Roles of Standardised Criteria
in Assessing Societal Impact of AI

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Abstract—**This paper proposes a set of criteria to evaluate organizational processes for artificial intelligence (AI) impact assessment, in order to facilitate public and private organizations to select the most appropriate impact assessment methodology for their specific context. To build this reference, the paper employs a dual research methodology: reviewing research on existing impact assessment in diverse domains including privacy, health, environment, and examining recent discussions on potential elements and methods for AI-related impact assessment. We consolidate key findings found in the literature and organize them in five dimensions: *normative framework*, *process rules*, *methodology*, *engagement*, and *oversight*. Within each of these dimensions, we propose a set of critical questions for meaningful impact assessment by integrating reflections on the challenges raised in the examined research, discussions on the ongoing impact assessment methodology, as well as investigations on impact assessment pitfalls. The resulting criteria are potentially useful to developers, regulators, and as a backbone of comparison across various standardization initiatives.**

Index Terms—**Societal Impact Assessment; AI Governance; Standards; Responsible AI**

I. INTRODUCTION

The widespread proliferation of services, systems, and apps driven or supported by artificial intelligence (AI) is increasing concerns for societal impact and sustainability, triggering and motivating a plethora of processes and frameworks for impact and risk assessment. Decisions made during AI development may significantly impact both individuals and society, paving the way for technologies that concurrently may empower, as well as may produce harms. The prevalent idea is then to enable *by-design* approaches and seek to intervene both on the "social processes that shape design choices and the social consequences that follow the development and deployment of technological systems" [1]. Yet, further inspection shows a less unitary picture, as in the last few years, a great number of proposals for assessing AI societal risks and impacts have been proposed, exhibiting a wide range of origins and ambitions. Amongst **academic proposals and pilots**, we can cite the evidence-based methodology for human rights impact assessment proposed by Mantelero and Esposito (2021) [2]; the IAMA methodology: the Dutch Impact Assessment of Human Rights and Algorithms (2021) [3]; the Human rights impact assessment of digital activities, proposed by Danish Institute for Human Rights (2020) [4]; the algorithmic

impact assessments and accountability framework proposed by Metcalf et al. (2021) [5], ant the guide for responsible design and implementation of AI systems proposed by the Alan Turing Institute (2019) [6]. A number of **standard setting efforts** have also been initiated, as for instance the AI Risk Management Framework proposed by NIST (2023) [7]; ISO/IEC 42001 and 42005 (ongoing) [8], and IEEE 7010-2020 (2020) [9]. Looking at **governmental normative frameworks** relevnt for AI impact assessment, we can refer to the Canadian Algorithmic impact assessment tool (2022) [10]; the European Union AI Act (2024) [11]; the Brazilian Artificial Intelligence Bill (2023) [12]; and the US AI Executive Order [13]. Finally, we should not overlook **industry lead initiatives**, as for instance the Responsible AI Impact Assessment Guide published by Microsoft (2022) [14]; and the Human Rights Impact Assessment documents published by Meta (2022) [15].

Stahl et al. (2023) [16] conducted a comprehensive review of 38 AI impact assessment methods, revealing both similarities and significant differences among them. While most share a common ground on assessing AI's impact on stakeholders, they vary in detail, processes, and issues addressed. For instance, some delve into data analysis, while others prioritize stakeholder consultations and the definition of ethical frameworks. Methods differ in focus, ranging from identifying algorithm biases to broader ethical evaluations and privacy risks. Some emphasize public disclosure, while others prioritize internal compliance. Overall, the review highlights a lack of coherence among these methods on key aspects, indicating the need for more alignment in assessing AI risks and impacts. This disorganic context cannot facilitate satisfying the general demand for thoughtful and robust governance and processes for impact assessment.

Not surprisingly, standard-setting organizations are focusing on addressing AI system societal impacts and risks too, including biases and discrimination. For instance, IEEE's P7003 standard incorporates methodologies aimed at mitigating bias in algorithms [17]. Efforts by the U.S. NIST AI Risk Management and the ISO/IEC 42001 and 42005 attempt to standardise societal impact assessment process in details. These standardization efforts are supported by the ongoing normative initiatives mentioned above, allocating a key role to technical standards in ensuring AI systems respect people's rights or

uphold ethical values, including alignments of terminology, metrics, criteria, benchmarks, and values across different contexts. Presence of misalignments may lead to fragmented and at times conflicting processes, inaccuracies in informing design choices and risk mitigating measures, to the detriment of both AI developers and users. But how to facilitate evaluation and comparison between different standardization proposals, or more in general, between AI impact assessment methods? How to discriminate accessory from essential dimensions?

This paper aims to identify a set of key criteria for meaningful AI impact assessment processes, by building upon relevant related domains (eg. privacy, health, environmental impact assessment), and contemporary discussions on AI impact assessment methods. The selected criteria are systematized in five dimensions (*normative framework*, *process rules*, *methodology*, *engagement*). Focusing on systematization is central to our contribution, as it enables us to abstract from specific implementation details, and instead to capture the *required complementarity* of the various criteria (their mutual roles), privileging functional coverage. Ideally, such criteria can facilitate standard setting organizations and initiatives to develop processes for AI impact assessment and detailed governance frameworks that enable meaningful and effective impact assessment methodologies for specific contexts.

The paper is structured as follows: section II describes our methodology, section III describes the relevant work including the lessons from other impact assessment domains; section IV proposes criteria for meaningful AI impact assessment; section V provides perspectives on our contribution.

II. METHODOLOGY

We adopt a dual research methodology for the identification and elaboration of the criteria. Firstly, we conduct secondary research, reviewing relevant literature, researches, evaluative techniques concerning privacy impact assessment (PIA), as well as criteria for effectiveness of the environmental impact assessments (EIA), health impact assessment (HIA), and human rights impact assessments of business activities (HRIA). These domains provide historical insights that can be adapted for the AI context. Secondly, we examine relevant recent contributions and discussions on elements and criteria for AI-related impact assessment. Considering the latter are limited in number, we applied insights from PIA, EIA, HIA and HRIA to complete the landscape. The selection of the contributions to study is obtained by a mixture of structured and semi-structured literature research methods, including web searches for relevant work on impact assessment methods, as well as examinations of existing work of standard-setting organizations on AI-related impact assessments. Thirdly, although the proposed criteria are rooted in existing work and ongoing debates, our elaboration aims to fill gaps emerging from our literature analysis.

III. RELEVANT WORKS

Impact assessments in socio-economic realms are complex processes prone to numerous pitfalls. These include unforeseen effects, biased processes influenced by vested interests, flawed methodologies affecting assessment quality, and the risk of marginalizing results that do not align with key stakeholders' interests. Awareness of these is vital, urging those conducting the assessment to mitigate them for a more robust and credible assessment process [18]–[21]. I In the following, we provide snapshots of the main lessons we reviewed from existing impact assessment fields and ongoing discussions.

A. Lessons from PIAs, EIAs, HIAs and HRIAs

Within the European Commission project PIAF, Wright et al. (2013) [22] examined the framework for conducting Privacy Impact Assessments (PIAs). Their proposed evaluation criteria focus on: the context of PIA implementation; the method addressing various privacy aspects; conducting PIA in an introductory (design) phase; consulting external stakeholders; the PIA report structure; accountability of senior management; reviewing the PIA report by an external authority. They also emphasize the need for PIA updates throughout the project lifecycle. Wadhwa and Rodrigues (2013) [23] proposed a tool for evaluating the effectiveness of PIA by grading PIA reports, via a PIA Evaluation and Grading System (PEGS). The PEGS criteria assess the quality of the following evaluation categories: PIA planning and scope; data collection and analysis; risk assessment; mitigation and reporting. Each category has several sub-criteria that are used to evaluate effectiveness of the PIA method by applying quantitative measures. Notario et al. (2015) [24] propose a PIA template specifically for smart-grid and smart-metering systems in the EU project PRIPARE (*Preparing Industry to Privacy by Design by supporting its Application in Research*). Their PIA template includes sections on PIA purpose, scope and methodology to conduct the assessment. Evaluation criteria focus on: a questionnaire ensuring that privacy obligations are met; examination of the privacy impact from the organization perspective (financial losses), or the individual perspective (identifiability and sensitivity of personal data); the metrics used to measure privacy risks; and the proposal of risk mitigation strategies. Vemou et al. (2018) [25] proposed a framework for evaluating PIA focused on *methodology*, *process*, *output*, and *outcome*. The methodology dimension evaluates the ability of PIA to identify and address privacy risks. The process dimension evaluates the quality of the process, the level of stakeholder engagement and transparency. The output dimension evaluates the quality of the PIA report, its clarity and comprehensiveness. The outcome dimension evaluates the effectiveness of the PIA method in achieving its intended goals and objectives in protecting privacy and mitigating risks. There are additional sub-dimensions and evaluation criteria to assess the effectiveness, including: early initiation of PIA; description of the purpose and any relevant contextual information; mapping of information flows (i.e. how information is collected, used, stored, secured and distributed, how long data is retained); checking compliance with relevant legislation; identification of risks or impacts on privacy; identification of solutions for avoiding or mitigating the risks; PIA publication; stakeholder consultation. Hanna

et al. (2015) [26] used a Delphi study [27] to identify the effectiveness of criteria for environmental assessment process (EIA). The criteria are grouped under nine themes, forming a rich framework for evaluation: stakeholder confidence; integrative decision-making; promoting long-term substantive gains in environmental quality and comprehensiveness; evidence-based approach; accountability; participation; legal foundation for impact assessment; capacity and innovation. Chanchit-pricha et al. (2012) [28] developed criteria for measuring the effectiveness of primarily health impact assessments (HIA). These focus on: procedural aspect (policy framework, political context, financial resources, public participation, and experience gained at all levels); substantive aspect (regulatory framework, decision-making mechanisms, levels of public participation among stakeholders and report characteristics); "transactive" aspect (how resources are being used); normative aspect (how perceptions of the impact assessment process can lead to normative outcomes). Götzmann (2017) [29] reviews key criteria for establishing a meaningful practice of assessing the human rights impact of business activities (HRIA). These include: applying international human rights standards; considering the full scope of impacts; adopting a rights-based process; ensuring accountability; addressing impacts according to a severity scale.

B. Ongoing debate in AI Impact Assessments (AIAs)

By studying important aspects of algorithmic impact assessment (AIA), Selbst (2021) [30] notes that AIAs are shaped by a range of institutional factors, including legal frameworks, corporate structures, and standard norms. For instance, normative frameworks can establish requirements for transparency and accountability in the development and deployment of AI, while corporate structures can influence the incentives and priorities of those developing and using AI. The effectiveness and legitimacy of impact assessments depend on the participation and input of a range of stakeholders, including affected communities. These can provide critical perspectives on the potential impacts of AI, and help ensure that AIAs are responsive to the concerns of those most affected. Selbst additionally argues that AIAs are an ongoing process that must be revisited as AI and their impacts evolve. This requires continuous monitoring and evaluation, as well as a commitment to transparency and accountability from those developing and using AI. Key criteria for such evaluation include: assessment early in development process; open ended questions; accountability; collaborative governance; community involvement; AIA regulation (primarily procedural); and minimum standards and oversight. ECNL and Data & Society research (2021) [31] suggest that establishing a human rights-based approach to AI is needed in securing public accountability for the AI impacts on society. They list key elements of such assessment, based on previous learnings of the HRIA: 1) process and content has to be legitimized through a normative framework; 2) establishing accountability between actors that design or deploy a system, and a forum that can allocate responsibility for potential consequences; 3)

identifying points in the development process that trigger a requirement to conduct AIA; 4) a time-frame period within which an AIA should be conducted; 5) public access for achieving transparency and accountability, as well as ability to scrutinize and contest process; 6) public consultation and solicitation of feedback from the stakeholders; 7) methods as standardized techniques of evaluating and foreseeing how the system would operate in the use context; 8) assessors selection and their independence from the developers; 9) identifying relevant impacts and ensuring that emerging harms can be assessed as impacts; 10) ensuring redress procedures for anticipated harms. The global survey of AI risk assessments and methodologies by EY (2022) [32] proposes several key elements of the assessment process, including: stage at which the assessment is conducted, pre-deployment vs. post-deployment, potentially on continuous or recurring basis; who is expected to conduct the assessment, data controllers, auditors (internal or external), developers of the AI themselves, agency/organization seeking to procure an AI system, etc.; whether the results of the assessment are to be made public; whether these frameworks include a *no-go* clause, according to which, if the results of the assessment indicate that the AI system is too risky or that risks cannot be mitigated, the AI system should not be developed, procured and/or used; relevant stakeholders for identifying and mitigating AI risk with mobilization of a diverse set of participants, including businesses, consumer organizations, trade unions and other representatives of civil society bodies.

C. Identified gaps

The lessons from PIAs, EIAs, HIAs and HRIAs, as well as the ongoing debates in AI impact assessment summarized in the previous sections provide grounds for the examination of impact assessment evaluation criteria, and demonstrate the need and benefits of evaluating the assessment process itself. However, through this review, we have detected significant gaps. First, as they treat the assessment process in an essentially fragmented manner, none of the existing work on evaluations of PIAs, EIAs, HIAs and HRIAs propose a framework that organically and comprehensively captures the diverse key process elements of conducting an assessment. Secondly, none of the ongoing AIA debates examine, nor offer, detailed process criteria *and* overarching governance criteria; yet, both are needed for AIA to function meaningfully within the broader AI governance efforts.

IV. Criteria for AIA

Realistically, there's no one-size-fits-all AI impact assessment applicable across all contexts and use cases. The absence of consensus on what defines a "high-quality" assessment adds complexity to this task. Without adequate norms, developers may prioritize their interests over a beneficial and effective assessment. Establishing a process template could limit such discretion. Integrating such process criteria into a broader AI governance is then crucial for connecting overarching principles with practical procedural steps.

A. Relevant criteria dimensions

Our criteria for AIA are rooted in the existing literature. Following the analysis presented in the previous section, we could consolidate the key elements of impact assessments and propose how to fill in the identified gaps. However, we also deliberately took the design choice to use five dimensions for a coherent organization of the criteria elements that emerged from the analysis: *normative framework* (A), *process rules* (B), *methodology* (C), *engagement* (D), and *oversight* (E).

The rationale behind this categorization is as follows: seen as a process, impact assessment should follow certain process rules (B), which are based upon a specific normative framework (A) and apply a certain methodology (C). The methodology requires dedicated engagement by relevant stakeholders (D). The feedback on the assessment process is instead provided by the oversight (E), which in turn needs to abide by the normative framework (A) and to be embedded in process rules (B). We deem considering such an integrated view crucial to identify coherent connections and dependencies among the criteria.

In terms of scope, each dimension reflects distinct aspects relevant for criteria. **Normative framework** is the basis of the assessment process, addressing scope and content, type of impact(s) that is being assessed, benchmarks for different impacts and any enforcement or rewards mechanisms that ensure the assessment will actually take place at a needed time. **Process rules** concern stages and trigger points for implementing the assessment and its iterations, key procedures and different roles of those involved as well as the assessment team requirements and responsibilities. **Methodology** for the assessment, concerns indicators used, scales for assessment, guidance for balancing competing interests and providing for proportionality assessment (trade-offs). **Engagement** of different individuals and groups concerns identification of impacted stakeholders, methods and processes for their participation and input. **Oversight** of the assessment process concerns its documentation, publication requirements, monitoring and feedback mechanisms.

B. Consolidating criteria to assess AIA

With the previous decomposition in mind, we can now propose a set of criteria to qualify impact assessment as meaningful, jointly with practical critical questions (Table I). In this section we present various arguments used to construct our proposal (referring where applicable to the reviewed sources), and we elaborate on their relevance for conducting AIA, illustrating their functions in the overall process. For reasons of space, we will report only a selection.

1) Normative framework: Scope, Content, Type of impact(s), Benchmarks, Enforcement: **A.1.** AI impact assessments should be viewed as a part of the broader AI governance framework which includes policies and decisions that guide the responsible development, deployment, and use of AI systems, rather than a standalone exercise. Supported by [16], [28], [30]. **A.2.** International human rights laws provide a universally recognized framework that ensures that AI impact

TABLE I
CRITERIA FOR AI IMPACT ASSESSMENT (AIA)

A. Normative framework: Scope, Content, Type of impact(s), Benchmarks, Enforcement

A.1. Is there a governance framework within the organization where AIA fits in?
A.2. Are international human rights laws basis for AIA content and benchmarks for assessing harms?
A.3. Is AIA scope and content defined?
A.4. Is there an option to stop development or use if results of AIA indicate that AI systems are too harmful or harm cannot be mitigated?
A.5. Are enforcement and/or reward mechanisms for conducting AIA included in the framework?

B. Process: Stages, Procedures, Roles, Assessment team

B.1. Is AIA initiated early enough in the AI lifecycle to influence design? Are there clear trigger points that initiate AIA when needed in an iterative manner?
B.2. Are independent assessors identified as those conducting AIA, along with required expertise?
B.3. Is it clear who should be included internally in the assessment process and in which roles?
B.4. Are there guidance for addressing information flows within the AIA framework?
B.5. Is there a designated role with the responsibility to approve the final AIA?

C. Methodology: Indicators, Scales for assessment, Balancing (trade-offs)

C.1. Are there detailed indicators for AIA based on human rights benchmarks for different human rights?
C.2. Does AIA include metrics and scales to assess e.g. likelihood and severity of each impact?
C.3. Does methodology require assessing the level of impact to different relevant human rights?
C.4. Are there both intended and unintended (mis)use of AI included in assessment for impact?
C.5. Is there a requirement to balance the proportionality and necessity of risks and potential adverse impact versus potential benefits of AI use, for each potentially impacted right?

D. Engagement: Identification of stakeholders, Frameworks for engagement

D.1. Is external stakeholders' consultation required throughout the AIA process and its iterations?
D.2. Is identification of external stakeholders who are important for assessing impact a required process?
D.3. Is there guidance how to choose methods or models for meaningfully consulting external stakeholders?
D.4. Do external stakeholders have the chance to provide information and comment on AIA findings/results?
D.5. Is there a requirement for providing feedback to external stakeholders on their input and results?

E. Oversight: Documentation, Publication, Monitoring, Feedback

E.1. Is there a requirement to internally document in detail AIA process implementation and its results?
E.2. Does the documenting report outline how the AIA influenced AI design and development outcomes?
E.3. Is there required external oversight and review or audit of AIA process and findings/content?
E.4. Are AIA findings required to be published (full or summary – key findings report)?
E.5. Is there a continuous monitoring mechanism for AI use and future AIA iterations?

assessments consider potential harm and serve as a benchmark for responsible AI development. Additional sources can be used to enrich the framework, without undermining existing

international legal protections Supported by [2], [3], [29]–[31]. **A.5** The existence of enforcement and/or reward mechanisms is critical for ensuring that AI impact assessments are not just a voluntary exercise without organizational "weight" but a meaningful process within the AI governance. Supported by [7], [22].

2) Process: Stages, Procedures, Roles, Assessment team: **B.1.** Initiating AI impact assessments early in the AI life-cycle is important for identifying potential harms and benefits and ensuring that different considerations are integrated into the design and development process. Moreover, having clear trigger points that initiate AI impact assessments when needed in an iterative manner enables potential challenges are continually identified and mitigated throughout the AI development process. Supported by [22], [25], [28], [30]–[32]. **B.2.** The involvement of independent assessors' team is essential for ensuring the objectivity and rigor of AI impact assessments. Additionally, having diverse assessors' expertise (including technical, sociological, legal, cultural etc.) is valuable when considering the complexity of various impacts – without it, AIA can be inadequate or inaccurate, leading to poorly informed decisions. Supported by [2] [31] [32]. **B.3.** Precise and defined roles and responsibilities of those involved in the AI impact assessment are essential for avoiding miscommunication, overlapping efforts or inefficiencies, and ensuring coordination, accountability and alignment within internal AI governance. Supported by [7], [8], [28], [29], [32].

3) Methodology: Indicators, Scales for assessment, Balancing of proportionality (trade-offs): **C.2.** Having practical metrics, scales, and other tools to help assess likelihood, severity and similar elements of the impact is necessary for operationalizing impact indicators based on human rights benchmarks and putting those into practice. Supported by [2], [23], [28], [31]. **C.3.** It is necessary to focus on both intended and unintended use (misuse) of AI during the assessment process, without assuming that intended use is inherently "beneficial", without harmful impact or assessing only potential misuse or unintended AI use. Supported by [2], [3], [8], [30], [31]. **C.5.** Balancing the proportionality and necessity of risks and potential adverse impact against potential benefits of AI use is the key moment and defining feature of the impact assessment process when the team needs to decide if it is appropriate (or even allowed) to continue forward with the AI development or use, considering potential impact. Supported by [2], [3], [8], [31].

4) Engagement: Identification of stakeholders, Frameworks for engagement: **D.1.** Requiring external stakeholders' consultation throughout the AI impact assessment process and its iterations is crucial for ensuring that a diversity of perspectives is considered, and potential harms are identified and addressed. Supported by [28]–[32]. **D.2.** Without taking steps to identify and then reach out to key external stakeholders who can provide essential input for AI impact assessment, it will not be possible to meaningfully engage them in the process. Supported by [30]–[32]. **D.3.** Methods for consulting external stakeholders can vary depending on who and when needs to

be involved, therefore it is useful to provide guidance on how to choose appropriate methods depending on the type and availability of stakeholders, timing and aim of engagement, etc. Supported by [31].

5) Oversight: Documentation, Publication, Monitoring, Feedback: **E.1.** Internal detailed documentation of the AI impact assessment process implementation, including stakeholder engagement throughout the process and AAI results, is needed for transparency and accountability within the organization. It allows decision-makers to review the methods and procedures used in the assessment, as well as enables continuous improvement and knowledge- sharing in responsible AI development. Supported by [7], [8], [22], [23], [30]. **E.4.** Publishing the results and findings of the AI impact assessment process is a key element for ensuring transparency and accountability, as well facilitating knowledge-sharing and collaboration with valuable insights and recommendations for improving AI development practices and mitigating potential harms. Supported by [3], [28]–[32]. **E.5.** AI impact assessments and its iterations should continue to be used as an instrument of monitoring AI use and implementation, to ensure benefits and harms balance is still in place and, if needed, revise or redesign certain features to enhance the use or product. Supported by [7], [8], [30], [31].

V. PERSPECTIVES

This work started by examining several analyses of (soundness and effectiveness of) criteria of impact assessments in fields other than AI: privacy, health, environment, and human-rights in business activities, with the objective to reuse lessons from those efforts to better approach impact assessment of AI. Following this literature, as a structural requirement, we acknowledged that AI impact assessment needs to be integrated in the overall governance framework of AI systems. This can ensure that the risks, challenges, and benefits identified in the assessment are addressed through existing governance mechanisms. If impact assessment is performed with no potential impact on governance, the whole exercise would be sterile, not meaningful. Consequently, analyzing and reorganizing the positions expressed in several (independent) efforts on AI impact assessment, we identified a set of relevant criteria and critical questions for AIA, categorized in five integrated dimensions, meant to support AI governance in public and private organizations.

The proposed criteria have several potential uses. From a developer perspective, criteria would ideally facilitate choosing the assessment process that is appropriate, useful, and effective for their use cases. Diverse types of organizations can refer to these criteria to evaluate if an assessment method or tool is suitable for their context, by checking how it meets key requirements for responsible AI. From a standard setting organization and oversight perspective, the proposed criteria can help evaluate if a particular impact assessment was conducted adequately or if it was part of an "ethics-washing" exercise [33], [34]. From a stakeholder perspective, placing trust in AI systems depends largely on whether these have been developed and are being used with potential impact in

mind. Consequently, having an impact assessment that was not conducted adequately and meaningfully would result in diminished confidence in the results of the process.

The criteria we propose represent only one aspect, *albeit* an important one, for achieving the goal of clear process requirements to promote responsible AI development. Some of the proposed criteria would likely be mandated by norms– for instance, the final draft of the EU AI Act and the U.S. OMB Policy to Advance Governance, Innovation, and Risk Management in Federal Agencies' Use of Artificial Intelligence already include some of these elements. Others are being and will be further elaborated in the (industry) standards and guidance. Practical elements of the criteria might be additionally (co)-developed as good practice repositories for specific domains and use cases.

Going forward, we aim to validate and implement the criteria examining the application of standards to AI development use cases and implementation of the regulatory framework for impact assessment on specific case studies of AI public sector use.

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