Gender Equality and Algorithmic Discrimination: the contribution of the EU standardisation request on AI

Fabian Lütz*

Schlagwörter Standardisation – Gender Equality – Algorithmic Discrimination – Artificial Intelligence – Discrimination

Zusammenfassung Dieser Beitrag untersucht das Standardsetzungsverfahren für Künstliche Intelligenz in Europa am Beispiel der Normungsanfrage der Europäischen Kommission im Rahmen des EU-KI-Gesetzes und bewertet dessen Relevanz und Auswirkungen für die Gleichstellung der Geschlechter und algorithmische Diskriminierung.

Résumé Cet article examine la procédure normative pour l'intelligence artificielle en Europe sur la base de l'exemple de la demande de normalisation de la Commission européenne dans le cadre de la loi européenne sur l'IA et évalue sa pertinence et ses impacts pour l'égalité des sexes et la discrimination algorithmique.

Summary This article examines the standard setting procedure for Artificial Intelligence in Europe with example of the European Commission's request for standardization in the framework of the EU AI Act and assesses its relevance and impacts for gender equality and algorithmic discrimination.

I. Introduction

Artificial Intelligence (AI) is not only making frontpage news, but also keeping legislators and regulators around the world busy.[1] Large Language Models (LLMs), such as *ChatGPT* or *Bard* are now known by most people. The UN High Commissioner for Human Rights recently recalled that AI must be grounded in human rights[2] and underlined the serious risks of AI for human rights and the need "to develop quickly effective guardrails".[3] In the same vein, the *The Elders* called for a global cooperation to manage risks and share benefits of AI.[4] A booming amount of AI conferences[5], reports[6] and articles is increasingly shedding light on the risks of biases and dis-

* Fabian Lütz, Ass. iur., Maître en droit (Paris), LL.M. (Bruges), PhD Researcher (Université de Lausanne, UNIL).
 DOI of this article: 10.3256/978-3-03929-042-0_02.

1 For a general overview, Fabian Lütz, Artificial Intelligence and Gender-Based Discrimination, in: Temperman/Quintavilla (ed.), Artificial Intelligence and Human Rights, Oxford 2023, 207-222, and specifically the EU (Proposal for a Regulation of the Europen Parliament and of the Council laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act), COM/2021/206 final; the U.S. (Algorithmic Accountability Act, https://www.congress.gov/bill/117th-congress/senate-bill/3572, accessed on 11 September 2023), Canada (Artificial Intelligence and Data Act, https://ised-isde.canada.ca/site/innovation-better-canada/en/artificial-intelligence-and-data-act-aida-companion-document, accessed on 11 September 2023) and Brazil (proposed legislation to regulate Artificial Intelligence, https://legis.senado.leg.br/sdleg-getter/documento?dm=9347593&ts=1683152235237&disposition=inline&_gl=1*edqnkm*_ga*MTgyMDY0MTcwMS4xNjc5OTM2MTI0*_ga_CW3ZH25XMK*MTY4MzIxNzUzMy4yLjEuMTY4MzIyMDAyMy4wLjAuMA, accessed on 11 September 2023).

2 UN High Commissioner for Human Rights, Statement of 12 July 2023, https://www.ohchr.org/en/statements/2023/07/artificial-intelligence-must-be-grounded-human-rights-says-high-commissioner, accessed on 11 September 2023.

3 UN High Commissioner for Human Rights, Statement of 18th February 2023, https://www.ohchr.org/en/statements/2023/02/comment-un-high-commissioner-human-rights-volker-turk-advances-artificial accessed on 11 September 2023.

4 The Elders, The Elders urge global co-operation to manage risks and share benefits of AI, 31 May 2023, Statement, https://theelders.org/sites/default/files/newsarticaldocument/2023-05-31-STATEMENT-The-Elders-urge-global-co-operation-AI.pdf, accessed on 11 September 2023. Remarkably, they call on the UN General Assembly to mandate the International Law Commission to "*draft an international treaty establishing a new international AI safety agency.*".

5 See Global AI for Good Summit where AI experts from different domains were drawing attention not only to the benefits of AI but also to the risk side of AI including biases and discrimination. However, only one event was specifically dedicated to women and AI, https://aiforgood.itu.int, accessed on 11 September 2023.

6 See Norwegian Consumer Council, Ghost in the machine – Addressing the consumer harms of generative AI, June 2023, www.forbrukerradet.no/ai accessed on 11 September 2023.

crimination notably in relation to gender equality.[7] Recent examples that illuminate the negative impacts of AI on women include deep fakes created for pornographic purposes[8], sexualised image creations with LLMs[9], as well as gender bias in translation or Chatbots.[10] However, standards and how they can shape and impact the debate, legislation and enforcement of AI rules is however a topic that receives far less attention. The EU's proposal for a Regulation on AI foresees standardisation as a tool to ensure compliance with the EU AI Act.[11]

One might wonder why technical standards elaborated by the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC) are relevant for gender equality law. Switzerland is a member of both CEN and CENELEC and even though future EU law adopted around AI will only be binding for the EU-27, the standards adopted in this framework will most likely shape the approach to AI and algorithmic discrimination in Switzerland too. Neither the AI Act nor the request for standardisation speaks concretely in their operative parts about gender equality and non-discrimination, although some references can be found in the recitals. Admittedly, a more detailed look is necessary to understand the importance of standards for EU gender equality and non-discrimination by putting seven puzzle pieces together.

First, the European Commission proposed a draft Regulation for an Artificial Intelligence Act (AI Act). Second, the European Commission sent a request for standardisation to the two mentioned standardisation bodies which it intends to incorporate into the AI Act. Third, the AI Act classifies certain AI systems as high-risk, which requires providers of such high-risk AI systems to fulfil specific requirements detailed in the AI Act. Fourth, many of the requirements relevant for high-risk AI systems will be based on the above-mentioned European standards. Fifth, an Annex of the AI Act lists those high-risk AI systems among which one can find AI recruitment systems. Sixth, such an AI recruitment system, which falls within the scope of the AI Act high-risk regulation could be used by a company to support its hiring procedure and it could cause gender-based discrimination, for example in the pre-selection phase, CV screening, interview- or any other stage of the recruitment procedure.[12] Seventh, if such alleged (algorithmic) discrimination occurs, the source of such discrimination might be investigated by the victim of discrimination, for example, among the design and the datasets of the algorithm and consequently either the AI company developing the AI system, the provider of the AI recruitment software or the victim of discrimination might invoke the underlying European standard in a legal procedure to argue compliance or non-compliance with EU law.

Having said that, to understand better, we need to investigate the standardisation request of the European Commission (I.) before discussing EU Harmonisation standards in general and its impacts on gender equality and algorithmic discrimination both in the EU and in Switzerland (II.). The article then discusses the point of view of gender equality law and the legal consequences incorporating EU standards into the EU and Swiss legal order (III.) before concluding and giving an outlook (IV.).

II. The EU AI Act Standardisation request by the European Commission

On 5 December 2022, the European Commission submitted a standardisation request for ten items regarding the

7 Many books have been written on the topic, most recently, Meredith Broussard, More Than a Glitch: Confronting Race, Gender, and Ability Bias in Tech, Cambridge 2023.

8 Kristen Thomasen/Suzie Dunn, Reasonable Expectations of Privacy in an Era of Drones and Deepfakes: Expanding the Supreme Court of Canada's Decision in R v Jarvis (2021), Bailey J./Flynn A./Henry N. (ed.), The Emerald International Handbook of Technology-Facilitated Violence and Abuse (Emerald Studies In Digital Crime, Technology and Social Harms), Bingley 2021, 555-576.

9 See for example Grace Sparks, The Woman's Metamorphosis: A Time-Traveling tale of Image and Text, May 2023, https://digital.kenyon.edu/cgi/viewcontent.cgi?article=1048&context=dh_iphs_ai, accessed on 11 September 2023.

10 Beatrice Savoldi/Marco Gaido/Luisa Bentivogli/Matteo Negri, Marco Turchi, Gender Bias in Machine Translation, Transactions of the Association for Computational Linguistics 9/2021, 845–874, https://doi.org/10.1162/tacl_a_00401, accessed on 11 September 2023.

11 See Recital 61 of the EU AI Act (fn. 1), and the standardization request; in general for an analysis that explains some of the ideas behind the AI Act, Paul Nemitz/Matthias Pfeffer, The Human Imperative – Power, Freedom and Democracy in the Age of Artificial Intelligence, Cambridge 2023.

12 On AI recruitment systems and algorithmic discrimination, see Fabian Lütz, Le rôle du droit pour contrer la discrimination algorithmique dans le recrutement automatisé, in: Guillaume (ed.), La technologie, l'humain et le droit, Bern 2023.

future AI Act[13] to the relevant EU bodies.[14] More specifically within the framework of Art. 12 of Regulation (EU) 1025/2012, the European Commission submitted a so-called possible future standardisation request to the European standardisation organisations (Art. 12, point b). The title of the initiative is "Draft standardisation request to the European Standardisation Organisations in support of safe and trustworthy artificial intelligence" within the framework of the AI Act.

Once the standard is available by the European standard setting bodies, it will be incorporated in a Commission Implementing Decision "on a standardisation request to the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC) in support of safe and trustworthy artificial intelligence".

A. General overview

The request specifies that the European Standardisation bodies shall draft the new European standards or European standardisation deliverables in support of safe and trustworthy artificial intelligence. The most important and relevant parts for the elaboration of the EU standard are contained in the Annexes. Annex I specifies the list of new European Standards and/or European standardisation deliverables to be drafted. Annex II details and describes the requirements for the European standards and European standardisation deliverables. While first recalling the general requirements for all European standards, the request then specifies the requirements for specific European standards and European standardisation deliverables, which in essence is an explanation and guidance for the elaboration of the ten requested standards. The European standards shall be elaborated in order to specify the requirements of the future Regulation in relation to the following issues, most of which are potentially relevant from a gender equality perspective: risk management system for AI systems, governance and quality of datasets used to build AI systems, record keeping through logging capabilities by AI systems, transparency and information provisions to the users of AI systems, human oversight of AI systems, accuracy specifications for AI systems, robustness specifications for AI systems, quality management system for providers of AI systems, including post-market monitoring process and conformity assessment for AI systems. The way those standards will be developed may be relevant to the extent to which it will be possible to address gender equality issues such as biases and algorithmic discrimination.

B. Gender equality and non-discrimination in the standardisation request

In the request, there is no specific mentioning of gender or non-discrimination. Nevertheless, it states that the EU's approach to AI is "ensuring safety and the protection of fundamental rights, as enshrined in the Charter of fundamental rights" (Recital 1). Furthermore, it is recalled that "Standards are important in supporting the implementation of EU policies and regulations to ensure a high level of protection of safety and fundamental rights for EU citizens throughout the Union" (Recital 2). Interestingly and importantly, the following is highlighted:

> *"In line with Article 10(1) of Regulation (EU) No 1025/2012, the policy objectives of the Commission in the field of artificial intelligence should be taken into account when drafting European standards and European standardisation deliverables in reply to this request. Such policy objectives include ensuring that AI systems placed on the market or put into service in the Union are safe, are used in compliance with fundamental rights and in full respect Union values (...)" (Recital 13).*

Although not explicitly mentioning gender equality and non-discrimination, those principles form integral part of EU fundamental rights and are enshrined in the EU Charter of fundamental rights. This can be understood as a clear guidance for considering the policy objectives and values of the Union. Due to the fundamental rights impacts of EU standards, it needs to be ensured that expertise in fundamental rights is guaranteed (Article 2(1) and Recital 14). Article 3 (5) includes the expertise on fundamental rights for the drafting of the standard into the specifications of reporting to the European Commission by the standard setters that need to be supported by evidence. There is a clear necessity to include gender equality and non-discrimination expertise throughout the standardisation process.

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[13] European Commission, Draft standardisation request to the European Standardisation Organisations in support of safe and trustworthy artificial intelligence, https://ec.europa.eu/docsroom/documents/52376/attachments/1/translations/en/renditions/native, accessed on 11 September 2023.

[14] CEN-CENELEC, https://www.cencenelec.eu/european-standardization/european-standards/, accessed on 11 September 2023.

C. The future standards and their relevance for gender equality

1. Risk management system for AI systems[15]

Designed to set up specifications for a risk management system for AI systems, such a "risk management should be intended as a continuous iterative process run throughout the entire lifecycle of the AI system, which is aimed at preventing or minimising the relevant risks to health, safety or fundamental rights."[16] Risk management should address fundamental rights including gender and non-discrimination and is important to manage and detect potential biases and discriminatory potential during the design phase, but also during and after deployment. The teams responsible for risk management should be diverse and include women.

2. Data and data governance

This future standard is particularly relevant in view of the known literature on gender biases and gender-based discrimination[17] notably as a result of biased datasets.[18] The twofold aim is first to develop "specifications for adequate data governance and data management procedures to be implemented by providers of AI systems (with specific focus on data generation and collection, data preparation operations, design choices, procedures for detecting and addressing biases or any other relevant shortcomings in data)" and second to provide "specifications on quality aspects of datasets used to train, validate and test AI systems (including representativeness, relevance, completeness and correctness)".[19] The doctrine and institutional reports have highlighted the risk of design choices and datasets in general (data collection and generation as well as modification and preparation of datasets used for training algorithms) as potential entry doors for gender biases and discrimination.[20] Finally, bias detection and the consecutive addressing of gender biases is a helpful tool to achieve gender equality. It is vital that clear guidance is given to companies and enforcers and that soft law and legal frameworks contain provisions that call for bias mitigation. With regard to the second aim of the standard, data quality is key to ensure non-discriminatory AI decisions. Training, validation and testing of algorithms is key to ensure non-biased and non-discriminatory decision-making. The gender data gap[21] sheds light on the problems, as datasets tend to be non-representative, incomplete and incorrect due to the digital gender divide and prevailing gender stereotypes.[22] This standard would therefore profit both in its elaboration and in its implementation by knowledge of gender equality issues and involvement of women to enable diverse and broad perspectives of the potential pitfalls.

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15 The different standards to be developed coincide with the relevant provisions of the AI Act, see fn. 34.

16 Standardization request (fn. 13), para 2.1; see also Art. 24 of the draft Framework Convention on Artificial Intelligence, Human Rights, Democracy and the Rule of Law (CoE AI), CAI 1/2023) on risk and impact management framework, https://rm.coe.int/cai-2023-01-revised-zero-draft-framework-convention-public/1680aa193f, accessed on 11 September 2023.

17 Joy Buolamwini/Timnit Gebru, Gender shades: Intersectional accuracy disparities in commercial gender classification, Conference on fairness, accountability and transparency, PMLR 2018; Emily M. Bender/Timnit Gebru/Angelina McMillan-Major/Shmargaret Shmitchell, On the dangers of stochastic parrots: Can language models be too big?, Proceedings of the 2021 ACM conference on fairness, accountability, and transparency, March 2021, 610-623, https://dl.acm.org/doi/10.1145/3442188.3445922, accessed on 11 September 2023; Timnit Gebru, Race and gender, The Oxford handbook of ethics of AI, Oxford 2020, 251-269.

18 With regard to Large Language Models (LLMs) and large datasets leading to scaling up societal biases, see Abeba Birhane/Vinay Prabhu/Sang Han/Vishnu Naresh Boddeti, On Hate Scaling Laws For Data-Swamps, arXiv preprint arXiv:2306.13141 (2023).

19 Standardization request (fn. 13), para 2.2; see Art. 16 of CoE AI on the principle of safety and on data quality and integrity.

20 See Fabian Lütz, Algorithmische Entscheidungsfindung aus der Gleichstellungsperspektive – ein Balanceakt zwischen Gender Data Gap, Gender Bias, Machine Bias und Regulierung, GENDER – Zeitschrift für Geschlecht, Kultur und Gesellschaft 1/2023, 26-41; Fabian Lütz, Gender equality and artificial intelligence in Europe, Addressing direct and indirect impacts of algorithms on gender-based discrimination, ERA Forum 23/2022, 33–52, https://doi.org/10.1007/s12027-022-00709-6, accessed on 11 September 2023; European Commission, Algorithmic discrimination in Europe – challenges and opportunities for gender equality and non-discrimination law, Directorate-General for Justice and Consumers, Luxembourg 2021, https://doi.org/10.2838/544956, accessed on 11 September 2023.

21 See Cristina Criado Perez, Invisible Women: Exposing Data Bias in a World Designed for Men, London 2019.

22 New findings show that nearly 9 out of 10 men and women hold fundamental biases against women, see UNDP (United Nations Development Programme), Gender Social Norms Index (GSNI): Breaking down gender biases: Shifting social norms towards gender equality, New York 2023, https://hdr.undp.org/system/files/documents/hdp-document/gsni202303pdf.pdf, accessed on 11 September 2023.

3. Record keeping, transparency and information requirements

In the case of an alleged case of algorithmic discrimination, the availability of and access to evidence is crucial, and AI has the advantage of enabling automatic recording and trace keeping of algorithmic actions and decisions. This standard aims to "enable the traceability of those systems throughout their lifecycle as well as the monitoring of their operations and shall facilitate the post-market monitoring of the AI systems by the providers"[23] and thus facilitates the submission of complaints by potential victims of gender-based algorithmic discrimination.

Without sufficient transparency and information provided to (end)users of AI systems, victims might not be even aware that an algorithm discriminated on the basis of sex for example. Transparency is also a common general principle in many non-binding and legal frameworks and frequently discussed in the doctrine on AI regulation.[24]

4. Human Oversight[25]

Aiming to provide "measures enabling users to understand, monitor, interpret, assess and intervene in relevant aspects of the operation of the AI system."[26], such a standard could help to identify and if necessary correct shortcomings of the AI system in relation to biased and discriminatory outcomes of the algorithm. It could be emphasized in the standard elaboration and implementation to include both women and men as humans in the loop to ensure diversity and representativeness of society issues.

5. Accuracy, robustness, cyber security

Although the performance of a specific algorithm is usually the key interest of companies using AI systems, this could conflict with accuracy in terms of biases and discrimination risks. Therefore, if guidance is issued in relation to "specifications for ensuring an appropriate level of accuracy of AI systems and for allowing providers to declare the relevant accuracy metrics and levels."[27], this could help not only to raise awareness but also opens the possibility to make problems in relation to gendered outcomes visible.

Particularly relevant for the mitigation of biases and discrimination, this standard on robustness will develop "relevant sources of errors, faults and inconsistencies, as well as the interactions of the AI system with the environment, including those AI systems that continue to learn after being placed on the market or put into service, notably in respect to feedback loops."[28]

Although less relevant at first sight for gender equality, there is always a risk of cybersecurity through exploitation "by malicious third parties exploiting the AI systems' vulnerabilities."[29]

6. Quality Management and Conformity assessment for AI systems

The role of a "continous compliance of an AI system"[30] also includes to ensure that along the lifecycle of the AI system, the risk of biases and discrimination is mitigated.

Considering conformity assessment is a key regulatory requirement to achieve the objectives of the EU AI Act, it is important that such standards are developed with a gender and non-discrimination lens in mind. For example, "criteria for assessing the competence of persons tasked with those conformity assessment activities."[31] can help ensure that relevant domain knowledge in gender equality and non-discrimination is available or integrated via external experts. The standard considers "both the

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[23] Standardisation request (fn. 13), para 2.3; see Art. 19, 24 (2)c) and 25b) on recording, document and keeping records, CoE AI; in general, see Sushant Agarwal, Trade-offs between fairness and interpretability in machine learning, PhD thesis Waterloo 2020.

[24] See Thomas Wischmeyer, Artificial intelligence and transparency: opening the black box, Regulating artificial intelligence, Cham 2020, 75-101; Larsson, Stefan/Fredrik Heintz, Transparency in artificial intelligence, Internet Policy Review 9.2/2020; see Art. 15 CoE AI.

[25] Art. 14 AI Act; Ben Green, The flaws of policies requiring human oversight of government algorithms, Computer Law & Security Review 45/2022; Yeung, Karen/Andrew Howes/Ganna Pogrebna, AI Governance by Human Rights–Centered Design, Deliberation, and Oversight, The Oxford handbook of ethics of AI, Oxford 2020, 77-106; see Art. 15 CoE AI.

[26] Standardisation request (fn. 13), para 2.5.

[27] Standardisation request (fn. 13), para 2.6.

[28] Standardisation request (fn. 13), para 2.7; Erick Galinkin, Robustness and usefulness in AI explanation methods, arXiv preprint arXiv:2203.03729 (2022); Hamon Ronan/Henrik Junklewitz/Ignacio Sanchez, Robustness and explainability of artificial intelligence, Publications Office of the European Union 207, Luxembourg 2020; see Art. 16 CoE AI.

[29] Standardisation request (fn. 13), para 2.8.

[30] Standardisation request (fn. 13), para 2.9.

[31] Standardisation request (fn. 13), para 2.10; see also Jakob Mökander et al., Conformity assessments and post-market monitoring: a guide to the role of auditing in the proposed European AI regulation, Minds and Machines 32.2/2022, 241-268; Martin Ebers, Standardizing AI-The Case of the European Commission's Proposal for an Artificial Intelligence Act, The Cambridge handbook of artificial intelligence: global perspectives on law and ethics, Cambridge 2021.

scenarios whereby the conformity assessment is carried out by the provider itself or with the involvement of a professional external third-party organisation.".[32]

It should be noted that these specifications and explanations are generally short and do not go beyond three paragraphs, sometimes fewer. On this basis and with this guidance, standard-setters shall elaborate the European standards. As highlighted in relation to each of the future standards, the importance of their content is of direct relevance to gender equality and non-discrimination.

III. The impacts on gender equality and algorithmic discrimination

A. Standard setting in general

Standards are necessary in an increasingly complex world, particularly when it comes to complex technologies. But there is a risk for fundamental rights such as gender equality associated with the reliance on standards. If developers of AI, for example a recruitment system, rely on the standards for compliance with EU law, they will use the future standard to comply with data and data governance obligations. If this standard is drafted without considering gender specificities, such as gender biases, the gender data gap, stereotypes and the risk of algorithmic discrimination based on the datasets used, such AI recruitment systems might perpetuate or reinforce these gender biases. Having an adequate standard in place that draws attention to the risks of gender biases and discrimination, could significantly decrease negative impacts for gender equality. Notably, because AI developers will heavily rely on these standards, gender equality expertise needs to feed into the standard developing process both in terms of substantive knowledge but also in terms of female representation among the standard setting organizations.

In the area of Artificial Intelligence, administrations often lack AI expertise and 'delegate' the formulation of technical standards to standard setting bodies. Such a hybrid system that relies on EU legal acts, such as a Regulation and at the same time on EU standards in cases of harmonization, are a typical occurrence.[33]

If an EU standard is adopted and forms part of the AI Act, according to the case law of the CJEU, it will form part of EU law. Therefore, this would concern EU gender equality law in so far as all decisions by AI systems that fall under the scope of the AI Act, because they are considered as high-risk AI, and which discriminate based on sex, would need to comply with the requirements of the AI Act.[34] A provider or manufacturer of AI would need to comply with those requirements. To comply, AI companies typically make use of (technical) standards, that would suggest that the companies are using adequate procedures and techniques which are *state of the art,* and which would be presumed to be sufficient to be in line with the legal requirements under EU law. Hence the importance of a fundamental rights compliant standard drafting process.

However, contrary to EU law, where legal rules would need to be coherent and in line with the EU acquis, this could pose a problem for gender equality law. Are standards adopted by relevant EU standard-setting bodies sufficiently aware of and respect gender equality norms? Whereas the legislative procedure at EU level follows clear rules and follows sufficient safeguards like those in all modern representative democracies, one could wonder whether the same is guaranteed for standards elaborated by standard setting bodies when it comes to fundamental rights and non-discrimination. Is it possible to incorporate sufficiently the concept of non-discrimination into an EU standard?

B. The work on standard setting at UN level

While the law can first formulate legal rules to regulate technology, such as AI, sometimes the technical specificities required for regulatory oversight are informed by technical specifications contained in standards. Considering that legislators and regulators often do not dispose of the technical knowledge required for the implementation of the legal rules, the involvement of technical experts helps to build and enforce the legal framework.

In the framework of the United Nations (UN)[35], the interplay between standard setting and human rights was discussed in the context of new and emerging tech-

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[32] Standardisation request (fn. 13), para 2.10.

[33] Annalisa Volpato/Mariolina Eliantonio, The Contradictory Approach of the CJEU to the Judicial Review of Standards: A Love–Hate Relationship? The Legitimacy of Standardisation as a Regulatory Technique, Maastricht 2020, 91-109.

[34] More specifically, this concerns notably articles 6 (High-risk AI system), 8 (compliance), 9 (risk management system), 10 (data governance), 11 (technical documentation), 12 (record keeping), 13 (transparency and information) and 14 (human oversight).

[35] For an overview, see Fabian Lütz, Gender Equality and Artificial Intelligence: SDG 5 and the Role of the UN in Fighting Stereotypes, Biases, and Gender Discrimination, Women's Empowerment and Its Limits: Interdisciplinary and Transnational Perspectives Toward Sustainable Progress, Cham 2023, 153-180.

nologies during the 53rd session of the Human Rights Council.[36] A report on the relationship between human rights and technical standard-setting processes for new and emerging digital technologies and the practical application of the Guiding Principles on Business and Human Rights was presented.[37] In relation to gender and non-discrimination, the report highlights the following issues: lack of diversity in expertise notably in relation to gender.[38] The report finds "the lack of equal gender representation in standard-setting processes", as "the vast majority of participants in standard-setting processes are men."[39] and highlights the need for focusing on equal gender representation in standard setting processes as well as gender responsiveness of standards all of which are vital to support gender equality.[40] The report also recommends to collect and publish data on the gender of participants involved in standard setting.[41] to measure the general problem of the digital gender divide, also in relation to standard setting.[42] Finally, the resolution on new and emerging technologies adopted during the 53rd Human Rights Council equally highlights the need to protect and promote human rights standards not only in legal frameworks but also in standard setting procedures.[43]

One key question is to what extent the civil society and the general public is involved in the standard setting process in order to take into account gender equality policies.[44] The gender-dimension of standards has been recently come into the focus of international organisations.[45] Reflecting gender considerations seems not easy throughout the standard setting process considering that nearly exclusively industry is involved in the process and one of the problems is the lack of diversity and representativeness of those in the AI industry and consequently those involved in elaborating standards.[46] In general, the lack of women in AI has been frequently highlighted in the literature and reports of regional and international organizations as one of the problematic issues to address gender biases and algorithmic discrimination.[47] The underrepresentation of women in the AI sector can be exemplified by numbers resulting from studies that show the domination of men of AI development: While in the leading AI conferences only 18 % are women, 80 % of professors in the area of AI are men.[48] In the AI industry, leading AI companies comprise for example only 15 % (Meta) or 10 % (Google) of the AI research teams responsible for AI development.[49] Reports have therefore recommended to increase the number of women, notably at leadership levels.[50] Considering the relative novelty of the debate around negative impacts of AI on women, more empirical evidence and studies regarding the specific magnitude are needed to inform the regulatory debate and shape or refine fu-

36 See https://www.ohchr.org/en/calls-for-input/2023/call-inputs-relationship-between-human-rights-and-technical-standard-setting, accessed on 11 September 2023.

37 See UN HRC Resolution on Relationship between human rights and technical standard-setting processes for new and emerging digital technologies and the practical application of the Guiding Principles on Business and Human Rights – Report of the Office of the United Nations High Commissioner for Human Rights, A/HRC/53/42, https://www.ohchr.org/sites/default/files/documents/hrbodies/hrcouncil/sessions-regular/session53/advance-versions/A_HRC_53_42_AdvanceUneditedVersion.docx, accessed on 11 September 2023.

38 A/HRC/53/42 (fn. 37), para. 40.

39 A/HRC/53/42 (fn. 37), para. 48.

40 A/HRC/53/42 (fn. 37), para. 59; See also ISO's Gender Action Plan 2022–2025, https://www.iso.org/strategy2030/key-areas-of-work/diversity-and-inclusion.html, accessed on 11 September 2023; and guidance on gender responsive standards by ISO/IEC Joint Strategic Advisory Group on Gender Responsive Standards, https://www.iso.org/files/live/sites/isoorg/files/standards/docs/en/Guidance%20on%20Gender%20Responsive%20Standards.pdf, accessed on 11 September 2023.

41 A/HRC/53/42 (fn. 37), para. 60 and 70(g).

42 On Digital Gender Divide see, A/HRC/53/65, Digital innovation, technologies and the right to health
Report of the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health, para. 36, https://documents-dds-ny.un.org/doc/UNDOC/GEN/G23/074/89/PDF/G2307489.pdf?OpenElement, accessed on 11 September 2023.

43 See A/HRC/53/29 (adopted on 14th July 2023), 4.

44 See one guiding question for input to the OHCHR process on standards and human rights is "How accessible are standard-setting processes and processes for new and emerging digital technologies for a broad range of stakeholders, in particular for civil society organizations and human rights experts?"

45 https://www.unido.org/sites/default/files/files/2019-03/UNIDO_Flyer_Standardization.pdf; https://unece.org/fileadmin/DAM/trade/wp6/documents/2018/PPTs/1511_am_Lorenza_Jachia_Gender-Responsive_Standards.pdf, all accessed on 11 September 2023.

46 See Gender-Responsive standards, https://unece.org/trade/wp6/gender-responsive-standards, accessed on 11 September 2023.

47 See Sarah Myers West/Meredith Whittaker/Kate Crawford, "Discriminating systems", AI Now 2019, 1-33; European Commission, Communication COM(2020) 152 final, Union of Equality: Gender Equality Strategy 2020-2025, 6; AI Index 2018, Artificial Intelligence Index 2018, http://cdn.aiindex.org/2018/AI%20Index%202018%20Annual%20Report.pdf, accessed on 11 September 2023.

48 Element AI 2019, Global AI Talent Report 2019, https://jfgagne.ai/talent-2019/, accessed on 11 September 2023.

49 Element AI (fn. 48); AI Index (fn. 47).

50 Sarah Myers West/Meredith Whittaker/Kate Crawford (fn. 47), 4.

ture legal frameworks. With this in mind, research projects such as Diversity in Artificial Intelligence (*divinAI)* try to research and develop a set of diversity indicators related to AI development, inter alia with a special focus on gender balance.[51] However, the problem and its risks as such for women have been clearly highlighted which should be enough to trigger a debate and reflection on how to address the negative consequences of AI for women. To remedy this, UNECE's Working Party on Regulatory Cooperation and Standardization Policies has developed guidance on how to develop gender-responsive standards.[52]

C. The implications of standard setting for gender equality and algorithmic discrimination

While not immediately obvious, the role of standard setting for gender equality in general and algorithmic discrimination in particular is important. As one of the main problems associated with the use of AI, gender biases and (algorithmic) discrimination, standards can help in addressing those issues and thereby supporting legal rules developed in national or regional law. The detection of gender biases and gender discrimination depend not only on legal rules framing the rights and obligations but also on technological solutions. Here, technical standards can play an important role in specifying legal standards and making them operational in practice for those using AI systems. The U.S. standard setting body, the National Institute of Standards and Technology (NIST) recently published work on a standard for identifying and managing bias in artificial intelligence.[53] The International Organization for Standardization (ISO) is equally conducting work on the treatment of (unwanted) biases in machine learning systems[54], referencing that this standard will contribute to achieve SDG 5.[55] Equally, the UK has started its own work in AI and standards following Brexit.[56]

An area where standard setting can be crucial is in assessing the potential negative or discriminatory effects of AI systems. Traditionally, impact assessments for AI systems serve this purpose and can help to detect biases or potential discriminations before or after the deployment of AI systems on the market.[57] Standards can inform companies or organisations to make use of such assessment tools in order to prevent their AI systems from negatively impacting its users, notably women.[58] That the standardised use of technology or medicines can have detrimental effects on women has been clearly shown, for example in relation to standardised car safety belts[59], or clinical trials for medicine[60] that is tested exclusively or predominantly on men rather than women[61] or the right dosage of medication often based on men[62] which entails

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51 See European Commission, AI Watch, Diversity in Artificial Intelligence (divinAI), https://ai-watch.ec.europa.eu/humaint/divinai_en, accessed on 11 September 2023.

52 https://unece.org/sites/default/files/2022-12/ECE_TRADE_472E.pdf, accessed 11 September 2023.

53 National Institute of Standards and Technology (NIST), Special Publication 1270, Towards a Standard for Identifying and Managing Bias in Artificial Intelligence, https://doi.org/10.6028/NIST.SP.1270, accessed on 11 September 2023.

54 ISO/IEC CD TS 12791, Information technology – Artificial intelligence – Treatment of unwanted bias in classification and regression machine learning tasks (currently under development), https://www.iso.org/standard/84110.html?browse=tc, accessed on 11 September 2023.

55 According to ISO, 225 of ISO standards contribute to SDG 5 and gender equality is at the heart of ISO standards as evidenced by ISO 26000, Guidance on social Responsibility, https://www.iso.org/iso-26000-social-responsibility.html and https://www.iso.org/sdg/SDG05.html, accessed on 11 September 2023; ISO Gender Action Plan, https://www.iso.org/files/live/sites/isoorg/files/news/News_archive/2020/05/Ref2512/Gender%20Action%20Plan_en.pdf, accessed 11 September 2023.

56 UK Government, New UK initiative to shape global standards for Artificial Intelligence, 12 January 2022, https://www.gov.uk/government/news/new-uk-initiative-to-shape-global-standards-for-artificial-intelligence, accessed on 11 September 2023.

57 Standard ISO/IEC CD 42005, Information technology — Artificial intelligence — AI system impact assessment https://www.iso.org/standard/44545.html?browse=tc, accessed on 11 September 2023.

58 This standard also indicates to contribute to achieving SDG 5.

59 See for example, Caroline Criado Perez, The deadly truth about a world built for men – from stab vests to car crashes, The Guardian, 23rd February 2019, https://www.theguardian.com/lifeandstyle/2019/feb/23/truth-world-built-for-men-car-crashes, accessed on 11 September 2023.

60 Gabrielle Jackson, The female problem: how male bias in medical trials ruined women's health, The Guardian 19th November 2019, https://www.theguardian.com/lifeandstyle/2019/nov/13/the-female-problem-male-bias-in-medical-trials, accessed on 11 September 2023.

61 Amy Westervelt, The medical research gender gap: how excluding women from clinical trials is hurting our health, The Guardian, 30th April 2015, https://www.theguardian.com/lifeandstyle/2015/apr/30/fda-clinical-trials-gender-gap-epa-nih-institute-of-medicine-cardiovascular-disease, accessed on 11 September 2023.

62 Irving Zucker/Brian J, Prendergast, Sex differences in pharmacokinetics predict adverse drug reactions in women, Biology of Sex Differences 2020, doi.org/10.1186/s13293-020-00308-5, accessed on 11 September 2023.

a risk for women. This is even referred to as the "medical research gender gap".[63] The problem is that for safety or medical issues, often a standard model or formula is used that is based on a "reference man" rather than a "reference woman".[64] The same problem can occur if models for algorithms are designed without taking into account women, which is less likely the more women are represented in key functions across the AI development chain.

Many recommendations[65] and legal proposals[66] rely on the regulatory tool of impact assessments or bias audits to detect potential problems with AI systems either before or after their use.[67] Therefore, considering how standards influence and shape the way the future legal rules of the EU AI Act are "filled with life", gender equality and non-discrimination considerations need to be incorporated from the start to ensure a fundamental rights-based design of the standards.

IV. The legal consequences of standard setting in the EU

Although there is no unanimity in the doctrine, according to CJEU case law, EU standards form part of EU law[68] (A.) and therefore can be reviewed by the CJEU (B.). A more open question is the problem of legitimacy of incorporating standards into EU law, that lead to a form of private norm setting or at least a hybrid form of legal norms that include important regulatory principles into EU law that have been elaborated outside the regular forum of EU Commission and European Co-legislators (C.).

A. EU law

EU standards not only become EU law.[69] If a standard is developed by the European Standard Setting Organisations (ESOs), it could also be considered as a presumption of conformity with the detailed specifications of the EU AI Act. As a matter of illustration, if a developer or deployer of a high-risk AI system wants to comply with the provisions on human oversight or transparency, it will most likely be sufficient to apply the relevant standards developed by the ESOs. Therefore, it is important that standards are designed with gender equality in mind in order to avoid gender-based discrimination. This shows the importance and the risks associated with the delegation of standard setting to private entities such as the ESOs, that are more concerned with technical regulations than human and fundamental rights considerations.[70]

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63 Ibid.

64 Mary Olson, Nuclear Information and Resource Service (NIRS) Briefing paper, Atomic radiation is more harmful to women, http://nirs.org/wp-content/uploads/radiation/radhealth/radiationwomen.pdf, accessed on 11 September 2023.

65 OECD Recommendation OECD/Legal/0449 (para. 1.4), https://oecd.ai/en/assets/files/OECD-LEGAL-0449-en.pdf, accessed on 11 September 2023 ; UNESCO Recommendation on the Ethics of AI suggests including the gender perspective into (Ethical) Impact Assessments (para. 87), https://www.unesco.org/en/articles/recommendation-ethics-artificial-intelligence?TSPD_101_R0=080713870fab20005212bad1144aeb55b82c4a891832652e849ebbbc085973467010f620de303d8008dc1511ed1430004c0485d49cc5bb7be477c202075d6af07a42acf346000d811afbd0471148041c0bb8e9079a0c59bd18207e2074332d36, accessed on 11 September 2023. On the legal side, the EU AI Act refers to Impact Assessments (Art. 29 para. 6, 29a: *"Fundamental rights impact assessment for high-risk AI systems"* and recital 58a: *"In order to efficiently ensure that fundamental rights are protected, the deployer of high-risk AI systems should therefore carry out a fundamental rights impact assessment prior to putting it into"*); the CoE refers to Impact Assessments. The NYC law regarding recruitment algorithms (Local law 144 of 2021 on Automated Employment Decision Tools, INT 1894-2020, in force since January 2023) makes bias audits mandatory prior to market access to detect disparate impacts on several grounds of discrimination, including gender.

66 Art. 22 of Brazil's new law on AI, which is modelled on the EU proposal for a Regulation, for example specifically foresees an Algorithmic Impact Assessment for high-risk AI systems, https://legis.senado.leg.br/sdleg-getter/documento?dm=9347593&ts=1683152235237&disposition=inline&_gl=1*edqnkm*_ga*MTgyMDY0MTcwMS4xNjc5OTM2MTI0*_ga_CW3ZH25XMK*MTY4MzIxNzUzMy4yLjEuMTY4MzIyMDAyMy4wLjAuMA, accessed on 11 September 2023.

67 Most recently, the UN Human Rights Council 53rd Session addressed the need for impact assessments for AI in Resolution A/HRC/53/L.27/Rev.1, 4: *"Protecting individuals from harm caused by artificial intelligence systems, including by ensuring the safety of artificial intelligence systems, introducing frameworks for impact assessments related to human rights, exercising due diligence to assess, prevent and mitigate adverse human rights impacts, and ensuring effective remedies and human oversight, accountability and legal responsibility"*.

68 See Linda Senden, Towards a more holistic legitimacy approach to technical standardisation in the EU, The Legitimacy of Standardisation as a Regulatory Technique, Maastricht 2020, 20 et seqq.

69 Harm Schapel, The new approach to the new approach: The juridification of harmonized standards in EU law, Maastricht Journal of European and Comparative Law 2013, 20, 521 et seqq, 533.

70 See Mark McFadden/Kate Jones/Emily Taylor/Georgia Osborn, Harmonising Artificial Intelligence, Oxford Information Labs, Working paper 2021.5 (2021), 22, who recommends that *"a mechanism must be in place to ensure meaningful, substantive participation in standards development by those most interested in protecting fundamental human rights and the public interest."*. The study also argues that "*Women and girls*

B. Legal review by the CJEU

A lot has been written on the judicial review since the first cases of the CJEU.[71] In general, the judicial review of the CJEU is limited to EU acts[72] which is the case for the present EU standards. Therefore, in principle, the CJEU could review EU acts adopted on the basis of the future EU AI Act in view of the principle of equality between women and men and conduct a control of legality also towards standards adopted pursuant to the European Commission's standardisation request. In this way, a judicial control of the principle of gender equality and non-discrimination would be ensured also in relation to standards that influence and shape how the legal requirements for high-risk AI systems are specified.

C. Problem of over-involvement of private stakeholders and legitimacy ?

The expertise of those who develop standards, should not be questioned as such.[73] Notably as the European standard setters cooperate with their national counterparts which include the experts of the relevant field and ensures a high level of competence that feeds into the standard setting process.

However, if legislators or regulators do not dispose of the relevant expertise in relation to AI systems, there is a risk of *private rule setting*[74] and *regulatory capture*[75] due to knowledge asymmetries between the private sector developing AI and the state that tries to regulate it.

Regarding the risk of private rule setting, the concentration of knowledge about AI clearly lies with the private sector. Equally, most of the academic research is conducted either by the research teams of AI companies or researchers affiliated with the private sector rather than independent academics.[76] If relying on expert knowledge, one needs to be aware of this imbalance between public and private sectors. In addition, the design of AI regulation often relies on algorithmic accountability and tools such as AI or bias audits or impact assessments which require the involvement of either the companies themselves or private third parties offering these services but rarely independent academics.[77] While this is not a problem in general, one needs to be aware of the risks associated with the reliance on AI experts and companies for executing parts of the regulatory rules considering that AI companies are targeted by EU AI regulation and goals between regulator and regulated company might diverge. Such a concentration of knowledge and power regarding AI systems can also lead to regulatory capture if the public regulatory authorities have no choice but to follow the expert advice without being able to verify its veracity. Involving civil society and the public more broadly could soften such a legitimacy problem[78].

In addition, if there are fundamental rights or discriminatory impacts, it is not clear whether the type of expertise available among the standard setting bodies is sufficient to ensure compliance with EU law in this regard.[79] In this regard, the United Nations for instance recently highlighted the underrepresentation of women and analysed the lack of diversity in standard setting with potential negative consequences for gender equality.

Many authors argue in favour of legitimacy of standards[80] which makes sense in the cases without severe impacts on

should be targeted with early interventions to redress the gender deficit in standards participation.", 23.

71 Carlo Tovo, Judicial review of harmonized standards: changing the paradigms of legality and legitimacy of private rulemaking under EU law, Common Market Law Review 2018, 55, 1178 et seqq; Annalisa Volpato, The harmonized standards before the ECJ: James Elliott Construction, Common Market Law Review 2017, 54, 591 et seqq.

72 Rob Widdershoven, The European Court of Justice and the standard of judicial review, In: de Poorter/Hirsch/Lavrijssen (ed.), Judicial Review of Administrative Discretion in the Administrative State, The Hague 2019.

73 Benoît Frydman, Prendre les standards et les indicateurs au sérieux, Gouverner par les standars et les indicateus: De Hume aux rankings, Bruxelles 2014.

74 See Fabian Lütz, Shared responsibility for human rights in the algorithmic age – Why business should be the states' ally to eliminate discrimination, Conference Proceedings Lausanne, Brill (forthcoming 2023).

75 Ernesto Dal Bó, Regulatory Capture: A Review, Oxford Review of Economic Policy 2006, 22, 203–225, https://doi.org/10.1093/oxrep/grj013, accessed on 11 September 2023.

76 The abovementioned Diversity in Artificial Intelligence (divinAI) project equally tries to identify indicators to measure the presence of academia vs. companies in the AI research and development, see fn. 51).

77 See AI Now Institute, Algorithmic Accountability: Moving beyond Audits (2023), https://ainowinstitute.org/publication/algorithmic-accountability, accessed 11 September 2023.

78 See the comments regarding the UK AI Summit held in Bletchley Park in November 2023 by Professor of Computer Sciences Wendy Hall ("My worry (..) is that the advice is coming mainly from the big tech companies themselves"), Financial Times, 16 August 2022.

79 Simon Den Uijl, The emergence of de-facto standards, No. EPS-2014-328-LIS, ERIM Ph.D. Series Research in Management, Rotterdam 2015, http://hdl.handle.net/1765/77382, accessed 11 September 2023.

80 Raymund Werle/Eric J. Iversen, Promoting legitimacy in technical standardization. Science, Technology & Innovation Studies 2006, 2, 19-39; Carlo Colombo/Mariolina Eliantonio, Harmonized technical standards as part of EU law: Juridification with a number of unresolved legitimacy

fundamental rights. Some authors argue for a more holistic legitimacy of EU standards.[81] Other authors yet, argue even that this form of co-regulation could strengthen the legitimacy of the EU overall.[82] In general, co-regulation is a well-established form of EU governance and can be seen as a complement to classical EU legislation.[83] The literature conceptualised co-regulation as a type of interaction between the EU and private actors.[84] Contrary to the classical legislative procedure, where stakeholders are only consulted, co-legislation foresees a more active role of the private sector. As has been stated by scholars: "European co-regulation presupposes the prior establishment of a general legislative framework by the European legislature and thus also takes place within the scope of the Union's competence. It merely leaves the further execution and implementation of this framework to the various private actors in the field concerned." In the framework of European standard setting for the EU AI Act, private actors would take the role of developing and specifying the discussed standards that will serve as compass and presumption of conformity with the EU rules. While such an involvement of AI experts and private actors in the implementation of EU legislation might strengthen to some extent the legitimacy and acceptance by society of the legislative framework on AI, this needs to be balanced against the risk of "outsourcing" the power of specification through standards to private actors, which are not accountable and legitimized as democratic actors. In order to be able to both include AI expert knowledge via the standard setting procedure and preserve fundamental rights, such as equality and non-discrimination, a thorough control of the standard setting process by the European Commission with regard to respect of fundamental rights as well as a legal review by the EU courts shall be sufficient to remedy the concerns of co-regulation in the present case.

V. Conclusion and Outlook

The EU AI Act has not been adopted yet and the *Trilogues* are ongoing at the time of writing. Equally the EU standards have not been developed yet and is expected to be drafted by the beginning of 2025. This could coincide with the entry into force of the AI Act. From the Swiss perspective, while the EU AI Act will not be directly applicable in Switzerland, Swiss enterprises and AI-start-ups that develop, use or deploy AI systems might fall under the scope of the EU AI Act.[85] In addition, for Switzerland the expected adoption of the Council of Europe Framework Convention on Artificial Intelligence will be very relevant for Switzerland from a legal perspective, as it will be a binding legal instrument once Switzerland adopts and ratifies the Convention. In addition, Switzerland closely follows the debate on the AI work as the CoE CAI is currently chaired by Swiss Ambassador Thomas Schneider. [86]

Maybe, the process surrounding the elaboration of the standards in support of safe and trustworthy artificial intelligence and its impacts on fundamental rights in general and gender equality and non-discrimination in particular can shape a reflection on how the elaboration of standards and notably its participatory process could evolve in the future. Traditionally, when it comes to mere technical standards this might be less relevant[87] but developing standards for AI and algorithms might be a different dimension of standard developing as it shapes and influences our values within algorithmic decision-making systems. Considering that despite some guidance of the European Commission, what values and policy objectives of the EU need to be reflected, it is difficult to say to what extent the current process guarantees a sufficient respect of gender equality and non-discrimination within the standards developed by the standard setting bodies. Compared to other international proposals such as Brazil[88], which more deeply embed gender equality and non-discrimination into the operative part of proposed legislation, the EU could improve on the integration of the principle of equality and non-discrimination, con-

concerns? Case C-613/14 James Elliot Construction Limited v. Irish Asphalt Limited, EU: C: 2016: 821, Maastricht Journal of European and Comparative Law 24/2017, 323-340.

81 Linda Senden, Towards a more holistic legitimacy approach to technical standardisation in the EU, in: Eliantonio/Cauffman (ed.), The Legitimacy of Standardisation as a Regulatory Technique, Maastricht 2020, 20-47.

82 Paul Verbruggen, Does Co-Regulation Strengthen EU Legitimacy?, European Law Journal 15/2009, 425-441.

83 See notably Linda Senden, Soft law, self-regulation and co-regulation in European law: Where do they meet?, Electronic Journal of Comparative Law 9.1/2005, 11.

84 See Senden n (fn. 83), 11; Edward Best, Alternative regulations or complementary methods? Evolving options in European governance, Eipascope 2003 I, 2 et seqq, 3; in general Linda Senden, Soft law in European Community law, Oxford 2004.

85 See Art. 2 (scope) of the EU AI Act.

86 https://www.coe.int/en/web/artificial-intelligence/cai, accessed on 11 September 2023.

87 See the standardised DIN-A4 paper, Ebers, (fn. 31).

88 Brazil's new AI law includes protecting fundamental rights (Art. 1), respect for human rights, equality and non-discrimination (Art. 2) and non-discrimination, justice, equity and inclusion (Art. 3). By doing so, the gender equality and non-discrimination nexus is enshrined in this law which facilitates the incorporation of the deliberate choices of the legislator, see (n1).

sidering the importance of these fundamental values and principles in EU law. In addition, the impact of such standard setting goes beyond the EU, as the member states of the European standard setting bodies are larger than that of the EU, for example including Switzerland.[89] In turn, EU standard setting could also rely on or influence international standard setting, such as standards on AI that are developed by the Geneva based ISO.[90]

[89] See the potential Brussels effect, Anu Bradford, Exporting standards: The externalization of the EU's regulatory power via markets, International Review of Law and Economics 2015, 42, 158-173. Switzerland has very limited interest so far to regulate AI besides the CoE proposal, https://www.swissinfo.ch/eng/sci-tech/where-does-switzerland-stand-on-regulating-ai-/48645054, accessed on 11 September 2023.

[90] ISO is developing many AI standards, https://www.iso.org/committee/6794475.html, accessed on 11 September 2023.