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From Pretoria to Brussels: Expert networks, ethical spillover, and the architecture of EU AI regulation

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Abstract

Background: As artificial intelligence (AI) technologies become embedded in public and private decision-making, questions of governance have become a critical global concern. The European Union (EU), widely regarded as a leader in digital regulation, has developed an AI governance architecture that includes the AI Act, Ethics Guidelines for Trustworthy AI, and multiple stakeholder platforms.

Aims: This article examines how expert networks and national governance models from France, Germany, and South Africa contribute to the European Union's artificial intelligence (AI) governance through conceptual, institutional, and procedural spillover.

Methodology: The research employs comparative case study analysis, drawing on policy documents, ethical guidelines, expert reports, and process tracing to track how national frameworks migrate into EU deliberations. The theoretical framework integrates spillover theory with multi-level governance, norm diffusion, and epistemic community perspectives.

Discussion: The central question is how transnational actors influence EU regulation via mechanisms such as normative transfer, expert mobility, and platform convergence. The study hypothesizes that EU AI governance is increasingly co-constructed through multidirectional spillover, in which norms and ethical frameworks from both the Global North and Global South are adapted and embedded into supranational regulation.

Findings: South Africa's "Fair AI" framework, France's participatory ethics inquiry, and Germany's strategic critique each shape EU debates on trustworthy AI, accountability, and regulatory experimentation. Together, these cases indicate that EU governance functions not as a closed, top-down system but as a porous and adaptive architecture responsive to external influence.

Conclusion: The expert communities across regions contribute to the co-production of global AI standards, and that ethical pluralism is emerging as a significant feature of supranational regulation.

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1. Introduction

As artificial intelligence (AI) technologies become embedded in public and private decision-making, questions of governance have become a critical global concern. The European Union (EU), widely regarded as a leader in digital regulation, has developed an AI governance architecture that includes the AI Act, Ethics Guidelines for Trustworthy AI, and multiple stakeholder platforms. While much scholarship has focused on the internal dynamics of EU regulation, less attention has been paid to how external actors— particularly expert networks and national governance models from the Global South and Global North— contribute to shaping this supranational framework. This study addresses that gap by asking: How do expert networks and national governance models from France, Germany, and South Africa shape the EU's AI governance through conceptual, institutional, and procedural spillover? The study hypothesizes that EU AI governance is increasingly co-constructed through multidirectional spillover, in which norms and ethical frameworks from both the Global North and Global South are adapted and embedded into supranational regulation. Existing literature has laid important groundwork but remains limited in scope. Dirk Brand (2022) outlines the need for principled AI governance in South Africa, yet his analysis remains domestically focused. Frederick Cloete (2024) highlights the urgency of hybrid governance models in the digital era but does not explore how regional actors shape global frameworks. Gonzalez Torres et al. (2023) offer a rich account of stakeholder discourse within the EU but overlook external normative influence. Yoshija Walter (2024) provides a comparative overview of global governance but leaves the role of transnational expert networks underexamined.

Building on these contributions, the study applies a theoretical framework that combines spillover theory with multi-level governance, norm diffusion, and epistemic community perspectives. It traces how ethical vocabularies and governance methodologies from France, Germany, and South Africa are recycled and repurposed within EU deliberations. For example, South Africa's 'Fair AI' framework emphasizes restorative justice and care ethics, while French and German expert groups contribute procedural innovations and institutional critiques. These interactions occur through mechanisms such as peer review, expert mobility, and platform convergence, revealing the EU's governance architecture as porous, adaptive, and experimentally grounded. By examining the role of regional actors and expert communities, the study presents the EU not as a self-contained regulatory entity but as a space shaped by ethical negotiation and normative experimentation. It demonstrates that AI governance is not merely a matter of institutional design but a dynamic process shaped by transnational expertise and ethical pluralism. In doing so, the research contributes to a more inclusive understanding of global norm

production and highlights the reciprocal influence between the EU and its regional interlocutors. Ultimately, the study suggests that governance models should recognize the Global South not only as a recipient of standards but also as a contributor of conceptual and regulatory innovation.

2. Theoretical framework

This study applies a theoretical framework that integrates spillover theory with multi-level governance, norm diffusion, and epistemic community perspectives. Together, these perspectives provide a robust analytical lens for understanding how expert networks and national governance models from France, Germany, and South Africa contribute to shaping the European Union's regulatory architecture for artificial intelligence. At the core is the spillover effect, referring to the transfer and adaptation of concepts, norms, and methodologies across domains or regions, including into the EU. This effect is not linear or unidirectional; rather, it is recursive, adaptive, and multidimensional. It operates through three primary mechanisms:

- **Peer review and stakeholder engagement**, which allow ideas from diverse regions to be vetted and integrated into EU frameworks;
- **Expert group mobility**, where scholars and practitioners serve on multiple boards, facilitating cross-pollination of ethical principles and governance strategies;
- **Platform convergence**, through forums like the European AI Alliance and UNESCO's ethics committees, which bridge regional expertise and global policy-making.

To situate these mechanisms within the EU's governance structure, the study draws on multi-level governance theory as articulated by Bache, Bartle, and Flinders (2016). This perspective conceptualizes the EU not as a centralized regulator but as a porous, layered system where authority and influence are distributed across national, regional, and supranational levels. It emphasizes the fluidity of jurisdictional boundaries and the dynamic interplay between public and private actors, making it especially suited to analyzing transnational regulatory processes. Within this framework, national initiatives— France's participatory ethics inquiry, Germany's strategic critique, and South Africa's 'Fair AI' framework— contribute directly to the development of EU norms. These initiatives interact with supranational institutions through recursive feedback loops, expert mobility, and platform convergence, reinforcing the EU's governance architecture as an adaptive and experimentally grounded system.

Multi-level governance (MLG), as elaborated by Bache et al. (2016), challenges traditional notions of hierarchical authority by emphasizing the dispersion of decision-making across multiple, overlapping

jurisdictions. Rather than viewing governance as a vertical chain of command, MLG highlights the horizontal and diagonal interactions between actors at local, national, regional, and supranational levels.

This framework is particularly relevant to the EU, where policy formation involves not only member states and EU institutions but also civil society groups, expert networks, and transnational platforms. The authors argue that governance in this context is characterized by blurred boundaries, shared competencies, and negotiated authority—conditions that make it especially receptive to external normative influence and conceptual spillover. Importantly, Bache et al. distinguish between two ideal types of MLG: Type I, which involves stable, nested jurisdictions with clearly defined roles (e.g., federal systems), and Type II, which features fluid, task-specific arrangements that cut across institutional boundaries. The EU's AI governance architecture aligns more closely with Type II, where expert groups, advisory bodies, and stakeholder alliances operate across levels and sectors(Bache et al., 2016). This fluidity enables the integration of ethical frameworks and regulatory innovations from diverse regions— such as South Africa's "Fair AI" model or Germany's sandbox experiments— into EU deliberations. By adopting MLG as a structural scaffold, this study situates the spillover effect within a broader understanding of how governance is co-produced through dynamic, multi-actor engagement.

Complementing this is the theory of norm diffusion, which explains how ethical principles and regulatory models travel across borders and are selectively adopted, adapted, or resisted. In this study, norm diffusion is not treated as a passive or linear process, but as a dynamic negotiation shaped by institutional context, epistemic pluralism, and strategic reinterpretation. Drawing on Winston's (2018) emphasis on the internal complexity and evolutionary nature of norms, we highlight how actors from the Global South—particularly South Africa—engage in reverse spillover by introducing alternative ethical vocabularies into global governance. The 'Fair AI' framework, emphasizing restorative justice and care ethics, illustrates this process by introducing a pluralistic redefinition of trustworthy AI. Its uptake within EU deliberations reflects a form of normative adaptation that preserves ethical diversity while contributing to supranational coherence.

Finally, the study incorporates epistemic community theory to conceptualize expert groups as transnational communities of practice. These communities— such as the AI HLEG, UNESCO's ethics bodies, and national commissions— share normative commitments and technical expertise that shape policy outcomes. Their mobility across institutional contexts enables the migration of ideas and the harmonization of governance strategies.

Drawing on Miller and Fox (2001), this study understands epistemic communities not merely as networks of technical specialists, but as culturally embedded collectives whose knowledge claims are shaped by

localized intentionality, discursive practices, and institutional context. Rather than pursuing universal truths, these communities generate situated, provisional understandings that respond to specific governance challenges. By analyzing the role of such communities in France, Germany, and South Africa, the study highlights how expert knowledge becomes a vehicle for regulatory innovation and ethical pluralism—co-constructing AI governance through iterative engagement and normative reframing.

Together, these theoretical strands frame EU AI governance as an evolving architecture shaped by transnational expertise, experimentation, and institutional feedback. The spillover effect, situated within this broader framework, becomes a powerful tool for analyzing how regional actors co-construct global standards and contribute to the legitimacy, flexibility, and inclusivity of AI regulation.

Building on these strands, this study conceptualizes reverse spillover as a mechanism through which normative innovations originating in the Global South reshape supranational governance. It operates through three channels: (1) epistemic sovereignty, where local actors resist dependency and assert autonomous frameworks; (2) epistemic filtering, where only context-compatible elements of external models are selectively adopted; and (3) platform projection, where locally grounded vocabularies are injected into transnational deliberations. These channels enable South African initiatives such as the 'Fair AI' model to introduce alternative perspectives and broaden EU debates on trustworthy AI.

Within the broader framework, reverse spillover complements norm diffusion by demonstrating that governance flows are recursive rather than unidirectional. It also interacts with multi-level governance, as the EU's porous architecture allows external vocabularies to be absorbed, and with epistemic communities, which serve as carriers of these alternative norms. The result is a causal pathway in which resistance to dependency generates normative alternatives, these alternatives circulate through transnational platforms, and EU institutions recalibrate their regulatory discourse in response. Reverse spillover illustrates how governance models from the Global South contribute to the adaptive evolution of EU AI regulation.

In the empirical sections that follow, this integrated framework is applied to trace how expert networks and national initiatives in France, Germany, and South Africa interact with EU institutions, demonstrating the recursive pathways through which normative innovations circulate, adapt, and reshape supranational AI regulation.

3. Literature review

Dirk Brand (2022) outlines the foundational principles needed to guide AI deployment in South African public institutions. He emphasizes the importance of aligning AI systems with constitutional values such as

transparency, fairness, and accountability, and proposes tools like algorithmic impact assessments to operationalize these principles. Drawing on international instruments like the OECD Principles and the EU's Ethics Guidelines for Trustworthy AI, Brand calls for a legal framework that is both principled and pragmatic. However, his analysis remains largely inward-facing, focused on domestic legal reform and institutional readiness. It does not explore how South African ethical frameworks— such as the "Fair AI" model— or expert networks contribute to shaping supranational governance regimes like those of the EU. This is the gap our study addresses. By analyzing the spillover effect, we show how South African norms and methodologies are adapted within EU governance, illustrating the Global South's role as a contributor to ethical and regulatory innovation.

Similarly, Frederick Cloete (2024) provides a macro-level overview of the regulatory challenges posed by emerging technologies in the context of rapid digital transformation. Cloete argues that the acceleration of generative AI since 2022 has outpaced existing governance structures, necessitating hybrid models that combine developer self-regulation with external oversight. He draws on historical analogies to suggest that the digital era— potentially transitioning into a Fifth Industrial Revolution— requires flexible, multi-stakeholder governance approaches. While Cloete's analysis is valuable in framing the urgency and complexity of AI regulation, it does not examine how specific regions, particularly the Global South, contribute to shaping global governance frameworks. Nor does it address the role of expert networks in peer review, ethical norm-setting, or platform convergence. This study extends Cloete's analysis by tracing how France, Germany, and South Africa influence the EU's AI governance architecture. We highlight how transnational expertise and ethical pluralism contribute to the adaptive nature of EU regulation.

Gonzalez Torres, Kajava, and Sawhney (2023) examine how evolving stakeholder discourses around the EU AI Act shape the trajectory of AI regulation in Europe. Using an interdisciplinary approach that combines computational linguistics, law, and sociology, the authors analyze multi-stakeholder feedback to the AI Act and trace how contested concepts— such as the definition of AI, tiered regulation of foundation models, and the role of regulatory sandboxes— are reflected in legislative amendments. Their study highlights the dynamic nature of EU AI governance, emphasizing that regulation is not static but shaped through iterative discourse, negotiation, and experimental frameworks. The authors argue that regulatory sandboxes, in particular, offer a strategic opportunity to incorporate global perspectives and foster more inclusive, context-sensitive governance. While the article provides a rich account of how internal EU discourses influence regulatory evolution, it does not explore how external actors—especially from the Global South—contribute to shaping these

discourses or frameworks. The role of transnational expert networks, conceptual spillover, and normative reframing from regions like South Africa remains underexamined. This is the gap our study addresses. By analyzing how ethical frameworks and methodologies from South Africa, France, and Germany are recycled and repurposed within EU governance, we extend Gonzalez Torres et al.'s work beyond internal discourse analysis to include the transregional mechanisms— peer review, expert mobility, and platform convergence— through which global actors co-construct the EU's regulatory architecture. This study complements their findings by showing that EU adaptive governance is shaped not only by internal discourse but also by external normative influence.

Yoshija Walter (2024) provides a sweeping comparative analysis of global AI governance strategies, emphasizing the tension between rapid technological innovation and the slower pace of regulatory adaptation. The article explores how different regions—I ncluding the EU, United States, Asia, and Africa— approach AI regulation, and it highlights the socioeconomic consequences of failing to establish cohesive, responsive governance frameworks. Walter proposes a hybrid model of "dynamic laws" that blend government oversight with industry expertise, aiming to create adaptive regulations that evolve alongside technological advancements. The paper underscores the need for international collaboration, sector-specific regulation, and ethical safeguards to ensure that AI development serves democratic stability and public interest. While Walter's analysis offers a valuable macro-level overview of global governance trends and regulatory innovation, it does not examine how specific regional actors— particularly expert groups from the Global South— contribute to shaping supranational governance architectures like those of the EU. The mechanisms through which ethical frameworks, institutional practices, and conceptual vocabularies from countries such as South Africa influence EU regulation remain underexplored. Builds on Walter's overview by tracing spillover from South Africa, France, and Germany into EU governance, we show how transnational expertise and ethical pluralism contribute to the adaptive nature of EU regulation. Our research complements Walter's work by identifying the specific mechanisms— peer review, expert mobility, and platform convergence— through which regional actors co-construct global standards.

4. Discussion

4.1. Introducing the Spillover effect in AI governance

As artificial intelligence (AI) becomes embedded in public institutions, economic systems, and social infrastructures, its governance has emerged as a transnational challenge. The European Union (EU), often described as a global leader in AI regulation— through initiatives such as the AI High-Level Expert Group (AI HLEG), the Ethics Guidelines

for Trustworthy AI, and the ALTAI assessment tool— does not develop its governance architecture in isolation. Rather, it evolves through a dynamic process of normative exchange, institutional learning, and conceptual adaptation. By the way, this article introduces the spillover effect as a key lens for understanding how EU AI governance is co-constructed through interactions with national and regional actors worldwide.

In this context, the spillover effect refers to the transfer and adaptation of concepts, norms, and methodologies from one domain or region— such as South Africa— into another, particularly the EU. The process is multidirectional and reciprocal, involving the migration of ethical principles, regulatory tools, and institutional practices across borders. The result is a governance model that is pluralistic and reflexive.

Three mechanisms underpin this dynamic. First, peer review and stakeholder engagement allow ideas from diverse regions to be vetted and integrated into EU policy frameworks. Public consultations, ethics inquiries, and transnational policy clinics serve as platforms for deliberation and refinement. Second, expert group mobility enables scholars and practitioners to serve on multiple boards and advisory committees, facilitating the circulation of governance strategies and ethical vocabularies across institutional boundaries. Third, platform convergence— through forums such as the European AI Alliance, UNESCO's ethics committees, and the Global Partnership on AI Governance— creates bridges between regional innovation and global standard-setting, fostering alignment and mutual learning.

The EU's governance model increasingly serves as a template for global AI regulation, but it is also shaped by external contributions. Experts from South Africa, Canada, and other regions have embedded local ethical concerns into global standards, mitigated industry influence by introducing alternative perspectives, and enhanced regulatory flexibility by drawing on diverse disciplinary vocabularies— including language technology, indigenous knowledge systems, and postcolonial legal traditions. These contributions illustrate that norm production is not confined to the Global North and highlight the agency of Global South actors in shaping AI governance. By examining France, Germany, and South Africa, this article traces how national expert groups and governance models contribute to the EU's regulatory architecture through conceptual, institutional, and procedural spillover. Each case demonstrates a distinct pathway of influence— from participatory ethics and strategic critique to reverse norm diffusion and sandbox experimentation. Taken together, they show that the EU's AI governance regime is not a closed system but an adaptive framework shaped by transnational expertise and multi-level feedback loops.

4.2. France's expert group as a Spillover node in EU AI governance

The French experience with AI governance—particularly through the work of the Commission Nationale de l'Informatique et des Libertés (CNIL)— illustrates the spillover effect in practice. National-level concepts, norms, and methodologies are not confined to domestic regulation but are adapted to shape broader European frameworks. France's trajectory demonstrates how ethical principles, participatory mechanisms, and anticipatory regulation developed in one jurisdiction can inform and enrich supranational governance models, especially those of the European Union.

With respect to peer review and stakeholder engagement, France's approach to AI ethics has been deeply participatory. CNIL's 2017 national ethics inquiry on algorithms and AI involved over 3,000 participants across 45 events, including international partners such as Harvard's Future Society. This process yielded two foundational principles—fairness and vigilance— which emerged through inclusive public reasoning rather than top-down imposition (Demiaux & Si Abdallah, 2017). These principles later informed EU-level deliberations, contributing to the normative architecture of the AI HLEG's Ethics Guidelines for Trustworthy AI (Hleg, 2019).

One of the European Commission's key initiatives in this regard was the establishment of the High-Level Expert Group on Artificial Intelligence (AI HLEG) in June 2018. The Directorate-General for Communications Networks, Content and Technology appointed members based on their expertise. Of the total, 19 were appointed in a personal capacity; one represented a shared interest among stakeholders— namely the European Digital SME Alliance; 30 represented organizations broadly defined, including academic institutions, companies, consumer organizations, trade unions, and civil society groups; and two represented public bodies— the European Union Agency for Fundamental Rights and the European Economic and Social Committee (Palladino, 2020). The AI HLEG was tasked with supporting the implementation of the European strategy on AI, including the development of forward-looking policy recommendations and addressing ethical, legal, and societal issues related to AI (Marnau, 2019). Toward the end of 2018, the group began drafting the Ethics Guidelines for Trustworthy AI, which were officially published in April 2019 (HLEG, 2019). These guidelines have since become a cornerstone of the EU's normative approach to AI governance, emphasizing principles such as human agency, technical robustness, privacy, transparency, and accountability. They also serve as a reference point for global regulatory efforts and have influenced the development of tools like ALTAI and the EU AI Act.

The participatory ethos extended to CNIL's 2024 post-AI Act recommendations, which were co-developed through consultations with 43 stakeholders, including companies, NGOs, and public

institutions. These recommendations offered practical guidance on GDPR compliance for AI developers, covering legal bases, data reuse risks, DPIAs, and privacy-by-design strategies (CNIL, 2024). Such stakeholder engagement exemplifies how national deliberative processes feed into EU-level norm-setting, reinforcing democratic legitimacy and regulatory precision.

With regard to expert group mobility and norm circulation, France's expert ecosystem has been instrumental in cross-pollinating ethical principles across governance contexts. Figures like Cedric Villani— tasked with leading France's AI strategy— have operated at the intersection of national and European policymaking. His 2018 report outlined a comprehensive strategy across six domains, including ethical governance, gender equality, and environmental transition (Villani et al., 2018). These priorities have resonated within EU digital strategy debates, particularly in the framing of inclusive and rights-based AI regulation. Moreover, CNIL's doctrinal publications and anticipatory interventions— such as its reports on generative AI bias and algorithmic discrimination— have directly influenced working groups within the European Data Protection Board. This mobility of ideas and experts enables recursive feedback loops, where national insights are vetted, adapted, and embedded into EU governance structures.

Regarding platform convergence, France's regulatory sandboxes in healthcare (2021) and education (2022) provided real-world testing environments for AI oversight. These experiments informed the EU's 2024 AI Act, which incorporated sandbox mechanisms to support adaptive regulation. CNIL's sandbox model exemplifies adaptive governance— where policies are iteratively refined through practice rather than imposed a priori. Platforms such as the European AI Alliance and UNESCO's ethics committees have further facilitated convergence. France's alignment with UNESCO's *Cracking the Code* report on gender gaps in technology (Chavatzia, 2017) and its initiatives like École Supérieure du Numérique and "Female Ambition" programs demonstrate how national educational reforms can influence EU-level commitments to inclusive AI.

CNIL's emphasis on fairness, vigilance, and gender justice reflects a broader commitment to embedding context-specific ethical concerns into universal standards. Its work on algorithmic bias— especially in generative models like ChatGPT— has shaped EU debates on high-risk AI applications. CNIL's April 2023 report warned of linguistic and cultural biases in language models, highlighting the need for explainability and social sensitivity (CNIL, 2023b). These insights resonate with the EU's push for trustworthy AI that respects fundamental rights and social diversity.

France's governance model foregrounds public interest, ethical foresight, and interdisciplinary expertise. CNIL's collaboration with the Defender of Rights and its support for civil society participation reflect

a commitment to alternative epistemologies and grassroots perspectives. Its doctrinal work— focused on data reuse, annotation practices, and lifecycle ethics— offers developers a roadmap for aligning innovation with legal and moral obligations. Besides, multi-level coordination and normative spillover is clear in CNIL's case. CNIL's role in shaping EU AI governance is not merely reactive but strategic. Its contributions span norm-setting, sandbox experimentation, doctrinal clarification, and stakeholder mobilization. These activities exemplify how national expert groups function as engines of innovation and legitimacy within a multi-level governance system. CNIL's influence on EU regulatory design suggests that spillover is not a passive diffusion but an active process of normative negotiation and institutional learning.

In conclusion, France's CNIL demonstrates how national expertise can be leveraged to shape supranational AI governance. Through participatory ethics, anticipatory regulation, and doctrinal clarity, France has contributed to the EU's evolving framework for trustworthy AI. This case affirms the central thesis of the spillover effect: that concepts, norms, and methodologies from one domain or region—when strategically mobilized—can transform governance architectures elsewhere. In the EU context, such spillovers are not peripheral but foundational to legitimacy, adaptability, and inclusivity.

4.3. Germany and the Spillover effect in EU AI governance

Germany's AI governance trajectory illustrates how national norms, institutional designs, and strategic methodologies spill over into the European Union's regulatory architecture. Through early ethical interventions, transnational collaborations, and reflexive policy critique, German expert bodies have helped shape the EU's multi-level governance model for artificial intelligence. These contributions exemplify the spillover effect: concepts developed in one jurisdiction informing governance elsewhere, particularly within the EU's evolving framework.

Peer review as a spillover catalyst. Germany's ethical engagement with AI began with the establishment of a federal ethics commission in 2017, tasked with addressing dilemmas posed by autonomous vehicles. The commission's report, published in August of that year, offered normative recommendations for programming AI-equipped systems to resolve ethical conflicts in real time (Di Fabio et al., 2017). These guidelines were framed as transferable models for peer review and ethical standard-setting across EU Member States. Cedric Villani later referenced this model as a benchmark for cross-national ethical deliberation (ibid). This early intervention illustrates how peer-reviewed ethical reasoning in Germany became a source of normative spillover. By translating abstract principles into operational criteria, German experts contributed to the EU's broader efforts to codify ethical

AI, particularly through the AI HLEG's Ethics Guidelines for Trustworthy AI and the ALTAI assessment tool.

Expert group mobility and strategic convergence. Germany's national AI strategy, launched in November 2018, further operationalized the spillover effect by embedding ethical oversight and transnational coordination into its governance architecture. The strategy emphasized human-centric AI in the workplace and initiated European and transatlantic dialogues on responsible deployment. Key initiatives included the creation of the German AI Observatory, support for similar institutions across Europe, and the development of a Franco-German virtual research center. These efforts culminated in the formation of a European innovation cluster to fund collaborative research projects (Federal Ministry for Economic Affairs and Energy, 2018). German scholars and policymakers engaged in joint ventures with French counterparts, enabling the cross-pollination of governance strategies and ethical principles. These collaborations helped align national strategies with EU objectives, reinforcing the EU's commitment to coordinated, rights-based AI regulation.

Doctrinal spillover. Germany's Commission of Experts for Research and Innovation has played a central role in reflexive governance. Its 2019 report welcomed the federal AI strategy but criticized its lack of measurable benchmarks and implementation clarity (Commission of Experts for Research and Innovation, 2019). It called for stronger institutional planning, enhanced transparency, and international comparability—recommendations that resonate with the EU's push for adaptive and accountable regulation. The commission questioned the feasibility of creating 12 new AI competence centers and hiring 100 professors in a saturated labor market. Instead, it proposed strengthening existing institutions, supporting international mobility through doctoral fellowships, and aligning with European initiatives such as the Confederation of AI Research Labs (Commission of Experts for Research and Innovation, 2019). These recommendations exemplify doctrinal spillover, where national policy critiques inform EU-level revisions and recalibrations.

Platform convergence. Germany's AI strategy prioritized capacity building as a mechanism of spillover. Efforts included hiring AI faculty, expanding regional competence centers, supporting SMEs through Mittelstand 4.0 hubs, and launching 50 environmental AI projects (Commission of Experts for Research and Innovation, 2019). Backed by €3 billion in funding through 2025, these initiatives aimed to position Germany as a global leader while aligning with EU goals for responsible and inclusive development. Roundtables on data protection, privacy, and ethical governance were convened to guide high-impact applications. These forums mirror the EU's platform convergence mechanisms, such as the European AI Alliance and UNESCO's ethics committees, which serve as bridges between regional expertise and

global policy-making. Germany's emphasis on stakeholder engagement and ethical oversight contributed to the EU's broader commitment to trustworthy AI.

Strategic critique and regulatory flexibility. Despite its ambitious scope, Germany's AI strategy faced criticism for vague commitments and insufficient strategic focus. The Commission of Experts warned that transformative innovation and public startup funding lacked clarity and risked diluting policy coherence. It highlighted Europe's comparative weakness in data-rich AI relative to China and the United States, proposing access to machine-generated datasets and the development of "non-data-centric AI research" as corrective measures (Commission of Experts for Research and Innovation, 2019). These recommendations reflect regulatory flexibility, where national insights help the EU adapt its governance model to technological and geopolitical challenges.

Germany's commitment to ethical governance is evident in its emphasis on privacy, transparency, and independent oversight. Roundtables on data protection and proposals for a dedicated regulatory body underscore the country's focus on high-risk applications and rights-based frameworks. These initiatives align with the EU's foundational principles and have influenced the drafting of the AI Act, particularly in areas concerning data sovereignty and algorithmic accountability. By foregrounding ethical oversight in national strategy, Germany has helped shape the EU's normative infrastructure for AI governance. Its proposals for independent regulation and stakeholder engagement reflect a multi-level approach that integrates national priorities with supranational standards.

In conclusion, Germany's expert groups and national institutions have played a significant role in shaping the ethical and strategic foundations of AI governance in Europe. From early modeling in autonomous vehicles to transnational research networks and reflexive policy critique, Germany has contributed to the EU's adaptive regulatory architecture. These contributions exemplify the spillover effect: national norms, methodologies, and institutional practices migrating across borders to inform supranational governance. Germany's model is recursive, adaptive, and multi-level, with expert groups contributing to norm-setting and oversight within the EU's approach to trustworthy AI regulation.

4.4. South Africa and the Spillover effect in EU AI governance

South Africa's engagement with AI governance exemplifies a multidirectional spillover effect— where concepts, norms, and methodologies developed in the Global South are adapted to shape supranational regulatory frameworks, particularly within the European Union. Rather than serving only as a recipient of global standards, South Africa has developed ethical frameworks and institutional

innovations that interact with and provide alternatives to prevailing models of AI governance. South African actors contribute to the EU's evolving architecture of trustworthy AI. They do so through peer review, expert group mobility, and platform convergence, particularly via RIA and UNESCO. Their work demonstrates how adaptive governance in the EU is increasingly shaped by transnational dialogue and reciprocal norm circulation.

With regard to peer review and ethical co-creation, structured interviews conducted with Professor Emma Ruttkamp-Bloom, Chair of UNESCO's World Commission on the Ethics of Scientific Knowledge and Technology and lead ethicist at RIA, reveal how South African experts participate in global peer review processes that influence EU governance. RIA's involvement in platforms such as the World Future Forum, the UN Technology Office, and the Global Partnership on AI Governance enables comparative evaluation of policies through joint sessions, policy clinics, and specialized communication channels. These mechanisms foster mutual learning and regulatory refinement across regions (E. Ruttkamp-Bloom, personal communication, August 8, 2025).

The development of the "Fair AI" framework by RIA is a direct outcome of such peer engagement. Rather than adopting European ethical principles wholesale, this framework reinterprets global norms through the lens of African social realities— emphasizing restorative justice, care ethics, and democratic oversight. As Ruttkamp-Bloom notes, these principles emerged from participatory research with marginalized communities, not from abstract theorizing. This process illustrates conceptual spillover, showing how ethical ideas are adapted to reflect local epistemologies (E. Ruttkamp-Bloom, personal communication, August 8, 2025).

When it comes to expert group mobility and norm circulation, South African scholars and ethicists frequently serve on multiple boards and advisory committees, facilitating the cross-pollination of governance strategies. Ruttkamp-Bloom's dual role within UNESCO and South Africa's AI research ecosystem illustrates how expert mobility enables the migration of ethical principles across institutional boundaries. These experts function as mediators, facilitating the translation of local concerns into global standards and vice versa. This mobility contributes to the EU's governance model by embedding alternative epistemologies and grassroots perspectives into regulatory design. For example, the "Fair AI" framework critiques the procedural complexity of the EU's AI Act while selectively integrating its emphasis on high-risk categorization and transparency mandates. This selective uptake reflects a spillover logic that is adaptive, incorporating useful elements while maintaining conceptual independence (E. Ruttkamp-Bloom, personal communication, August 8, 2025).

Regarding platform convergence and institutional alignment, South

Africa's participation in global governance platforms reflects a broader convergence of institutional practices. Expert networks affiliated with UNESCO, including "AI Ethics Without Borders," serve as bridges between regional expertise and global policy-making. These platforms enable South African actors to engage with EU institutions, contributing to the harmonization of ethical standards and the co-creation of shared governance tools. RIA's collaboration with European and Canadian institutions in policy clinics and regulatory dialogues demonstrates how platform convergence facilitates the alignment of ethical and legal frameworks. These engagements have contributed to the gradual integration of African perspectives into EU deliberations, broadening discussions on legitimacy and inclusivity in AI governance (E. Ruttkamp-Bloom, personal communication, August 8, 2025).

The interview highlights a case of operational translation within adaptive governance. South African expert groups have played a role in turning ethical principles into operational mechanisms. Their involvement in designing regulatory sandboxes—particularly in health and education—parallels similar initiatives in France and the EU. Developed with expert consultation, these sandboxes enable real-world testing of policies and foster institutional learning through feedback loops. This iterative process exemplifies adaptive governance, where regulation evolves through practice rather than prescription (CNIL, 2023). Ruttkamp-Bloom emphasizes that such mechanisms are essential for bridging the gap between normative aspiration and policy implementation. Expert groups serve as translators, converting abstract ethical commitments into actionable tools. Their role in sandbox design suggests that spillover operates not only conceptually but also institutionally and procedurally.

4.5. Conceptual independence and reverse Spillover

A critical dimension of South Africa's contribution is its resistance to conceptual dependency. Ruttkamp-Bloom warns against the uncritical adoption of European frameworks, arguing that such dependency undermines local capacity and the ability to generate knowledge frameworks independently (epistemic sovereignty). Instead, South African experts advocate for pluralistic governance models that reflect regional realities and social histories.

This stance illustrates reverse spillover, where Global South actors contribute alternative frameworks that influence global standards. The 'Fair AI' model emphasizes justice and care, introducing an alternative vocabulary that broadens debates on what constitutes trustworthy AI. It also affirms the importance of adaptive governance, where norms are not static but evolve through contextual negotiation (E. Ruttkamp-Bloom, personal communication, August 8, 2025).

This reverse spillover is not merely rhetorical— it is operationalized through the creation of ethical frameworks that originate in African

contexts and are then projected outward into global deliberations. The "Fair AI" model, developed by RIA, is not a derivative of European ethics but a product of participatory research rooted in South Africa's post-apartheid legal culture and community-based governance traditions. Its emphasis on restorative justice and democratic oversight introduces a normative vocabulary that contrasts with the proceduralism and technocratic orientation often present in EU regulatory discourse. By foregrounding care ethics and social repair, South African experts offer a conceptual alternative that reorients global debates on AI accountability and legitimacy (E. Ruttkamp-Bloom, personal communication, August 8, 2025).

Moreover, this conceptual independence is reinforced by South Africa's strategic engagement in global policy platforms. RIA's participation in the Global Partnership on AI Governance, UNESCO's ethics committees, and the UN Technology Office allows South African experts to inject locally grounded perspectives into transnational norm-setting processes. These engagements are not passive—they involve active critique, selective uptake, and normative reframing. For instance, while South African experts acknowledge the utility of the EU's risk-based approach, they reject its complex regulatory proceduresand advocate for simplified, context-sensitive regulatory models. This selective adoption shows how reverse spillover operates through epistemic filtering, retaining and reinterpreting elements compatible with local governance capacities (E. Ruttkamp-Bloom, personal communication, August 8, 2025).

Finally, the resistance to conceptual dependency is also a form of epistemic activism. Ruttkamp-Bloom's warning against uncritical adoption of European models is not simply a call for regional autonomy— it is a demand for ethical pluralism in global governance. By asserting the legitimacy of African frameworks, South African experts highlight the asymmetries in norm production and contribute to a more pluralistic governance discourse. This intervention contributes to reshaping global AI governance, positioning the Global South as an active participant in normative innovation. In doing so, South Africa contributes to a more reflexive, inclusive, and adaptive regime— one where spillover is not a one-way flow but a recursive, multi-directional exchange (E. Ruttkamp-Bloom, personal communication, August 8, 2025).

4.6. Mapping Spillover mechanisms: Insights from South African expert networks

To further illustrate the multidirectional nature of the spillover effect in AI governance, the following table synthesizes key insights from the structured interview with Professor Emma Ruttkamp-Bloom. It highlights how South African expert groups— particularly those affiliated with RIA and UNESCO— contribute to ethical and

institutional alignment between the Global South and the European Union. Each row reflects a distinct mechanism of spillover, whether conceptual, procedural, or institutional, and shows how South African actors engage with, reinterpret, and influence EU governance models.

This mapping suggests that spillover is not a passive transfer of norms but a dynamic process of co-creation, critique, and adaptation. South African experts do not merely receive European standards— they actively reshape them, offering alternative ethical vocabularies, participating in peer review, and translating abstract principles into operational tools. Table 1 captures these contributions and their relevance to the EU's evolving AI governance architecture.

Table 1. Insights from South African Expert Networks

Analytical dimension	Key insights from interview	Connection to EU AI governance
Transnational expert networks	UNESCO-affiliated networks and others provide platforms for knowledge exchange and policy dialogue.	Strengthens ethical and regulatory alignment between Europe and the Global South.
Alternative ethical framework (Fair AI)	Developed by RIA with a focus on restorative justice, care, and democratic oversight; rooted in participatory research.	Redefines global ethical principles; implicitly critiques Eurocentric models.
Peer review and institutional interaction	Participation in global forums like the Internet Governance Forum, GPAI, and policy clinics; engagement with European and Canadian institutions.	Creates feedback loops and cross-regional policy evaluation mechanisms.
Critique of EU regulatory model	EU's AI Act is too complex for African contexts; high-risk focus is adaptable.	Selective uptake of concepts; calls for simpler, locally implementable regulation.
Risk of conceptual dependency	Warns against uncritical adoption of EU frameworks; emphasizes locally grounded concept production.	Reinforces conceptual independence; advocates for pluralistic and adaptive governance.
Operational mechanisms and sandboxes	Experience with regulatory sandboxes in health and education; policies tested in real-world settings with expert input.	Translates ethical principles into practical tools; strengthens adaptive governance.
Ethical and Regulatory alignment	Some EU principles like transparency and human oversight are adaptable; broader model needs revision.	Enables abstract-level alignment; requires contextual adaptation to local capacities.
South Africa's role in global governance	Engagement with European and international institutions; aims to influence global standards from an African perspective.	Demonstrates reciprocal spillover; Global South as norm producer, not just recipient.

Source: Authors' analysis based on interview with South African Expert Emma Ruttkamp-Bloom

Table 1 reinforces the central thesis of the South Africa case: expert groups from the Global South are not peripheral actors but strategic contributors to global AI governance. Their participation in transnational networks, development of alternative ethical frameworks, and critique of prevailing regulatory models exemplify the spillover effect in its most reciprocal and adaptive form. These mechanisms not only shape EU policy but also expand the normative horizon of AI governance, embedding diverse epistemologies and reinforcing the legitimacy of a multi-voiced, adaptive regulatory regime.

In conclusion, South Africa's expert groups— particularly those affiliated with RIA and UNESCO— demonstrate that the spillover effect in AI governance is not a one-way transfer but a multidirectional, adaptive process. Through conceptual innovation, institutional participation, and operational translation, South African actors have helped shape the EU's governance architecture while simultaneously redefining global standards from a Southern perspective. Their contributions affirm that the Global South is not merely a recipient of norms but a producer of ethical frameworks and regulatory tools. The "Fair AI" model, sandbox experimentation, and critique of EU legal complexity all reflect a sophisticated engagement with global governance. These efforts strengthen the legitimacy, flexibility, and inclusivity of AI regulation across borders. Ultimately, South Africa's role in transnational AI governance illustrates how expert groups from the Global South contribute to norm creation, institutional innovation, and discussions of democratic legitimacy. Their participation enhances the EU's governance model by embedding diverse epistemologies and expanding the normative horizon of trustworthy AI.

These interventions did not remain peripheral; they entered EU deliberations and contributed to the shaping of the AI Act, particularly in its emphasis on transparency, high-risk categorization, and the recognition of ethical pluralism. In this way, reverse spillover from South Africa demonstrates how Global South frameworks can recalibrate supranational regulation rather than merely respond to it.

4.7. Comparative Spillover in AI governance: France, Germany, and South Africa

The evolving architecture of AI governance in the European Union is not solely the product of internal deliberation. It is shaped by a dynamic spillover effect— where concepts, norms, and methodologies from diverse regions and domains are adapted to inform supranational regulation. France, Germany, and South Africa each exemplify this process in distinct ways, contributing to the EU's governance model through ethical innovation, policy critique, and transnational engagement.

These contributions operate through three key mechanisms:

- **Peer review and stakeholder engagement**, which allow ideas

from different regions to be vetted and integrated into EU frameworks;

- **Expert group mobility**, enabling scholars to serve on multiple boards and facilitate cross-pollination of governance strategies;
- **Platform convergence**, where forums like the European AI Alliance and UNESCO's ethics committees serve as bridges between regional expertise and global policy-making.

Table 2 synthesizes these mechanisms across the three case studies, showing how each country's expert groups and institutions contribute to the EU's AI governance through conceptual innovation, institutional alignment, and procedural experimentation.

Table 2. Comparative table of Spillover mechanisms in AI governance

Spillover mechanism	France	Germany	South Africa
Peer review & stakeholder engagement	National ethics inquiry (2017) with 3,000 participants; participatory development of fairness and vigilance principles (Demiaux & Si Abdallah, 2017)	Ethics commission on autonomous vehicles (2017); public roundtables on data protection and AI ethics (Di Fabio et al., 2017)	Participatory development of "Fair AI" framework; engagement with marginalized communities (E. Ruttkamp-Bloom, personal communication, August 8, 2025)
Expert group mobility	AI HLEG members from diverse regions; collaboration with UNESCO and European AI Alliance (HLEG, 2019)	Franco-German research center; mobility through doctoral fellowships and EU lab networks (Commission of Experts, 2019)	Ruttkamp-Bloom's dual role in UNESCO and RIA; participation in GPAI and UN platforms (E. Ruttkamp-Bloom, personal communication, August 8, 2025)
Platform convergence	European AI Alliance and UNESCO ethics committees as bridges between regional and global governance	German AI Observatory and European innovation clusters; alignment with EU digital strategy (Federal Ministry, 2018)	UNESCO-affiliated networks and "AI Ethics Without Borders" as channels for norm diffusion (E. Ruttkamp-Bloom, personal communication, August 8, 2025)
Conceptual innovation	Fairness and vigilance as ethical anchors; emphasis on gender justice and inclusive education	Critique of EU strategy's vagueness; proposal for non-data-centric AI research	"Fair AI" framework with restorative justice and care ethics; reverse spillover into global

Spillover mechanism	France	Germany	South Africa
		(Commission of Experts, 2019)	standards (E. Ruttkamp-Bloom, personal communication, August 8, 2025)
Procedural experimentation	Regulatory sandboxes in health and education; support for SMEs and AI startups (CNIL, 2023)	Mittelstand 4.0 hubs; environmental AI projects; sandbox-style policy testing (Federal Ministry, 2018)	Sandbox design in health and education; translation of ethics into operational tools (CNIL, 2023; Ruttkamp-Bloom interview)
Regulatory critique & adaptation	Critique of industry capture; emphasis on grassroots epistemologies and flexible regulation	Call for measurable benchmarks and simplified governance; critique of EU's data limitations (Commission of Experts, 2019)	Selective uptake of EU principles; critique of procedural complexity; call for simplified models (E. Ruttkamp-Bloom, personal communication, August 8, 2025)
Normative reframing	Embedding local ethical concerns into global standards; emphasis on transparency and accountability	Strategic alignment with EU goals; emphasis on rights-based governance and institutional comparability	Reinterpretation of global norms through African epistemologies; emphasis on ethical pluralism (E. Ruttkamp-Bloom, personal communication, August 8, 2025)

Source: Authors' analysis through the process tracing

This comparative analysis suggests that the EU's AI governance regime is not a closed system— it is porous, reflexive, and shaped by external contributions. France offers a model of participatory ethics and stakeholder-driven norm creation. Germany contributes through strategic critique, institutional foresight, and transnational infrastructure-building. South Africa brings conceptual independence, reverse spillover, and ethical pluralism rooted in postcolonial critique and community engagement.

Together, these cases illustrate how the spillover effect operates across conceptual, institutional, and procedural dimensions. They show that expert groups from both the Global North and Global South are essential engines of innovation, norm-setting, and democratic legitimacy. Their participation strengthens the EU's governance model by embedding diverse epistemologies, enhancing regulatory flexibility,

and reinforcing the legitimacy of a multi-voiced, adaptive approach to AI regulation.

This comparative strategy demonstrates both convergence and divergence across the three cases. France and Germany, as EU member states, contribute primarily through participatory ethics and technocratic experimentation, embedding their national vocabularies into supranational deliberations via stakeholder engagement, expert mobility, and platform convergence. South Africa, by contrast, advances a justice-oriented "Fair AI" framework that exemplifies reverse spillover, projecting Global South epistemologies into global platforms and reorienting EU debates on trustworthy AI. Whereas France emphasizes democratic deliberation and Germany stresses regulatory precision, South Africa foregrounds ethical pluralism and care ethics, challenging Eurocentric assumptions and affirming the importance of adaptive governance. Taken together, these cases show that EU AI regulation is not simply the aggregation of member state practices, but the product of multidirectional exchanges across regions and normative traditions. The originality of the South African case underscores the recursive nature of spillover, revealing how Global South frameworks can recalibrate supranational governance and strengthen its legitimacy.

5. Conclusion: Spillover, expertise, and the architecture of adaptive AI governance

This article set out to investigate the following research question: How do expert networks and national governance models from diverse regions—particularly France, Germany, and South Africa—contribute to shaping the European Union's AI governance architecture through conceptual, institutional, and procedural spillover? The hypothesis guiding this inquiry posited that AI governance in the EU is increasingly co-constructed through multidirectional spillover effects, whereby norms, methodologies, and ethical frameworks from both the Global North and Global South are adapted and embedded into supranational regulation.

The comparative analysis confirms this hypothesis. France, Germany, and South Africa each demonstrate distinct pathways through which expert groups influence EU governance. France contributes through participatory ethics, stakeholder engagement, and normative modeling rooted in democratic deliberation. Germany offers policy critique, institutional foresight, and transnational infrastructure-building. South Africa brings conceptual independence, reverse spillover, and ethical pluralism grounded in postcolonial critique and community-based research. Together, these cases illustrate that spillover is not a linear transfer but a recursive, adaptive process.

One of the key findings is that peer review and stakeholder engagement serve as foundational mechanisms for normative diffusion.

In France, public consultations and ethics inquiries generated principles like fairness and vigilance that later informed EU guidelines. In South Africa, participatory research led to the development of the "Fair AI" framework, which reinterprets global norms through African epistemologies. These processes validate the role of inclusive dialogue in shaping ethical standards and reinforce the legitimacy of adaptive governance.

Expert group mobility emerged as another critical mechanism. Scholars and practitioners often serve on multiple boards, enabling cross-pollination of ideas and governance strategies. Franco-German collaborations, UNESCO-affiliated networks, and South African participation in global platforms like GPAI and the UN Technology Office illustrate how mobility facilitates the migration of ethical principles across institutional boundaries. This mobility not only enriches EU governance but also ensures that diverse epistemologies are represented in global norm-setting.

Platform convergence— the alignment of institutional practices across regions— was evident in all three cases. France's European AI Alliance, Germany's innovation clusters, and South Africa's engagement with UNESCO and "AI Ethics Without Borders" demonstrate how transnational platforms enable the harmonization of ethical and regulatory frameworks. These platforms serve as bridges between regional expertise and global policy-making, reinforcing the EU's commitment to multi-level, inclusive governance.

Importantly, the article highlights the role of reverse and selective spillover. South Africa's critique of the EU's AI Act and its emphasis on simplified, context-sensitive regulation exemplify how the Global South influences global standards. Rather than adopting European models wholesale, South African experts selectively integrate compatible elements while rejecting procedural complexity. This adaptive uptake affirms the agency of Global South actors and challenges the assumption of normative hierarchy in AI governance.

The findings also underscore the importance of translating ethical principles into operational tools. Regulatory sandboxes in France, Germany, and South Africa demonstrate how abstract norms are tested and refined in real-world settings. These experiments contribute to institutional learning and policy calibration, reinforcing the EU's adaptive governance model. Expert groups play a vital role in this translation process, ensuring that ethical commitments are embedded in practical mechanisms.

In sum, this article confirms that the EU's AI governance architecture is shaped by a complex interplay of transnational expertise, normative innovation, and institutional experimentation. The spillover effect— conceptual, procedural, and reciprocal— is central to this process. Expert groups from France, Germany, and South Africa are not

peripheral actors but strategic contributors to a global regime of trustworthy AI. Their participation expands the normative horizon of regulation, embeds diverse epistemologies, and strengthens the legitimacy of multi-voiced governance.

Conflict of interest

The authors declared no conflicts of interest.

Ethical considerations

The authors have completely considered ethical issues, including informed consent, plagiarism, data fabrication, misconduct, and/or falsification, double publication and/or redundancy, submission, etc. This article was not authored by artificial intelligence.

Data availability

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