the development of knowledge - Participation in internal programmes
	Integration into team dynamics and supervision: - Collaborative work - Critical exchange with peers - Acceptance of feedback and hierarchical guidance

Source: the authors

The regulatory and normative framework for sustainability information is a key reference for auditors specialising in this field, setting out requirements for the transparency, reliability and comparability of ESG data. This framework, embodied in particular by the Taxonomy Regulation, the SFRD Regulation, the CSRD and CS3D Directives and the ESRS, as well as other international standards, imposes precise standards regarding the nature, quality and scope of the information to be disclosed. For sustainability auditors, a thorough understanding of this specific regulatory framework is essential in order to correctly interpret and apply the requirements in the audit process, as shown in the **Table no. 2**.

Table no. 2. Dimension 2: Regulatory and normative framework

Criteria	*Associated key knowledge and skills*
2.1 Mastery of the European and international regulations on sustainability information	- Theoretical knowledge required in relevant to sustainability information assurance - In-depth knowledge of the regulatory and normative frameworks in force (Taxonomy, SFRD, CSRD, ESRS, CS3D, etc.) - Critical reading of cross-cutting requirements (ESRS 1 & 2) - Critical reading of thematic standards (ESRS E1-E5, ESRS S1-S4, ESRS G1
2.2 Operational interpretation of regulatory requirements	- Ability to apply this knowledge in practice - Ability to analyse and interpret the basic principles of sustainability information: double materiality, DNSH, proportionality, etc. - Ability to assess the company's choice of sustainability issues and the information it has identified as material - Ability to assess companies' narratives on materiality analysis and due diligence processes - Ability to select relevant standards/themes and sub-themes in line with the material issues identified - Ability to prioritise issues according to double materiality
2.3 Integration of the normative framework into audit planning	- Development of an audit plan aligned with regulatory requirements - Ability to translate standards into auditable analysis criteria - Normative justification of decisions - Identification of regulatory compliance risks
2.4 Adaptability to regulatory change	- Active regulatory monitoring - Ability to revise practices in response to changes in the regulatory framework Participation in updating procedures - Proactive proposals for improving the regulatory and standards framework

Source: the authors

To ensure harmonisation of knowledge in this area, the European legislator has clearly indicated the relevant subjects for providing the theoretical knowledge necessary for statutory auditors responsible for reporting on sustainability, namely:

a) legal requirements and standards relating to the preparation of annual and consolidated sustainability information;

b) sustainability analysis;

c) due diligence procedures in relation to sustainability matters;

d) legal requirements and assurance standards for sustainability-related information (CSRD, 2022).

By consolidating these factors, professionals will be able to integrate the four specific audit areas for sustainability reporting certification into their work:

– the relevance of the double materiality analysis process and its accurate description in the sustainability statement (in connection with the due diligence process);

– the compliance of the sustainability information disclosed in the sustainability statement with national

legislation and ESRS (according to which sustainability information must meet the criteria of relevance, fair representation, comparability, verifiability and understandability);

– compliance with the information disclosure requirements set out in Article 8 of the Taxonomy Regulation;

– compliance with sustainability information disclosure requirements.

The emergence of technological innovations, particularly generative AI tools, is a disruptive factor that has profoundly transformed the audit profession by offering new possibilities for data analysis and processing. In order for human-machine cooperation in the co-construction of professional judgement to preserve the auditor's independence and objectivity, professional scepticism, confidentiality and professional secrecy, specific skills must be developed, as outlined in the **Table no. 3**.

Table no. 3. Dimension 3: Technological innovations and generative AI

Criteria	*Associated key knowledge and skills*
3.1. Mastery of generative AI tools	- Training and experience in the use of AI technologies (GPT, Claude, Copilotes, Perplexity, etc.) - Prompt engineering skills - Autonomy of use - Ability to integrate tools into the audit process
3.2. Human-machine cooperation	- Ability to collaborate effectively with AI systems - Balance between human judgement and AI recommendations - Ensuring synergy between human and machine capabilities
3.3. Ability to interpret AI recommendations	- Understanding the limitations of AI tools - Critical thinking when faced with AI-generated suggestions - Ability to validate or challenge automatic analyses
3.4. Management of algorithmic bias	- Knowledge of possible types of bias (data, training, formulation, confirmation, etc.) - Critical thinking when faced with AI outputs / Do not passively accept the responses generated - Be able to question the "neutrality" of AI - Triangulate sources / Cross-check AI responses with reliable documents (standards, regulatory texts, sector reports, expert opinions) - Assessing the representativeness of the data used / Being able to detect whether the data used or integrated by AI is biased (e.g. geographically, sectorial, culturally) - Be able to explain, in audit notes, the technical and epistemic limitations of the AI tool used

Source: the authors

The technological dimension, embodied by skills related to the use of generative AI, is a key issue for the professional judgement of sustainability auditors. The **Table no. 3** summarises the essential skills for integrating these tools into audit practice. Mastery of AI tools, including specific training and prompt engineering, is necessary to fully exploit their potential. The autonomous use and integration of technologies into the audit process mark a shift from traditional practices.

Managing algorithmic bias is a key strategic skill. Auditors must not only identify the different types of bias that can affect results (data, training, formulation, confirmation, etc.), but also adopt rigorous validation strategies, such as triangulation of sources and cross-checking with reliable documents and expert opinions. This vigilance is essential to avoid systematic errors or misrepresentations in the analysis of sustainability data.

All these elements show how the integration of AI into sustainability auditing is transforming professional judgement by combining technical expertise, human-machine collaboration, critical analysis and methodological rigour, with the aim of responding to the increased quality and ethical requirements under temporal constraints at the digital age.

6. Research findings and conclusions

Documentary research, in particular an in-depth analysis of the European and international regulatory framework for sustainability, as well as numerous informal discussions with professionals in the accounting and auditing professions, have enabled us to outline a conceptual framework for the professional judgement of sustainability auditors in a context marked by the rapid penetration of artificial intelligence tools. This framework, which can still be improved, as shown by the focus group results, provides an initial basis for theoretical reflection on the transformation of judgement in an era of regulatory and technological change.

The use of a focus group with practising auditors was considered a relevant methodological approach to validate the conceptual framework proposed in this research. By bringing together 20 professionals for a 90-minute session, the aim was not only to test the theoretical relevance of the framework developed, but also to verify its operationality in sustainability auditing practices, a field that is still being structured. The conclusions of *the focus group* are as follows:

1. Relevance of the dimensions of the theoretical framework identified

The first notable conclusion concerns the general validation of the first dimension of the grid, which focuses on the cognitive, contextual and organisational factors of professional judgement. The fact that these dimensions were recognised as representative of the realities on the ground tends to confirm the transferability of traditional theoretical models of judgement in auditing (Libby & Luft, 1993) to the specific context of sustainability auditing. This suggests that, despite changes in the profession, the foundations of professional judgement remain stable, even if they need to be broadened.

2. Limitations in the adoption of the regulatory framework

On the other hand, the second dimension, relating to the regulatory and normative framework specific to sustainability reporting (CSRD, ESRS, Taxonomy), gave rise to more limited discussions. This situation reveals a gap in professional maturity: only 20% of participants had a good knowledge of the normative framework, while 30% had a poor understanding of it. This finding reflects both the recent introduction and complexity of the European measures, and the need for ongoing training, particularly in the field of sustainability. This lack of regulatory expertise limits the ability to make informed professional judgements and shows that improving regulatory skills is a prerequisite for the effective integration of the framework into practice.

3. Relevance of the framework in light of ESG and technological changes

Participants generally recognised the relevance of the framework in light of evolving European regulatory requirements and the emergence of new technologies (generative AI, data mining tools, etc.). However, as these changes are still stabilising, discussions showed that the effective integration of these tools into audit practices remains uneven and sometimes lacking in reflection. This confirms the need for co-construction of human-machine judgement, but also for enhanced training on the technological and ethical dimensions of audit work, with a view to anticipating future developments.

4. A partial answer to the research question

Finally, the question posed by this research: *What conceptual framework can guide the development of professional judgement among sustainability auditors in a context of regulatory and technological change?* has been partially answered. While the framework has not been fully validated, the feedback from the focus group provides solid empirical support for refining the grid and identifying areas for improvement, focusing on:

- dynamic modelling of professional judgement in uncertain contexts;
- better formalisation of the practical indicators associated with each criterion;
- measuring auditors' understanding of ESRS and Article 8 of the Taxonomy;
- and the development of enhanced professional ethics in the age of AI.

In conclusion, this research provides a solid but partial conceptual basis, which needs to be further developed through future work in line with feedback from the application of European sustainability reporting regulations. This work should also assess the rapidly advancing convergence of humans and machines in sustainability auditing and the development of professional judgement.

Bibliography

Books and articles

1. Barocas, S., Hardt, M., & Narayanan, A. (2019). Fairness and machine learning, https://fairmlbook.org,
2. Beck, U. (1992), Risk Society. Towards a New Modernity, *SAGE Publications Ltd*
3. Berger, P. L. & Luckmann, T., (1966). The Social Construction of Reality: A Treatise in the Sociology of Knowledge, *Anchor*
4. Bertalanffy, von L., (1969). General system theory: foundations, development, applications. *Ed. G. Braziller*
5. Brynjolfsson, E., & McAfee, A. (2017). Artificial intelligence, for real. *Harvard Business Review*, 95(4), 108-116.
6. Burlaud, A. (1995). *Contrôle de gestion : le développement de l'intelligence organisationnelle.* (leçon inaugurale placée sous la présidence de Louis Schweizer, président de Renault), CNAM, https://shs.hal.science/halshs-04464282
7. Burlaud, A. & Pérez, R. (2012). La comptabilité est-elle un bien commun?, în „Comptabilité, société, politique. Mélanges en l'honneur du professeur Bernard Colasse", *Economica*
8. Burlaud, A., Niculescu, M. (2016). Un droit comptable ouvert au jugement professionnel : menace ou opportunité ?, *Revue française de comptabilité*, no. 500, juillet-août.
9. Burlaud, A., (2022). Comptabilités. L'empire des nombres. *EMS*
10. DiMaggio, P. J. & Powell, W. W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields, *American Sociological Review*, Vol. 48, no. 2, p. 147-160.
11. Durkheim, E. (1911). Jugement de valeur et jugement de réalité. http://kieranhealy.org/files/misc/durkheim-jugements-text.pdf
12. Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist, 34*(10), 906-911. https://doi.org/10.1037/0003-066X.34.10.906
13. Floridi, L. & Cowls, J. (2019). A Unified Framework of Five Principles for AI in Society. https://doi.org/10.1162/99608f92.8cd550d1
14. Foucault, M. (1975). Surveiller et punir : Naissance de la prison. *Gallimard*.
15. Gilles, B. (dir.), (1978). Histoire des techniques. Technique et civilisations. Technique et sciences. *NRF*.
16. Habermas, J. (1984). The theory of communicative action (T. McCarthy, Trans., Vol. 1). *Beacon Press*. (Originally published 1981)
17. Hollan, J., Hutchins, E., & Kirsh, D. (2000). Distributed cognition: Toward a new foundation for human-computer interaction. *ACM Transactions on Computer-Human Interaction, 7*(2), 174-196. https://doi.org/10.1145/353485.353487
18. Hutchins, E. (1995). Cognition in the wild. *MIT Press*.
19. Krishnan, G. V., & Wang, Y. (2024). Artificial intelligence and the integrated audit of financial and sustainability reports. *Journal of Accounting Research, 62*(1), 203-241. https://doi.org/10.1111/1475-679X.12407
20. Lalande, A. (1983). Vocabulaire technique et critique de la philosophie, *PUF*
21. Lavalette, G. & Niculescu, M. (1999), Les stratégies de croissance. *Editions d'Organisation*
22. Libby, R., & Luft, J. (1993). Determinants of judgment performance in accounting settings: Ability, knowledge, motivation, and environment. *Accounting, Organizations and Society, 18*(5), 425-450.
23. Martins, A., Seidel, S., & Beck, R. (2023). Generative AI: A new challenge for digital innovation research. *Business & Information Systems Engineering*, 65(4), 453-463. https://doi.org/10.1007/s12599-023-00785-9
24. Ménard, L. *et al.* (2004). Dictionnaire de la comptabilité et de la gestion financière. *ICCA, OEC, CNCC, IRE*.
25. Niculescu, M. & Galabov, A. (2019). Epistemologia cercetării în științele organizațiilor, *Ed. Pro-Universitaria*
26. Niculescu, M. & Burlaud, A. (2023), From Non-Financial Disclosure to Sustainability Reporting: New Challenge for Financial Analysts and Auditors, *Audit Financiar* no. 4, p. 685-714
27. Niculescu, M. & Voicu C., (2024). Le passage de la *soft law* à la *hard law* en matière de durabilité. L'impact du nouveau rapport entre les règles de droits et la réalité sociale sur la théorie et la pratique du management, *The 5th International Conférence GIKS 2024 Global Interferences of Knowledge Society*, 24-25 octombrie, Universitatea Valahia Târgoviște
28. Niculescu, M., Burlaud, A. & Predescu L. (2024). Expectation Gap: the Story of the Auditor's Necessary and Impossible Mission, *Audit Financiar*, vol. XXII, no. 4(176), pp. 695-723; DOI: 10.20869/AUDITF/2024/176/023
29. Niculescu, M. & Burlaud, A. (2025), Durabilité et RSE. Analyse et audit de durabilité. *Foucher*
30. Norman, D. A. (1993). Things that make us smart: Defending human attributes in the age of the machine. *Addison-Wesley*.

31. Schutz, A. (1967). The phenomenology of the social world. (Walsh & Lehnert, Trans.). *Northwestern University Press*. (Original work published 1932)
32. Trist, F. E. & Emery, E. L. (1973), Towards A Social Ecology: Contextual Appreciation of the Future in the Present. *Plenum Press*
33. Trotman, K. T. (2014). Professional judgment in auditing. *Accounting & Finance, 54*(S1), 49-67. https://doi.org/10.1111/acfi.12053
34. Zhang, B., & Xu, H. (2022). A systematic literature review of explainable artificial intelligence in finance and auditing. *Expert Systems with Applications*, 195, 116662. https://doi.org/10.1016/j.eswa.2022.116662

Legislation and regulations

1. Directive (UE) 2022/2464 du Parlement et du Conseil du 14 décembre 2022 *modifiant le règlement (UE) no 537/2014 et les directives 2004/109/CE, 2006/43/CE et 2013/34/UE en ce qui concerne la publication d'informations en matière de durabilité par les entreprises* / CSRD (Corporate Sustainability Reporting Directive)
2. Directive (UE) 2025/5678 du Parlement européen et du Conseil du 20 mars 2025 *modifiant la directive 2013/34/UE en ce qui concerne la publication d'informations en matière de durabilité par les entreprises* (Directive Omnibus).
3. International Auditing and Assurance Standards Board (IAASB) (2024), *International Standard on Sustainability Assurance (ISSA) 5000 General Requirements for Sustainability Assurance Engagements.*
4. Règlement (UE) 2020/852 du Parlement européen et du Conseil du 18 juin 2020 s*ur l'établissement d'un cadre visant à favoriser les investissements durables et modifiant le règlement (UE) 2019/2088/* (dit règlement Taxonomie) *et ses règlements délégués*.
5. Règlement (UE) 2024/1086 du Parlement européen et du Conseil du 21 mai 2024 *établissant des règles harmonisées concernant l'intelligence artificielle.*
6. Règlement délégué (UE) 2021/2178 de la Commission du 6 juillet 2021 c*omplétant le règlement (UE) 2020/852 du Parlement européen et du Conseil par des précisions concernant le contenu et la présentation des informations que doivent publier les entreprises soumises à l'article 19 bis ou à l'article 29 bis de la directive 2013/34/UE sur leurs activités économiques durables sur le plan environnemental, ainsi que la méthode à suivre pour se conformer à cette obligation d'information* (Règlement délégué Article 8)
7. Règlement délégué (UE) 2023/2772 de la Commission du 31 juillet 2023 *complétant la directive 2013/34/UE du Parlement européen et du Conseil en ce qui concerne les normes d'information en matière de durabilité* (ESRS)
8. Règlement délégué (UE) 2023/2772 de la Commission du 31 juillet 2023 *complétant la directive 2013/34/UE du Parlement européen et du Conseil en ce qui concerne les normes d'information en matière de durabilité*.