OPERATIONALISING GENDER EQUALITY AND INCLUSIVITY ACROSS THE RESEARCH FUNDING LIFECYCLE: EVIDENCE FROM A SYSTEM-LEVEL CAPACITY-BUILDING INTERVENTION IN GHANA

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ABSTRACT

Gender Equality, Inclusivity, and Intersectionality (GEII) are increasingly recognised as priorities within science, technology, and innovation (STI) policy frameworks. However, there remains a persistent gap between policy commitments and institutional practice within national research funding systems, particularly in low- and middle-income countries. This study examines how GEII can be operationalised across the research funding lifecycle through a system-level capacity-building intervention in Ghana. Drawing on a qualitative case study of the *Bridging Gender Gaps in Research and Evaluation Process (EQUISTEM)* Project, the study analyses a nationally implemented GEII training curriculum and associated multi-actor workshops involving science granting council staff, peer reviewers, researchers, and institutional research managers. Using a curriculum-as-data approach, the analysis integrates structured document review of the training manual with insights from facilitated workshop discussions and a validation session to examine how GEII principles were translated into practical competencies related to funding design, proposal evaluation, and accountability mechanisms. The findings show that system-level capacity-building can foster institutional learning and reflexivity by shifting understanding of gender inequality from individual-level explanations toward recognition of structural and procedural barriers embedded within research funding systems. At the same time, the study highlights persistent tensions between meritocratic norms and equity objectives, as well as limitations associated with weak accountability mechanisms and monitoring infrastructure. The paper contributes empirical and methodological insights into the operationalisation of GEII through system-level capacity-building and offers lessons for strengthening inclusive research funding governance in Ghana and comparable contexts.

Keywords: Gender equality and inclusivity; Research funding governance; Capacity-building; Science, technology and innovation (STI); Ghana

Introduction

Gender equality, inclusivity, and intersectionality (GEII) have become increasingly prominent within science, technology, and innovation (STI) policy discourses globally. Governments, research councils, and international development organisations now recognise inclusive research systems as critical to scientific excellence, societal relevance, and sustainable

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development (Schiebinger & Schraudner, 2011; UNESCO, 2017; World Bank, 2020). Within these frameworks, gender equality is frequently positioned as a cross-cutting priority, linked to broader commitments to equity, innovation, and human capital development. Despite this growing policy attention, persistent disparities remain in access to research funding, leadership, and decision-making roles, particularly for women and other marginalised groups (Huyer, 2015; Lepori *et al*., 2019).

A key explanation for this paradox lies in the persistent gap between policy commitments and institutional practice within research funding systems. While national STI and gender policies increasingly reference GEII principles, these commitments are rarely translated into the operational rules, procedures, and competencies that shape funding decisions. Eligibility criteria, peer review processes, evaluation metrics, and accountability mechanisms often remain formally gender-neutral, thereby obscuring and reproducing structural inequalities embedded within academic and research careers (Acker, 1990; Waylen, 2014). Feminist institutionalist scholarship demonstrates that such "neutral" institutional arrangements are not apolitical but reflect historically masculinised norms of productivity, merit, and career progression that systematically disadvantage women and other underrepresented groups (Acker, 2006; Mackay *et al*., 2010).

These implementation gaps are particularly pronounced in low- and middle-income countries, where research funding systems are often undergoing institutional consolidation and reform, yet empirical analyses of how GEII is operationalised within STI governance remain limited (Huyer & Hafkin, 2017; Mama, 2011). In African contexts, gender equality initiatives within STI systems have tended to focus on increasing women's participation in education and research, while paying comparatively less attention to the institutional architectures, such as funding rules and decision-making processes, that structure access to resources and authority (Ongolo-Zogo *et al*., 2021). As a result, gender equality is frequently articulated as a policy objective without necessarily being embedded in the governance mechanisms that shape research outcomes.

Recent scholarship on gender equality, inclusivity, and intersectionality (GEII) within science, technology, and innovation (STI) has increasingly shifted from a primary focus on participation and representation towards closer examination of the institutional and governance arrangements that shape research systems (Schiebinger & Schraudner, 2011; Waylen, 2014; Schiebinger et al., 2018). Within this body of work, research funding systems have emerged as critical yet under-examined sites where gendered inequalities are produced and reproduced through ostensibly neutral rules, norms, and evaluative practices (Acker, 1990; Acker, 2006; Lepori et al., 2019). Feminist institutionalist analyses demonstrate that funding mechanisms—such as eligibility criteria, peer review procedures, and merit-based evaluation frameworks—are embedded with historically gendered assumptions about productivity, excellence, and career progression, which systematically disadvantage women and other marginalised groups (Mackay et al., 2010; Waylen, 2014; van den Brink & Benschop, 2012). More recent contributions extend this insight by foregrounding the need for system-level approaches that address the interconnected roles of funders, reviewers, and research institutions across the full research funding lifecycle,

particularly in low- and middle-income country contexts where funding systems are undergoing institutional consolidation (Huyer & Hafkin, 2017; Mama, 2011; Ongolo-Zogo et al., 2021). This literature provides a critical foundation for examining how GEII principles can be operationalised in practice, while also revealing persistent gaps between policy commitments and the governance mechanisms that shape funding decisions and accountability (Lepori et al., 2019; Schraudner et al., 2020).

While recent scholarship has deepened understanding of research funding systems as gendered governance arrangements, there remains limited empirical evidence on how GEII principles are translated into operational practice within national funding systems, especially in low- and middle-income countries. In response to this gap, capacity-building has emerged as a key strategy for advancing gender-responsive research systems. Training interventions are widely used to raise awareness of gender inequality and promote inclusive practices within academic and research environments (Schiebinger *et al*., 2018). However, existing GEII training approaches have largely targeted researchers as individual actors, with limited engagement of science granting councils, funding administrators, peer reviewers, and institutional leaders who play decisive roles across the research funding lifecycle. This narrow focus overlooks the systemic nature of research funding governance, in which funders, reviewers, and research institutions collectively shape eligibility, evaluation, and accountability processes (Lepori *et al*., 2019).

Moreover, there is limited scholarly documentation of system-level GEII capacity-building interventions that engage multiple institutional actors simultaneously. Where training initiatives are discussed in the literature, they are often treated as ancillary project activities rather than as sites of institutional learning and change worthy of systematic analysis (Schraudner *et al*., 2020). This limits understanding of how GEII training is designed, how it is adapted to specific national contexts, and how it contributes to institutional reflexivity within research governance systems.

This paper addresses these gaps by examining a system-level GEII capacity-building intervention implemented within Ghana's national research funding ecosystem. The intervention targeted a broad range of institutional actors, including staff of the national science granting council, peer reviewers, researchers, and representatives of institutions with research directorates. Rather than focusing solely on individual attitudes or levels of awareness, the training was deliberately structured to engage participants in critical reflection on how gendered assumptions, institutional norms, and governance practices shape funding design, proposal evaluation, and accountability mechanisms across the research funding lifecycle.

The paper has two main objectives. First, it documents the design of a GEII training curriculum tailored to research funding governance, illustrating how identified policy and institutional gaps were translated into concrete learning objectives and competencies. Second, it examines how participation in system-level training influenced institutional understanding and reflexivity among key actors involved in research funding processes. Methodologically, the study adopts a curriculum-as-data approach, treating the training manual and learning processes as

analytical artefacts for understanding how GEII is operationalised in practice (Lepori *et al*., 2019; Schiebinger *et al*., 2018).

Empirically, the paper contributes evidence from Ghana, a context that remains underrepresented in international scholarship on gender and research funding governance. Conceptually, it advances debates on inclusive STI systems by foregrounding capacity-building as a mechanism for institutional change rather than individual compliance. By engaging funders, reviewers, and research institutions alongside researchers, the study demonstrates the importance of multi-actor institutional learning for advancing gender-transformative research funding systems in low- and middle-income countries.

Against this background, the study adopts a system-level perspective to examine how gender equality, inclusivity, and intersectionality are operationalised within research funding governance. The study is guided by the following research questions:

RQ1**:** How was Gender Equality, Inclusivity, and Intersectionality (GEII) operationalised across different stages of the research funding lifecycle through a system-level capacity-building intervention in Ghana?

RQ2**:** How did participation in a multi-actor GEII training intervention influence institutional understanding and reflexivity among key actors involved in research funding governance, including funders, reviewers, and research institutions?

RQ3**:** What institutional constraints and tensions emerged in efforts to operationalise GEII through capacity-building, and what do these reveal about the limits of training-based interventions in the absence of complementary governance reforms?

Conceptual framework

This study is anchored in feminist institutionalism, gender systems theory, and institutional learning perspectives to conceptualise research funding systems as gendered governance arrangements and to position capacity-building as a critical mechanism for institutional change. Together, these frameworks enable an analysis of how gender equality, inclusivity, and intersectionality (GEII) are shaped not only by formal policies but also by the rules, norms, and practices that structure research funding decisions across the funding lifecycle. In this paper, we use the term Gender Equality, Inclusivity, and Intersectionality (GEII) to emphasise that gendered inequalities in research funding systems are produced through intersecting institutional, career, and social dynamics, rather than gender alone.

Research funding systems as gendered institutions

Feminist institutionalism provides a foundational lens for understanding how institutions that appear neutral can reproduce gendered power relations through their formal and informal rules (Acker, 1990; Mackay *et al*., 2010; Waylen, 2014). Within this perspective, institutions are not simply organisational structures but "gendered systems of advantage and disadvantage" that embed assumptions about merit, productivity, authority, and legitimacy. Research funding systems, comprising funding agencies, review panels, eligibility rules, and evaluation criteria, are therefore understood as gendered institutions rather than impartial allocators of scientific resources.

From this standpoint, formal commitments to gender equality within STI policies do not automatically translate

into equitable funding outcomes. Eligibility requirements based on uninterrupted career trajectories, evaluation criteria privileging publication volume or prior funding success, and peer review norms rooted in disciplinary hierarchies can systematically disadvantage women and other marginalised groups, even in the absence of overt discrimination (Acker, 2006; Lepori *et al*., 2019). Feminist institutionalism thus draws attention to the "implementation gap" between gender-aware policy language and gender-responsive institutional practice, highlighting the need to interrogate how funding systems operate in practice.

Gender systems and interconnected institutional roles

Gender systems theory complements feminist institutionalism by emphasising that gender inequality is produced through interconnected social relations, institutions, and practices rather than isolated actors or policies (Connell, 2002; Huyer, 2015). Within STI systems, gender operates across multiple levels—individual, organisational, and systemic—shaping who participates in research, whose knowledge is valued, and who controls access to resources.

Applying a gender systems lens to research funding highlights the interdependence of key actors across the funding lifecycle, including funders, reviewers, research institutions, and researchers. Decisions made at one point in the system, for example, the design of funding calls or the composition of review panels, have cascading effects on participation, evaluation outcomes, and leadership opportunities. As a result, addressing gender inequality requires interventions that engage multiple institutional roles simultaneously, rather than focusing narrowly on individual researchers or beneficiaries.

This perspective is particularly relevant in contexts where gender initiatives have historically targeted women researchers as a homogenous group, often through scholarships or training, without addressing the institutional rules and power structures that shape funding governance (Mama, 2011; Huyer & Hafkin, 2017). Gender systems theory therefore underscores the need for system-level approaches that recognise how gendered norms are reproduced across interconnected funding processes.

Institutional learning, reflexivity, and capacity-building

Institutional learning theory provides a further analytical lens for understanding how organisations and governance systems adapt, reflect, and change over time (Argyris & Schön, 1978; Schiebinger *et al*., 2018). Within this framework, learning is not limited to the acquisition of technical skills but involves reflexive processes through which institutional actors critically examine underlying assumptions, norms, and routines.

In the context of research funding systems, capacity-building can serve as a mechanism for institutional learning by creating structured spaces for funders, reviewers, and researchers to interrogate how gendered assumptions shape funding decisions and outcomes. Rather than treating training as an awareness-raising exercise, this study conceptualises GEII capacity-building as a form of reflexive governance intervention that seeks to influence how institutional actors understand their roles within the funding lifecycle.

Such reflexivity is particularly important in research funding governance, where decision-making power is often diffused

across multiple actors and stages. By engaging actors across the system—science granting council staff, peer reviewers, researchers, and institutional representatives—capacity-building interventions can foster shared understanding of GEII principles and their practical implications for funding design, evaluation, and accountability.

Linking policy intent to practice across the funding lifecycle

Bringing these perspectives together, the conceptual framework positions capacity-building as the critical link between GEII policy intent and institutional practice within research funding systems. Feminist institutionalism highlights the gendered nature of funding rules and norms; gender systems theory emphasises the interconnectedness of actors and processes; and institutional learning theory explains how reflexive engagement can enable change within complex governance systems.

Within this framework, GEII is understood as a system-level property that must be embedded across the entire research funding lifecycle, from agenda setting and call design, through proposal evaluation and award decisions, to monitoring and accountability. Capacity-building interventions that engage multiple institutional roles are therefore conceptualised not as peripheral activities but as central mechanisms for advancing gender-transformative research funding systems.

This integrated framework guides the empirical analysis in this paper, informing both the design of the GEII training curriculum and the examination of how system-level training influences institutional understanding and reflexivity within Ghana's national research funding ecosystem.

To operationalise gender equality and inclusivity across research funding systems, this study conceptualises research funding as a lifecycle process shaped by interconnected institutional rules, norms, and practices. Rather than viewing funding as a single decision point, the framework emphasises multiple stages, from agenda setting and call design to evaluation, award management, and post-award learning, each of which presents distinct opportunities for embedding GEII.

Table 1 summarises how GEII gaps and governance levers manifest across key stages of the research funding lifecycle and the institutional actors involved.

TABLE 1

Embedding Gender Equality, Inclusivity, and Intersectionality (GEII) Across the Research Funding Lifecycle

Research Funding Lifecycle Stage	Governance Focus	Observed GEII Gaps	Key GEII Governance Levers	Primary Institutional Actors
Agenda setting and priority definition	National research priorities; thematic focus; eligibility of research areas	Gender treated as a cross-cutting principle rather than a funding determinant, limiting the inclusion of gender-responsive priorities	Gender-responsive priority setting; explicit inclusion of GEII objectives in funding calls.	Science granting councils; ministries and other public sector agencies; universities; public research institutions; policy units
Call design and eligibility rules	Call texts; eligibility criteria; application requirements	Assumptions of linear career trajectories; limited flexibility for caregiving or non-traditional career paths	Inclusive eligibility criteria; recognition of diverse career trajectories; guidance on GEII integration in proposals	Funding agencies; research councils
Proposal submission and evaluation	Peer review; scoring templates; selection processes	Gender-neutral merit criteria; limited attention to bias in evaluation	Gender-aware evaluation criteria; bias-mitigation guidance; gender-balanced review panels	Reviewers; evaluation committees; funding secretariats
Award decision and grant management	Contracting; leadership roles; resource allocation	Limited transparency on gender outcomes; weak accountability for inclusion	Gender-disaggregated award data; inclusive leadership requirements; accountability mechanisms	Funding agencies; host institutions
Post-award monitoring and learning	Reporting; impact assessment; system learning	Emphasis on outputs rather than equity outcomes; weak feedback into future funding cycles	Gender-disaggregated monitoring; learning loops linking monitoring to future calls	Funding bodies; monitoring units; policymakers

Table 1 illustrates how gender equality, inclusivity, and intersectionality (GEII) can be embedded across the research funding lifecycle through coordinated governance levers and multi-actor institutional engagement. It shows how gendered dynamics manifest at different stages of the funding process and identifies key governance entry points for strengthening inclusivity. Central to this framework is the recognition that capacity-building functions as a linking mechanism between policy intent and institutional practice, enabling funders, reviewers, and research institutions to develop shared understanding, reflexivity, and accountability. Importantly, the framework incorporates a feedback loop from post-award monitoring back into agenda setting, highlighting institutional learning

as a critical component of sustainable, gender-transformative research funding systems.

Context: GEII and the Ghanaian research funding system

Overview of Ghana's research funding landscape

Ghana's research and innovation system is governed through a multi-institutional science, technology, and innovation (STI) framework involving government ministries, science granting councils, public research institutions, and higher education institutions. Research funding is primarily administered through national science granting mechanisms, sector-specific research funds, and institutional research allocations within universities and public research organisations. These arrangements position science granting councils and related funding bodies as central actors in setting research priorities, designing funding calls, and allocating resources.

Within this system, research institutions and universities play a dual role as both implementers of funded research and gatekeepers of internal research governance through research directorates, ethics committees, and grant management units. Peer review processes, typically coordinated by funding agencies, rely on external reviewers drawn from academia and research institutions to assess proposals and advise on funding decisions. Together, these actors shape the rules, norms, and practices governing access to research resources and participation in knowledge production.

Although gender equality and inclusivity feature prominently in national development and STI policy discourse, their translation into research funding governance remains uneven. Gender-related commitments are often articulated at a high level, while operational responsibility is dispersed across multiple institutions with varying mandates and capacities. This institutional fragmentation creates challenges for embedding GEII coherently across the research funding lifecycle.

Institutional actors across the research funding lifecycle

Research funding in Ghana unfolds through a sequence of interconnected stages, including agenda setting and priority definition, call design and eligibility specification, proposal evaluation and peer review, award decision-making and grant management, and post-award monitoring and learning. Each stage involves distinct institutional actors whose decisions collectively shape inclusion outcomes.

Science granting councils and policy bodies play a central role in defining research priorities and structuring funding opportunities. Reviewers and evaluation panels influence allocation decisions through peer review processes that assess scientific merit and feasibility. Research institutions and universities, through their research directorates and administrative systems, mediate researchers' access to funding and manage funded projects following award decisions.

Importantly, these actors often operate within institutional silos, with limited shared understanding of how gender equality and inclusivity can be embedded across the full funding lifecycle. Responsibilities for GEII are frequently perceived as peripheral or external to core funding functions, rather than as integral to research governance. This fragmentation limits opportunities for coordinated action and institutional learning around inclusive funding practices.

Rationale for a system-level capacity-building intervention

The design of the GEII capacity-building intervention was informed by recognition of the systemic nature of gender inequality within research funding systems. Rather than targeting researchers alone, the intervention engaged multiple institutional actors, including science granting council staff, reviewers, research managers, and researchers. This multi-actor approach reflects the understanding that research funding systems function as interconnected institutional arrangements in which decisions at one stage shape opportunities and constraints at others.

Focusing exclusively on individual researchers risks obscuring the structural and procedural dimensions of inequality embedded within funding rules, evaluation criteria, and governance practices. By contrast, a system-level capacity-building approach seeks to foster shared awareness, reflexivity, and institutional responsibility across the funding lifecycle. Engaging funders, reviewers, and institutional administrators alongside researchers creates opportunities to surface implicit assumptions, challenge gender-neutral norms, and explore practical entry points for reform.

Situating the intervention within Ghana's research funding context therefore allows for examination of how GEII can be operationalised not only through policy commitments but through institutional learning processes that span multiple roles and responsibilities. This contextual grounding is essential for understanding both the potential and the limitations of capacity-building as a mechanism for advancing inclusive research governance.

Experimental

Study design

This study adopts a qualitative, system-level case study design to examine how capacity-building can operationalise gender equality and inclusivity (GEII) across the research funding lifecycle. The analysis focuses on a national GEII training intervention implemented in Ghana as part of a broader initiative to strengthen inclusive governance within science, technology, and innovation (STI) systems. The study is informed by feminist institutionalism and gender systems theory, which conceptualise institutions as sets of formal rules, informal norms, and decision-making practices that shape access to resources and opportunities.

Rather than treating training solely as an intervention outcome, the study employs a curriculum-as-data approach, analysing the training manual and delivery processes as empirical material. Within this approach, training curricula and facilitated learning processes are understood as institutional artefacts that reflect how policy-level GEII commitments are translated into operational guidance for actors across the research funding system. This allows the study to examine not only what GEII principles were promoted, but how institutional roles and responsibilities were framed across different stages of the funding lifecycle.

Context and participants

The training intervention targeted actors across Ghana's national research funding ecosystem, reflecting a deliberate system-wide approach to capacity-building. Participants included staff of the national science granting council, research funding administrators, peer reviewers,

academic researchers, and representatives of public research institutions and universities with established research directorates. These actors are centrally involved in the design of funding calls, assessment of proposals, institutional research management, and the conduct of publicly funded research.

Participation was purposively structured to capture the diversity of institutional functions that shape research funding outcomes. This multi-actor composition is analytically significant, as GEII challenges within research funding systems are often addressed through isolated training of researchers, rather than through coordinated engagement of funders, reviewers, and institutional decision-makers. By engaging these interconnected roles, the training created a shared space for institutional reflection across the funding lifecycle, enabling examination of how GEII principles were interpreted from different governance positions.

Data sources

Three primary qualitative data sources informed the analysis.

First, the GEII training manual constituted a central empirical source. The manual documents the conceptual framing, learning objectives, session structure, and practical tools used to operationalise GEII across the research funding lifecycle. It includes modules addressing gendered institutions, bias in peer review, inclusive eligibility criteria, gender-responsive evaluation, and accountability and monitoring mechanisms. The training manual was analysed as a policy and practice document to examine how abstract GEII principles were translated into concrete institutional guidance tailored to Ghana's STI governance context.

Second, data were drawn from training delivery processes, including facilitated discussions, group exercises, and plenary reflections conducted during the workshops. These interactions provided insight into how participants engaged with the curriculum, interpreted GEII concepts in relation to their institutional roles, and reflected on existing funding practices. Observations focused on collective patterns of institutional learning and reflexivity rather than individual attitudes or performance.

Third, insights from a dissemination and validation workshop were incorporated to refine interpretation of findings. This workshop brought together key stakeholders to reflect on the training experience, emerging institutional lessons, and implications for research funding governance. While these reflections were not treated as standalone empirical data, they were used to triangulate and validate patterns identified through analysis of the manual and training interactions.

Analytical approach

Data analysis followed a qualitative thematic approach guided by the study's conceptual framework and structured around the stages of the research funding lifecycle. The training manual was systematically reviewed using a structured document analysis approach. The review was guided by the research funding lifecycle framework outlined in Section 2 and focused on identifying how Gender Equality, Inclusivity, and Intersectionality (GEII) principles were operationalised across key stages of the funding process, including agenda setting, call design, proposal evaluation, award management, and post-award monitoring. The manual was examined module by module, with content coded according to these lifecycle stages and corresponding governance functions to assess how abstract GEII principles were translated into concrete institutional guidance.

Particular attention was paid to how the curriculum framed institutional roles, decision-making authority, and accountability mechanisms at each stage.

Workshop interactions and participant reflections were analysed to examine processes of institutional learning and reflexivity. Analysis focused on identifying how participants articulated gendered assumptions embedded in funding practices, recognised structural barriers to inclusion, and reflected on potential entry points for reform within their respective roles. Themes were developed iteratively across data sources, allowing convergence between curriculum design and participant engagement to inform interpretation of results.

Insights from the validation workshop were used to assess the resonance of identified themes with broader stakeholder experiences and to strengthen the credibility of the findings. This triangulation helped situate training-based observations within wider institutional contexts.

Ethical considerations

The study adhered to ethical principles of informed participation, confidentiality, and respectful engagement. Participation in training activities and reflective discussions was voluntary, and no personal identifiers are used in reporting findings. The analysis focuses on institutional processes and collective learning rather than individual attribution, consistent with the study's system-level analytical orientation.

Methodological limitations

The study relies on qualitative data generated through training materials and facilitated reflection, capturing processes of institutional learning rather than measurable behavioural change or long-term funding outcomes. While the inclusion of a validation workshop strengthened interpretive robustness, the findings reflect short- to medium-term institutional reflexivity rather than sustained structural transformation. Nonetheless, this approach provides empirically grounded insight into how capacity-building can function as a mechanism for operationalising GEII within national research funding systems.

Designing the GEII curriculum: translating policy gaps into institutional competencies

This section analyses the design of the Gender Equality, Inclusivity, and Intersectionality (GEII) curriculum as a system-level capacity-building intervention. Rather than treating the curriculum as a training output, the analysis conceptualises the training manual as an institutional artefact that translates identified policy and governance gaps into concrete competencies for actors across the research funding lifecycle. The curriculum was developed in response to documented weaknesses in the integration of gender equality, inclusivity, and intersectional considerations within Ghana's research funding policies and practices and was explicitly tailored to the roles of funders, reviewers, research managers, and researchers.

Design principles

The curriculum design was guided by four interrelated principles derived from both the empirical policy assessment and international best practices in gender-responsive research governance.

Context specificity was a foundational principle. The curriculum was explicitly grounded in Ghana's science, technology, and innovation (STI) governance landscape, drawing on national policy frameworks,

institutional mandates, and funding procedures. Ghana-specific examples, case scenarios, and policy references were used throughout the modules to ensure relevance and practical applicability. This approach reflects evidence that generic gender training often fails to produce institutional change when it is not aligned with local governance structures and decision-making processes (Schiebinger & Schraudner, 2011; Waylen, 2014).

Systems thinking informed the overall structure of the curriculum. Rather than focusing narrowly on individual behaviour or awareness, the training conceptualised research funding as an interconnected system involving agenda setting, call design, proposal assessment, funding decisions, implementation, and monitoring. Gender equality and inclusivity were therefore addressed as cross-cutting governance concerns that must be embedded at multiple stages of the funding lifecycle. This systems-oriented framing is consistent with feminist institutionalist analyses that emphasise how formal rules, informal norms, and organisational practices interact to reproduce or challenge inequality (Acker, 1990; Van den Brink & Benschop, 2012).

Intersectionality was explicitly incorporated as a design principle. Building on established gender studies scholarship, the curriculum moved beyond binary understandings of gender to examine how gender intersects with career stage, disciplinary location, institutional position, and other axes of disadvantage. Dedicated modules addressed the implications of intersectionality for research design, peer review, and data analysis, responding directly to gaps identified in Ghanaian research funding frameworks, where intersectional considerations are largely absent (Crenshaw, 1991; Mama, 2011).

Finally, the curriculum adopted a practice-oriented approach. Each module combined conceptual inputs with applied exercises, group work, and scenario-based learning focused on real-world funding decisions. This design reflects evidence that institutional learning is more likely when participants are required to interrogate their own organisational procedures and decision-making roles rather than engage solely with abstract concepts (Schön, 1983; Nielsen *et al*., 2018).

Curriculum Structure and Content

The curriculum was organised into modular components aligned with key stages of the research funding lifecycle. This structure enabled participants to situate gender equality and inclusivity within their specific institutional responsibilities rather than treating GEII as an external or supplementary concern.

Early modules focused on foundational concepts, including gender equality, inclusivity, unconscious bias, and the relevance of GEII to STI governance. These modules established a shared analytical language among participants drawn from diverse institutional backgrounds, including science granting councils, research institutions, and peer review bodies.

Subsequent modules addressed operational stages of the funding process. These included gender-responsive agenda setting and call design, inclusive eligibility criteria, and the integration of GEII considerations into proposal assessment and peer review. Practical exercises required participants to examine existing funding instruments and evaluation templates, identify implicit biases, and propose concrete revisions.

Later modules focused on implementation, monitoring, and institutionalisation. These components

addressed gender-responsive data collection, the use of gender-disaggregated indicators, and mechanisms for accountability and organisational learning. By linking GEII to monitoring and evaluation practices, the curriculum explicitly addressed one of the most significant weaknesses identified in Ghana's research funding system: the absence of data-driven accountability for equity outcomes.

Across all modules, Ghana-specific case studies were used to anchor discussions in participants' lived institutional realities. This reinforced the curriculum's emphasis on institutional reflexivity and collective learning rather than individual compliance.

Innovation in curriculum design

The GEII curriculum departs from conventional gender training in three important ways.

First, it moves beyond awareness-raising to focus on governance reform. Rather than positioning gender equality as an individual attitude or ethical commitment, the curriculum framed GEII as a property of funding rules, evaluation criteria, and institutional processes. This aligns with feminist institutionalist arguments that durable change requires reform of organisational architectures rather than reliance on individual goodwill (Acker, 1990; Waylen, 2014).

Second, the curriculum explicitly targeted multiple institutional actors across the research funding system. Unlike many training initiatives that focus exclusively on researchers, this intervention engaged funders, reviewers, research managers, and institutional leaders. By doing so, it recognised that funding outcomes are shaped by distributed decision-making across the system and that capacity gaps at any stage can undermine inclusivity.

Third, the curriculum embedded accountability and learning mechanisms into its design. Participants were encouraged to link GEII objectives to measurable indicators, reporting requirements, and feedback loops within their institutions. This emphasis on monitoring and institutional learning responds directly to critiques of gender mainstreaming approaches that lack enforcement mechanisms and evaluative capacity (Huyer, 2015; Lepori *et al*., 2019).

Taken together, these design features position the GEII curriculum as a system-level capacity-building intervention aimed at transforming how gender equality and inclusivity are understood and operationalised within national research funding governance.

Results

Training implementation and institutional engagement

The GEII capacity-building intervention was deliberately designed and implemented as a system-level governance exercise, rather than a standalone training for individual researchers. The training brought together actors occupying different but interconnected positions within Ghana's research funding ecosystem, including staff of the national science granting council, research funding administrators, peer reviewers, academic researchers, and representatives of public research institutions and universities with established research directorates. This cross-institutional composition reflected an explicit recognition that gender equality and inclusivity in research funding are shaped not by isolated decisions, but by interdependent rules, practices, and institutional roles across the funding lifecycle.

Training delivery was structured to foster dialogue across institutional boundaries. Sessions combined conceptual inputs with

facilitated group work that deliberately mixed participants from different roles, enabling funders, reviewers, and researchers to interrogate funding practices from multiple perspectives. Rather than focusing on individual awareness-raising, the focus of the discussions centred on institutional procedures, including call design, eligibility criteria, peer review processes, award decision-making, and post-award monitoring. This approach positioned GEII not as a personal value or compliance requirement, but as a collective governance responsibility embedded in organisational routines.

A key feature of the training was its emphasis on role reflexivity. Participants were encouraged to reflect on how their institutional positions, whether as funders, reviewers, or researchers, shaped decision-making power and responsibility within the funding system. This created space for recognising how ostensibly neutral procedures could produce exclusionary outcomes when viewed across the system as a whole. The training environment thus functioned as an institutional learning space, enabling actors to surface shared constraints, identify misalignments between policy intent and practice, and explore feasible entry points for reform.

Importantly, the training was not framed as a one-directional transfer of knowledge. Facilitated discussions and plenary reflections allowed participants to critically interrogate the applicability of GEII principles within Ghana's specific STI governance context. This dialogic approach reinforced the system-level orientation of the intervention and laid the groundwork for collective sense-making around gender-responsive research funding.

Shifts in understanding and institutional reflexivity

Reframing gender inequality as structural

Across the training sessions, participants increasingly reframed gender inequality in research funding as a structural and institutional phenomenon, rather than as a consequence of individual capacity deficits or lack of interest among women researchers. Discussions revealed growing recognition that funding rules, evaluation criteria, and procedural norms systematically advantage certain career trajectories while disadvantaging others.

Participants critically examined assumptions embedded in eligibility requirements and merit-based evaluation, particularly those privileging uninterrupted productivity, prior funding success, and established institutional affiliation. These reflections marked a shift away from narratives that locate gender disparities solely at the level of researcher preparedness, towards an understanding of research funding systems as gendered institutions that shape opportunity unevenly. This reframing was evident across institutional roles, indicating an emergent shared language for articulating structural inequality within the funding ecosystem.

Role-specific insights across the funding lifecycle

The training also facilitated the articulation of role-specific responsibilities for advancing GEII across the research funding lifecycle. Funders identified entry points at the level of call design, eligibility criteria, and reporting requirements, recognising their influence in setting the parameters within which inclusion could be enabled or constrained. Reviewers reflected on how scoring templates,

disciplinary norms, and time pressures could reinforce implicit bias, even in the absence of overt discrimination. Researchers and institutional representatives highlighted how internal research management practices, mentorship structures, and access to proposal development support interacted with external funding rules to shape participation.

Crucially, these insights were not expressed in isolation but were increasingly articulated as interconnected responsibilities. Participants acknowledged that no single actor could operationalise GEII independently, and that misalignment across institutional roles often undermined inclusion efforts. This recognition reinforced the training's system-level framing and underscored the importance of coordinated institutional action.

Constraints, tensions, and resistance

Despite evidence of institutional learning, discussions also surfaced persistent constraints and tensions. A recurrent theme was the perceived tension between meritocratic norms and equity objectives, particularly concerns that gender-responsive measures might compromise excellence or introduce subjectivity into evaluation processes. These concerns were expressed most strongly in relation to peer review and competitive funding contexts, where neutrality and objectivity are deeply entrenched institutional values.

Participants also identified structural constraints beyond the immediate control of training participants, including rigid regulatory frameworks, limited data infrastructure for gender-disaggregated monitoring, and resource pressures that prioritised efficiency over reflexivity. These reflections highlighted the limits of training as a standalone intervention and underscored the need for complementary structural reforms within funding institutions.

Discussion

The findings demonstrate that system-level capacity-building can function as a governance intervention by reshaping how institutional actors conceptualise and enact gender equality and inclusivity (GEII) within research funding systems. The participatory action learning processes employed in the Science Granting Councils Initiative (SGCI) GEII Project enabled actors across councils to reflect on institutional practices and to situate GEII considerations within grant-making cycles, rather than limiting engagement to discrete training events (Lynch *et al*., 2024; Schiebinger *et al*., 2018).

This approach contributed to reframing gender inequality as structural, reflecting broader feminist institutionalist insights that formal rules and informal norms within institutions reproduce gendered outcomes (Acker, 1990, 2006; Mackay *et al*., 2010; Waylen, 2014). Research funding systems are not neutral allocators of resources but embody gendered assumptions about merit, productivity, and career progression that systematically disadvantage women and other underrepresented groups (Lepori *et al*., 2019; Mama, 2011).

The role-specific insights across the funding lifecycle further illustrate the value of multi-actor engagement. GEII actions undertaken by participating councils included organisational policy development, targeted measures to support women researchers, and efforts to shift organisational norms around inclusion, signaling that advancing GEII requires coherence across funders, reviewers, and research system actors (Huyer, 2015; Lynch *et al*., 2024; SGCI Africa, n.d.).

At the same time, persistent institutional constraints—including entrenched norms, limited infrastructure, and attachment to

meritocratic ideals—illustrate the limits of training-only interventions (van den Brink & Benschop, 2012; Verge *et al*., 2018). While capacity-building enhanced reflexivity and peer learning, advancing GEII also requires structural reforms such as integrating GEII into formal policies, monitoring systems, and accountability mechanisms (HSRC, 2023; Schraudner *et al*., 2020).

Taken together, the findings position capacity-building as a necessary but partial mechanism for advancing GEII in research funding systems. Its contribution lies in fostering institutional reflexivity and shared understanding; however, the realization of transformative change depends on *coupling* capacity-building with structural and policy reforms that embed GEII into governance practice (Lynch *et al*., 2024; Schiebinger *et al*., 2018; Acker, 2006).

Implications for GEII capacity-building in research systems

Designing training for system-level change

Capacity-building programmes should prioritise action learning and peer reflection that engage stakeholders across institutional roles, including funders, reviewers, and administrators, in order to foster shared understanding of GEII as a core governance principle rather than an add-on (Lynch *et al*., 2024; Schiebinger *et al*., 2018).

Embedding GEII within institutional mandates

Sustainable GEII integration requires embedding gender equality metrics and accountability mechanisms into formal funding policies and review criteria (HSRC, 2023; SGCI Africa, n.d.; O'Connor, 2020). Policy frameworks developed through African councils illustrate how GEII commitments can become integral to core governance functions, enhancing legitimacy and continuity beyond project cycles.

Sustaining learning beyond project cycles

To sustain capacity gains, councils and funding agencies need mechanisms such as gender action plans, monitoring systems, and communities of practice (Schraudner *et al*., 2020; Schiebinger *et al*., 2018). Embedding GEII learning within organisational strategies and performance frameworks helps ensure continuity and adaptation over time, positioning councils as champions of inclusive research governance.

Conclusion

This study examined how Gender Equality, Inclusivity, and Intersectionality (GEII) can be operationalised across the research funding lifecycle through a system-level capacity-building intervention in Ghana. It addressed a persistent implementation gap in which policy commitments to gender equality and inclusion are often not translated into the operational rules, practices, and competencies that shape funding decisions. Using a qualitative case study approach and treating the GEII training manual and associated learning processes as empirical material, the study explored how a multi-actor training model engaged funders, peer reviewers, researchers, and institutional research managers in reflecting on inclusion within research funding governance.

The findings show that system-level capacity-building can support institutional learning by shifting how key actors understand inequality in research funding systems. Participants moved from individual-level explanations of gender disparities toward a more structural interpretation that recognises how "neutral" procedures such as eligibility

rules, evaluation criteria, and peer review norms can reproduce exclusion. The training also generated clearer role-specific insights across the funding lifecycle, enabling different actors to identify practical entry points for action, including call design, proposal assessment, and accountability mechanisms. At the same time, the study highlights persistent tensions, especially where meritocratic norms are perceived to conflict with equity objectives, as well as constraints such as limited monitoring infrastructure and fragmented institutional responsibility.

These results underscore that capacity-building is necessary but not sufficient for sustained change. Training can strengthen shared language, reflexivity, and awareness of institutional responsibilities, but its transformative impact is constrained when governance arrangements remain unchanged. For GEII to be embedded meaningfully across the funding lifecycle, capacity-building needs to be reinforced through institutional reforms that formalise inclusive design and evaluation practices, strengthen gender-disaggregated monitoring, and create accountability and learning loops that feed evidence from post-award monitoring back into future priority setting and call design.

As a learning case, the Ghanaian experience demonstrates the value of engaging interconnected actors across the funding system rather than focusing on researchers alone. The study contributes practical insights for research funding bodies and research institutions seeking to move from policy intent to operational practice, emphasising that inclusive research governance requires coordinated action across lifecycle stages and sustained mechanisms for monitoring and institutional learning. Future research can build on these findings through longitudinal assessment of how combined capacity-building and governance reforms influence funding outcomes over time and through comparative analyses across national contexts.

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