SOUTHERN VOICE

GLOBAL SOUTH PERSPECTIVES

Issue No. 1 | May 2025

Founded in 2013, Southern Voice is a network of think tanks across Africa, Asia, and Latin America & the Caribbean, aiming to transform the international development landscape and rebalance knowledge asymmetry.

The Global South Perspectives (GSP) is a strategic initiative and a peer-reviewed publication focused on centering Global South viewpoints in rigorous policy research to reshape the sustainable development agenda.

This publication is supported by the Robert Bosch Stiftung and the William and Flora Hewlett Foundation, as part of Southern Voice's Global South Perspectives initiative.

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Report designed by Santiago Pacheco Cuesta

Please cite as:
Southern Voice. (2025). *Global South Perspectives (Issue No. 1).* Southern Voice.

Southern Voice Website: www.southernvoice.org
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First Published May 2025 © Southern Voice

Foreword

We are living through a pivotal moment in global history, marked by profound geopolitical shifts, the rebalancing of influence, and growing uncertainty about the future of international cooperation. These circumstances challenge the foundations of the current development system, but they also present a powerful opportunity to reimagine how we shape and implement the sustainable development agenda by embracing new voices and perspectives from the Global South that can help lead the way.

Global South Perspectives is Southern Voice's strategic initiative to bring the voices, insights, and leadership of the Global South to the forefront of policy debates. This publication is both timely and necessary. It addresses a persistent gap in global development discourse—namely, a lack of space for Global South knowledge and lived experience to inform development priorities, approaches, and outcomes. The articles contained in this volume offer fresh thinking which is both rooted in local realities, and relevant to global challenges.

This collection reflects the dedication and intellectual rigour of 16 researchers from nine of the Southern Voice network's member institutions. These contributors—based in Indonesia, Sri Lanka, and India in Asia; Uganda, Nigeria, and Tanzania in Africa; and Jamaica, Bolivia, and Paraguay in Latin America and the Caribbean—bring rich and diverse perspectives grounded in the lived realities of their communities. Their combined efforts demonstrate the strength and relevance of knowledge generated within the Global South, and the critical role of local research institutions in shaping more inclusive global policy dialogues.

Their work speaks directly to the challenges and opportunities of our time, offering action-oriented, context-sensitive recommendations to inform policy and practice. The articles explore a wide range of pressing issues, from how the framing of information can shape youth participation in policymaking—a vital condition for sustainable change—to the urgent need to regulate artificial intelligence to safeguard access to reliable information. They also examine how decisions made far from the Global South—whether in multilateral institutions or geopolitical centres of power—can have profound effects on local realities, and vice versa. Likewise, they highlight the delicate balance between responding to global imperatives and defending local priorities, particularly in areas such as industrial policy and environmental protection.

This is Southern Voice's call to action: we must not let this moment of flux pass us by. Instead, we must harness it to rethink the development system and reposition institutions from the Global South as central actors. This is an opportunity to offer a new anchor for global development and international stability—one grounded in equity, local agency, and mutual collaboration.

I invite you to read these articles with curiosity and openness. Share them widely. Let them provoke reflection and dialogue in the spaces where decisions are made. The much-needed transformation of the development system begins with a shift in perspective such as this.

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Acknowledgements

The team of the Global South Perspectives initiative extend their heartfelt appreciation to Estefanía Charvet, Pablo Ignacio Soto-Mota, Daniela García Villamil, and Ama Pokuaa Fenny for their expertise, dedication, and meaningful contributions through their distinct roles in the editorial process.

The Global South Perspectives team extend their sincere thanks to Iván Borja, Farwa Sial, Sebastián Irigoyen, Kanchan Kaur, Ariel Gonzalez Levaggi, Luis Enrique Segoviano, Lena Grobusch, and Raman V. R. for their time and dedication in the peer review process of the articles. Their expertise and thoughtful feedback enriched the research presented in this publication. We are grateful as well to Jorge Chediek for authoring the concluding chapter of this publication. His reflections, grounded in the research of Global South scholars, brought valuable depth and perspective to the final message of this publication.

The articles and reflective pieces would not have come together without the support of the participating member organisations: Investigación para el Desarrollo - ID, the Institute of Policy Studies (IPS), the Centre for Population and Environmental Development (CPED), the Science, Technology, Innovation, Policy Research Organization (STIPRO), the Public Affairs Centre (PAC), the Caribbean Policy Research Institute (CAPRI), the ARU Foundation (ARU), the Centre for Indonesian Policy Studies (CIPS) and the Economic Policy Research Centre (EPRC).

The initiative was made possible through the financial support of the Robert Bosch Stiftung and the William and Flora Hewlett Foundation, with special thanks to Dina Fakoussa and Christopher Chibwana.

The Global South Perspectives team would like to express their sincere appreciation to the Southern Voice Secretariat. Special thanks go to Margarita Gómez, Charles Kasumba, Giovanna Rinaldo, Gabriela Keseberg Dávalos, Iliana Ninahualpa Sandoval, Angélica Suárez, Kim John-Williams, Guísela Pereira, and Azizah Fauzi for their various contributions to the overall quality of the initiative.

Finally, the authors are grateful to Ailsa Winton and Lindy Whitehouse for their editorial support, and to Santiago Pacheco Cuesta for the design of the initiative's brand and materials.

Acronyms and abbreviations

AI	Artificial Intelligence
ANOVA	Analysis of variance
AU	African Union
BCBS	Basel Committee on Banking Supervision
CAPRI	Caribbean Policy Research Institute
CBP	Central Bank of Paraguay
CSDDD	Corporate Sustainability Due Diligence Directive
DPTR	Dynamic panel threshold regression
DSA	Debt sustainability analysis
ECLAC	Economic Commission for Latin America and the Caribbean
EU	European Union
EUDR	European Union Regulation on Deforestation Free Products
FAO	Food and Agriculture Organization of the United Nations
GAI	Generative Artificial Intelligence
GDP	Gross Domestic Product
ILO	International Labour Organisation
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IS	Islamic State
JAM	Jamaat al-Muslimeen
KII	Key Informant Interview
LAC	Latin America and the Caribbean
NSAG	Non-State Armed Group
ODA	Official Development Assistance
OEC	Observatory of Economic Complexity
PAHO	Pan American Health Organization
PNM	People's National Movement
SDGs	Sustainable Development Goals
SOR	Stimulus-Organism-Response
SSA	Sub-Saharan Africa
SSE	Sum of squares within groups
SVAR	Structural Vector Autoregressive
THIP	Healthy Indian Project
UMSA	Universidad Mayor de San Andrés (Public University of the City of La Paz)

UCDA	Uganda Coffee Development Authority
UN	United Nations
UNC	United National Congress
UNHCR	United Nations High Commissioner for Refugees
UNOSSC	United Nations Office for South-South Cooperation
UPEA	Universidad Pública de El Alto (Public University of the city of El Alto)
WHO	World Health Organisation

INTRODUCTION: GLOBAL SOUTH INSIGHTS FOR A CHANGING WORLD

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INTRODUCTION: GLOBAL SOUTH INSIGHTS FOR A CHANGING WORLD

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Rethinking international cooperation and multilateralism

In an interconnected world, no nation acts in isolation. Decisions made in one country today can shape lives thousands of miles away and across generations. Whether it is the impact of carbon emissions, war and conflict, financial instability, the disruption of global value chains or the spread of disease, global challenges demand collective solutions (Sandler, 2004). Against this backdrop, international cooperation and the multilateral system are pivotal in promoting institutionalised mechanisms where governments can come together to discuss and address pressing issues of global scale and impact. Although international cooperation has been the subject of a polarising public debate, framed as altruistic by some, and as reflecting geopolitical interests by others (International Task Force on Global Public Goods, 2006; Malacalza, 2024), in reality no nation is shielded from global threats. As such, international cooperation needs to be understood and analysed as a tool to reconcile national and global interests.

Similarly, the multilateral system is arguably experiencing one of its most significant crises since its creation after World War II. Profound tensions in world politics, characterised by an erosion of trust and geopolitical fragmentation, are also taking their toll on multilateral institutions. This year alone, we have seen key donor countries substantially scale back funding for international cooperation and withdraw political support for the multilateral system (Obrecht & Pearson, 2025; OECD, 2025). The current so-called "crisis of internationalism" that is shaking up multilateral institutions from New York to Geneva brings existential challenges for global stability and sustainable development. At the same time, the latest calls to reform multilateralism based on a rapidly changing geopolitical landscape and related budgetary constraints might present a historic opportunity to rethink the current international system, which was born at a time when a large part of the Global South was still under oppressive colonial rule. This demands, however, an inclusive approach in any upcoming discussions on the future of multilateralism. The growing and urgent need to renew and revitalise international cooperation therefore raises the question of who gets to shape global priorities.[1]

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1. In the context of the "UN80 Initiative" launched in 2025, a reform process is currently in the making to modernise and streamline the United Nations system. In light of recent budget shortfalls, it focuses on improving efficiency, restructuring organisational operations, and ensuring more effective use of resources.

In a spirit of enriching broader debates on the Global South's contribution to the current restructuring of international cooperation, we present the first edition of Global South Perspectives, which is a space for Global South researchers to analyse and propose actionable solutions, crafted in the Global South, to tackle global problems.

In September 2024, a call by the UN Secretary-General to revitalise multilateralism, as well as countries' commitment to accelerating the implementation of the 2030 Agenda and addressing key global challenges, gave rise to the Summit of the Future and its key outcome, the Pact for the Future.[2] Resonating with the vision and commitments of the Pact, the Global South Perspectives publication brings forward insights from Global South think tanks on global issues that disproportionately affect them. Through eight articles that critically examine common challenges in the fields of climate change, governance, global security, and finance, the publication offers reflections and forward-looking proposals which contribute to the debate on the future of international cooperation.

Global systemic issues: A framework for inclusive global governance

A useful lens to explore global and regional governance processes, which often lack sufficient input from the Global South (Rucavado Rojas & Postigo, 2025), is to look at so-called global systemic issues (GSIs). These are defined by Khan and Ahmed (2019) as complex changes caused by one country that have positive and/or negative impacts, which vary in nature and extent, and which occur at a national, regional and global level.

In this way, it is critical to recognise how global policy frameworks that are often defined in developed countries can inadvertently impose significant challenges in other parts of the world, even when those policies are designed to be universally beneficial. Moreover, in an era of rapid globalisation, the interconnectedness of national economies means that related decisions made in wealthier nations can have far-reaching, unintended consequences for developing countries (Islam, 1981).

Acknowledging these interdependencies is an important step towards the goal of designing inclusive strategies which balance the diverse and at times contradictory needs and interests of both developed and developing

2. For more information, visit the official website: https://www.un.org/en/summit-of-the-future

nations. This approach provides a more integrated understanding of what international cooperation for sustainable development could mean.

For instance, trade agreements, particularly those favoring liberalisation, can lead to negative externalities for the Global South. The rapid removal of trade barriers may expose local industries in developing countries to intense competition from more established foreign firms. Additionally, the emphasis often placed by Global North nations on export-oriented growth can result in environmental degradation, as countries may overexploit natural resources to meet international demand (Ollivier, 2016). This is evident in instances where production for export results in policies with no environmental protections, leading to unsustainable freshwater withdrawals, pollution, biodiversity loss, and deforestation (Heyl et al., 2021).

Moreover, economic policies such as structural adjustment programs mandated by international financial institutions often require austerity measures. These measures can lead to reduced public spending on essential services like healthcare and education, exacerbating poverty and inequality in the Global South (Ortiz & Cummins, 2021; Perez & Matsaganis, 2018). This, in turn, can increase disorganised mass migration and contribute to the brain drain that many countries currently face (Finnsdottir, 2019).

Likewise, rapid technological advancement may impact developed and developing economies differently. For example, while the emergence of artificial intelligence (AI) has the potential to drive economic growth, it also poses particular risks to labour markets in the Global South (Sikorskyi, 2024). One reason is that automation primarily affects low-skill jobs, which are more common in developing economies (Song, 2024). Automation and AI-driven processes can lead to job displacement and increased economic inequality, particularly in sectors where developing countries have traditionally held competitive advantages, such as manufacturing and services (Zhou et al., 2020). Moreover, these technological changes demand greater investments in education and a reorientation of school programs, limiting the capacity of the Global South to adapt to changes in the job market (Gomez-Mejia, 2021). Finally, recent evidence suggests that AI may increase gender disparities due to gender gaps in the adoption of these technologies (Carvajal et al., 2024; Young et al., 2023).

Improved understanding of how global decisions disproportionately affect the Global South is fundamental to fostering fair and effective international cooperation and enhancing the multilateral system. The notion of GSIs helps highlight how decisions made by one country can have significant impacts

elsewhere–often on nations that have little say in shaping those decisions. Issues ranging from trade policies affecting local industries, to regulations that affect small farmers, to local policies that worsen international security, all show the need to address these interconnected, indirect effects. Fundamentally, there is a common need for inclusive global governance structures that better reflect and address countries' diverse realities.

Global South Perspectives to embrace plurality

In such a challenging context for international cooperation, it is important to clarify the Global South vision, priorities and development models. Global North and Global South countries may differ not only in their epistemic approaches, but also in their values and how they weigh specific challenges.

Development models have often been rooted in Global North perspectives, emphasising market liberalisation, industrialisation, and economic growth as the primary indicators of progress (Alenda-Demoutiez, 2022). However, without proper contextualisation, these models may overlook the unique cultural, social, and environmental contexts of Global South nations, leading to inadequate analysis and policy design. In fact, an overall dominance of Global North actors in producing and disseminating knowledge could marginalise Global South views and realities (Charvet & Ordonez, 2022).

Furthermore, without meaningful dialogue and co-creation, development models may hinder Global South economies if based more on ideological goals than addressing their specific challenges in context. Consequently, there have been calls for a more inclusive, globally-oriented perspective on development, incorporating diverse viewpoints and needs (e.g., Horner, 2020). Indeed, a critical approach which recognises a range of alternative models is key to legitimising a plurality of views on development. Incorporating the perspective of the Global South requires an open exchange of knowledge, challenging the unspoken assumption that the best research is conducted in the North and merely applied in the South. As McFarlane (2006) posits, this shift in attention implies a reconceptualisation of learning as a process that occurs beyond traditional sites of knowledge production and distribution. Moreover, such an approach should challenge one-size-fits-all methodologies by promoting development strategies that are comprehensive, participatory, and tailored to the specific needs and aspirations of Global South communities.

The way forward

What if the future of international development were no longer defined by priorities set by the few, but rather based on the collective vision of the majority? How might the current crisis in international aid and multilateralism be taken as an opportunity to do things differently? While there is the risk that cuts and reforms will lead to Global South interests being put on the back burner once again, the current situation also presents an opportunity to learn from the past, and to bring about new and more inclusive global governance.

From these initial reflections, it becomes clear that the future must be shaped through a collective, inclusive approach that embraces the diverse perspectives of the international community, including the Global South. Recognising the unique challenges and opportunities faced by Global South nations is not just a matter of equity; it is essential for fostering sustainable, resilient, and contextually relevant development models. The transformative potential of Global South perspectives lies in their ability to challenge conventional paradigms, introduce innovative solutions grounded in local realities, and promote a more balanced global discourse on development.

In a rapidly changing geopolitical landscape, it is crucial that the voice of the Global South is not lost in the tug-of-war between major powers. Even as the world order becomes increasingly multipolar, with the rise of new regional powers and increased competition for influence, global challenges and threats remain, and solid multilateral structures are key to address them. Countries in the Global South, which are often the most affected by climate change, conflicts and other threats (Ngcamu, 2023; Food Security Information Network & Global Network Against Food Crises, 2024), have a pivotal role to play when it comes to tackling global challenges. The current context highlights the need for more fact-based analysis from the Global South, as well as improved dialogue and greater opportunities to share relevant local knowledge at the regional and global levels. Specifically, establishing platforms for mutual exchange can contribute to fostering environments where knowledge flows bidirectionally from local to global levels, allowing for shared learning and co-creation of strategies that are adaptable to diverse contexts (Zamiri & Esmaeil, 2024).

The path forward for international development lies in embracing a genuinely inclusive, participatory approach that values the insights, experiences, and aspirations of the Global South. This is more than an ethical imperative; it is a strategic necessity for achieving sustainable development goals that are truly global in scope. With this publication, we aim to foster South-North and

South-South dialogue and promote knowledge pluralism. Our hope is that it serves as a vehicle for co-creating a future where development is not a privilege of the few, but rather a shared endeavour for the benefit of all.

This is a call for all international stakeholders, including governments, donors, multilaterals, think tanks, and research institutions, to engage closely with Global South-led development priorities, agendas and research. The time to act is now. The articles showcased in this publication offer a glimpse into some pressing issues; they are not exhaustive, but learning more about what the Global South has to say is the first step in fostering change.

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THE IMPACT OF INFORMATION FRAMING ON YOUTH ENGAGEMENT IN PUBLIC POLICY DEBATES

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THE IMPACT OF INFORMATION FRAMING ON YOUTH ENGAGEMENT IN PUBLIC POLICY DEBATES

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Abstract

Active youth participation in public policy debates contributes to the achievement of the sustainable development goals, ensuring social equity, promoting peace, and safeguarding human rights. Youth engagement can enhance policy legitimacy and effectiveness, while tapping into their creative potential for tackling complex societal challenges. However, little is known about what mechanisms promote meaningful youth involvement in policy discussions, especially in the Global South. This article explores the impact of information framing on the engagement of Bolivian university students in debates about gender inequality in the labour market. Findings show that information framing can serve as a catalyst for engagement, with digital formats potentially increasing student participation in gender equality discussions. However, its effectiveness is contingent upon contextual factors such as institutional relationships, students' individual characteristics, and the topic at hand. To foster meaningful Global South youth participation in global policy discussions, it is imperative to adopt a multifaceted approach that both addresses institutional barriers to participation, and harnesses young people's interest in participating.

Keywords

Youth; information framing; experiment; participation mechanisms; Global Agenda.

Evidence for decision-making

1. Information delivery may be as important as content, with digital formats potentially increasing youth participation in policy debates by up to 6.8%.

2. The effectiveness of information framing is influenced by academic and professional incentives, as well as affinity with the topic.

3. Bolivian students recognise the importance of contributing to policy discussions and are interested in learning more, yet social obligations, job commitments, urban migration and institutional distrust limit their active involvement.

4. Investing in programmes that develop youth leadership, critical thinking, communication skills, and civic culture can empower youth to participate meaningfully in policy discussions.

5. Fostering collaboration between governments, NGOs, and youth organisations can create a supportive environment for youth engagement in policy processes.

Introduction

Youth engagement in public policy and global debates has been increasingly recognised as a key element in achieving sustainable development, fostering peace, ensuring social equity, and protecting human rights (United Nations [UN], 2021, 2023). Their involvement in public policy discussions is vital not only for enhancing the legitimacy and effectiveness of policy outcomes, but also for tapping into the innovative and creative potential of the younger generation. Yet, the mechanisms that encourage and sustain meaningful youth participation, particularly in the Global South, remain underexplored.

In Bolivia, universities are key spaces for fostering social awareness and activism among young people. However, little is known about the specific factors that motivate students to actively participate in policy debates. Previous studies have explored general trends in youth political participation (Douglas, 2023; UN-Habitat, 2013) but the lack of contextualised experimental research represents a significant knowledge gap.

Youth participation in policy in the Global South faces numerous barriers, including weak legal frameworks, ineffective political systems, scarce resources, and limited political will, along with individual characteristics such as distrust of institutions and political apathy (UN-Habitat, 2013). Recommendations to overcome these barriers often focus on creating formal spaces for youth, but concerns persist that their participation is "ineffective or tokenistic" (United Nations, 2021, p. 45).

In contrast, empirical studies suggest that youth in the Global North benefit from stronger legal and institutional frameworks that encourage civic participation through channels such as voting, volunteering, and advocacy (Shaw et al., 2014; Pickard & Bessant, 2018; Pitti, 2018). Platforms including youth parliaments and councils in several countries in the Global North have facilitated the direct engagement of young people with decision-makers (Cammaerts et al., 2016).

Despite these structural differences, youth engagement globally still struggles with tokenism, whereby consultations rarely translate into meaningful action (Cammaerts et al., 2016; European Partnership for Democracy, 2023). There is also scant evidence of how sustainable this participation is. Little is also known about more specific aspects such as current levels of active youth participation in discussions around public issues, which groups participate most frequently, what the moments of greatest engagement

are, and the effectiveness of information framing[1] in facilitating participation (Youth Policy Press, 2015; UN Women, 2019; Douglas, 2023).

This article seeks to contribute to the discussion by examining the impact of information framing on Bolivian university students' participation in debates around gender inequality in the labour market. The central research question is: What is the effect of information framing on the participation of young university students in public policy debates? To answer this question, the motivation of young people to participate in gender equality discussions, and the effectiveness of two mechanisms to promote their participation were analysed. The findings may be particularly useful for other cities in the Global South trying to develop meaningful and effective youth participation.

Youth participation in policy in the Global South is hindered by weak legal frameworks, ineffective politics, scarce resources, low political will, and individual distrust and apathy.

To evaluate the effect of information framing, we operationalised the concept of 'meaningful participation' as the percentage of students who submitted a written essay in response to an academic paper competition on gender equality. This definition extends beyond the conventional criterion of 'political participation' which refers to a civil right enabling groups and individuals to engage in governance, leadership, and decision-making processes, either directly or indirectly through representation (Abebe et al., 2022). Although this criterion has limitations including a narrow focus on written expression and limited applicability in non-academic settings, it also offers several advantages. Firstly, it reproduces a fairly 'real' scenario in policy formulation, which is written, discussed and evaluated, providing an authentic example of young people's engagement with public discourse. Second, by requiring students to produce written essays, we gain a deeper understanding of their knowledge base and their ability to articulate complex ideas related to gender equality, thus enabling a nuanced evaluation of their participation. Third, it entails a process of reciprocal information exchange, where participants share their knowledge and perspectives, leading to a more informed and nuanced understanding of the issue at hand (Rowe & Frewer, 2005).

1. In the study, 'framing information' refers to presenting or structuring information in a manner that shapes how the issues discussed are perceived, interpreted, and addressed.

Methods

An experimental design involving three groups of volunteer students was implemented. Stimulus-organism-response (S-O-R) theory was employed to analyse how different information framings may affect their motivation to participate in policy debates. Proposed by Mehrabian and Russell (1974), S-O-R theory posits that individual behaviour is influenced by environmental stimuli, internal cognitive processes, and subsequent responses. In our study, the different information formats (workshops and infographics) serve as environmental stimuli, influencing participants' cognitive processes and ultimately their decision to participate. While this theory is foundational, its relevance endures, as it has been widely applied and expanded upon in contemporary research across various fields, including consumer behaviour (Jacoby, 2002), environmental psychology (Chang et al., 2011), and digital marketing (Purwanto et al., 2022).

First, students from the Public University of El Alto (UPEA) were invited to take part in the experiment. The invitation was sent by a final-year teacher via WhatsApp to colleagues, fifth-year students, graduates, and the student centre. The call yielded 147 participants, all from the Economics programme.[2] Following the elimination of duplicates[3] and errors,[4] a final sample of 131 participants was obtained. A statistical power analysis was not conducted due to several constraints, including restricted access to the UPEA student population, the voluntary nature of participation, and limited resources in terms of time and budget. The focus, therefore, was on maximising the participation of available students.

Participants were randomly assigned–using Stata 17–to one of three experimental groups: an on-site group, a digital group and a control group. To verify their initial equivalence, comparative analyses of demographic variables such as age and gender were performed. The results indicated no significant differences between the groups, suggesting successful randomisation (Appendix 1).

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2. This programme was selected because of its relevance to public policy analysis and formulation. It was considered that the training of these students would allow them to contribute significantly to this dialogue. Furthermore, the agreement between the Aru Foundation and these academic areas facilitated coordination and access to the students.
3. I.e., responses containing the same mobile phone number.
4. I.e., responses where the mobile phone number entered was incorrect or incomplete.

Following allocation, WhatsApp groups were created to facilitate communication with each group. To provide evidence-based gender equality information, the on-site group attended an interactive workshop, while the digital group received two series of infographics (see Appendix 2 for examples of the infographics). The same content was provided to in-person and digital groups. The control group did not receive any intervention.

All participants were invited to complete two questionnaires (one pre- and one post-intervention) and submit an essay two days after the intervention. The questionnaires gathered: 1) personal data; 2) pre-treatment beliefs (practices, attitudes, and perceptions) about gender equality; and 3) post-treatment beliefs about gender equality, including inclinations to engage in discussions on public policies for gender equality. Participants were sent an invitation to take part in an opinion piece competition, and received five reminders over ten days.

The experiment was then replicated with two groups of students from the Universidad Mayor de San Andrés (UMSA), the public university of the city of La Paz: one comprising 44 final-year political science students, and the second composed of 61 first-year computer science students. As in the UPEA experiment, each group completed two questionnaires, one with questions about respondents' personal data and their beliefs before the experiment, and one on their beliefs after the experiment.

The experiment was designed to control for potential differences in outcomes by analysing each degree course separately, thus each degree was considered as an independent unit of analysis. By disaggregating the data, we were able to distinguish more accurately between the influence of information framing and factors related to each academic discipline. Additionally, since the treatment was not the same in the case of UPEA (where three groups were included) and UMSA (where two groups were included), an aggregate analysis of the data was not carried out.

Then, three indicators were calculated based on each sample's data: 1) participation rate, gauged by the proportion of individuals who submitted essays; 2) participants' belief index, calculated from the questionnaires on practices, attitudes, and perceptions; and 3) essay scores.

Finally, semi-structured interviews were conducted with two teachers and with six final-year UPEA students. The interview focused on the essay competition, the decision to participate, and gender equality more broadly (see Appendix 8). Of the students interviewed, two were from the control

group (one male, one female), two from the on-site group (one male, one female), and two from the digital group (both female). Two of them had submitted essays, while the remainder had not. Informed consent from all participants was obtained and confidentiality ensured.

The experiment was implemented following a predefined protocol to minimise researcher bias and ensure consistency across all participant groups. All steps of the research process were meticulously documented, including data collection methods, analysis procedures, and ethical considerations. This detailed documentation allows for replication and evaluation of the article's findings.

Results

Participants profile

Demographic analysis shows differences in age, gender and ethnicity among the participating groups. The mean age of participants enrolled in the Economics and Political Science programmes (23.3 and 23.7 years respectively) is higher compared to those in the Computer Science programme (20.9 years). Gender distribution also varies. Males make up the majority of participants in Political Science (69%) and Computer Science (63%), while females predominate among the Economics programme participants (72%). While most political science and computer science participants identify as 'mestizo' (54% and 37% respectively) —a term used in Bolivia to refer to individuals of mixed indigenous and non-indigenous ancestry—the majority of economics participants identify as indigenous (52%).

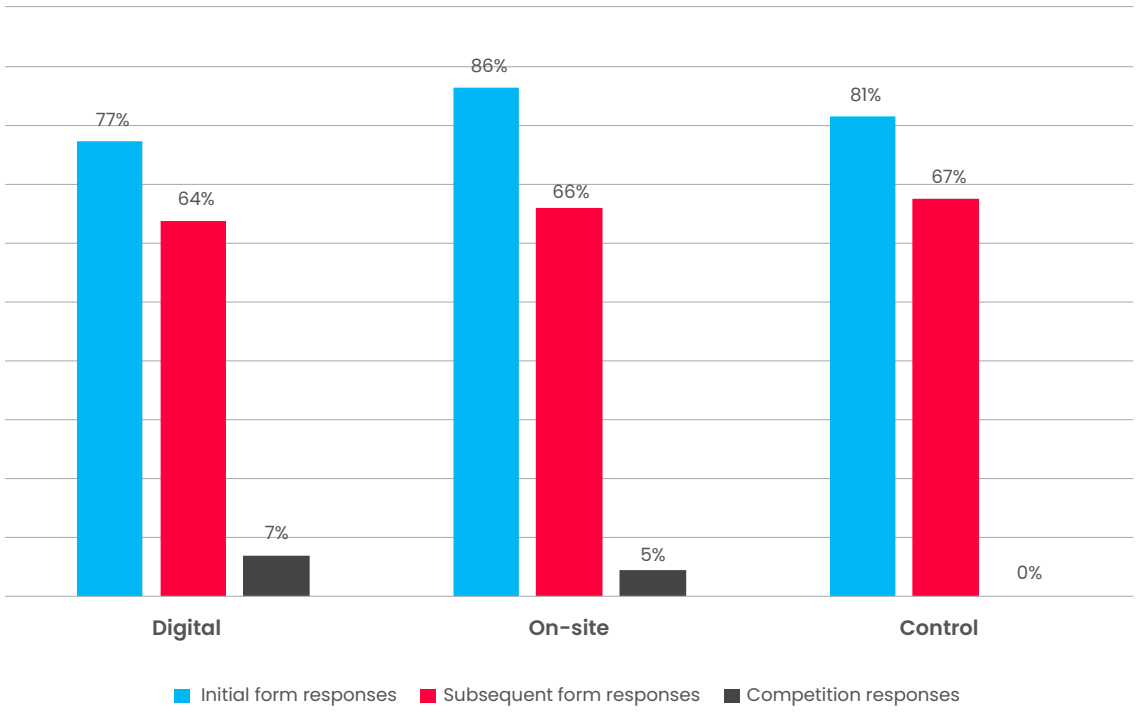
Participants' place of residence, employment rates, and family income levels also varied. Most participants resided in La Paz, except for economics students, 95% of whom lived in El Alto. Employment is more common among economics and political science participants (43% and 42%, respectively) than among computer science participants (21%). Finally, family income among economics students is concentrated in the lowest income bracket (66%), in stark contrast to the political science (23%) and computer science participants (38%). Appendix 3 provides a detailed analysis of the statistical significance of these inter-group differences.

Participation

In UPEA groups, comprising economics students, participation was high at the beginning of the experiment (when they had to submit the subsequent form), decreasing when they had to submit the subsequent form, and was very low when they had to submit the essay (see Figure 1). Only the digital and on-site treatment groups submitted an essay. The results of the analysis of variance (ANOVA) indicate a statistically significant effect of digital information on the dependent variable ($p < 0.10$) in comparison to the control group (6.8%). Nevertheless, no statistically significant difference was identified between the on-site and control groups. The sample size and the ANOVA results are presented in Appendix 5.

These results suggest that providing information digitally may positively impact student participation, while the lack of significant differences between the on-site and control groups raises doubts about the effectiveness of in-person interventions. This may be due to smaller sample sizes or a weaker impact of the on-site approach compared to the digital one.

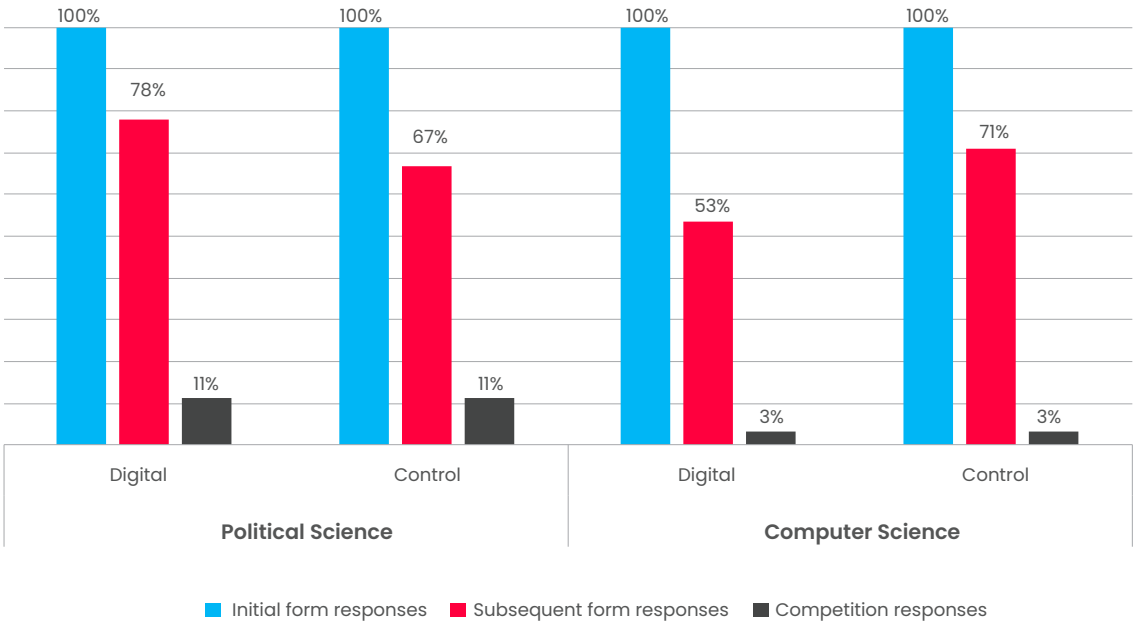
Figure 1. **Graph to show percentage of questionnaire responses and essay submissions among economics students across groups**



Note. Authors' calculations based on the UPEA experiment.

Among the UMSA groups, no statistically significant differences were found between the digital and control groups for political science and computer science students in contrast to the findings from the UPEA experiment. In the case of political science participants, 11% in both the digital treatment and control groups submitted essays. Among computer science students, the response rate for the essay contest was similar, at 3.3% for the digital group and 3.2% for the control group (see Figure 2). This lack of significant differences may imply that the digital treatment did not have a marked effect on these student groups, or it may reflect underlying factors, such as variations in motivation or engagement across disciplines.

Figure 2. **Graph to show percentage of questionnaire responses and essay submissions among political science and computer science students across groups**



Note. Authors' calculations based on the UMSA experiments.

Beliefs before and after treatment

Three dimensions (perceptions, attitudes and practices) were analysed to assess beliefs on gender equality in the control, digital, and workshop groups. Table 1 presents the results of the analysis. For the workshop group, the results were further divided between those who attended the workshop at UPEA and those who did not. This distinction allows us to compare the beliefs of participants who received the full intervention to those who did not

attend. We present 'before' and 'after' treatment measurements. Values closer to five indicate greater affinity to gender equality. The indices summarising young people's beliefs in favour of gender equality vary between 3.8 and 4.0. There are no significant differences between groups.

Table 1. **Summary of interview findings**

		Perceptions				Attitudes				Practices			
		Before		After		Before		After		Before		After	
Treatment	Degree	M	SE	M	SE	M	SE	M	SE	M	SE	M	SE
Control	Political Science	3.76	0.15	4.02	0.13	4.06	0.20	4.20	0.16	3.79	0.22	3.88	0.15
	Economics	3.83	0.09	3.78	0.12	4.03	0.10	4.18	0.11	3.87	0.12	3.87	0.12
	Computer Science	3.75	0.14	3.97	0.12	3.90	0.15	4.11	0.14	3.78	0.15	3.81	0.14
Digital	Political Science	3.90	0.11	3.88	0.13	4.28	0.11	4.34	0.11	3.90	0.15	4.02	0.13
	Economics	3.86	0.09	3.88	0.11	3.97	0.12	4.19	0.11	4.06	0.13	3.97	0.12
	Computer Science	3.77	0.10	4.07	0.16	4.03	0.13	4.05	0.19	3.64	0.13	3.90	0.18
Workshop - Attended	Economics	3.84	0.10	3.80	0.18	4.23	0.14	4.28	0.12	3.86	0.25	4.17	0.22
Workshop - Did not attend	Economics	3.76	0.09	3.70	0.14	4.22	0.13	4.11	0.16	3.71	0.13	3.85	0.13

Note. Authors' calculations based on the UPEA and UMSA experiments. M=Mean; SE=Standard Error.

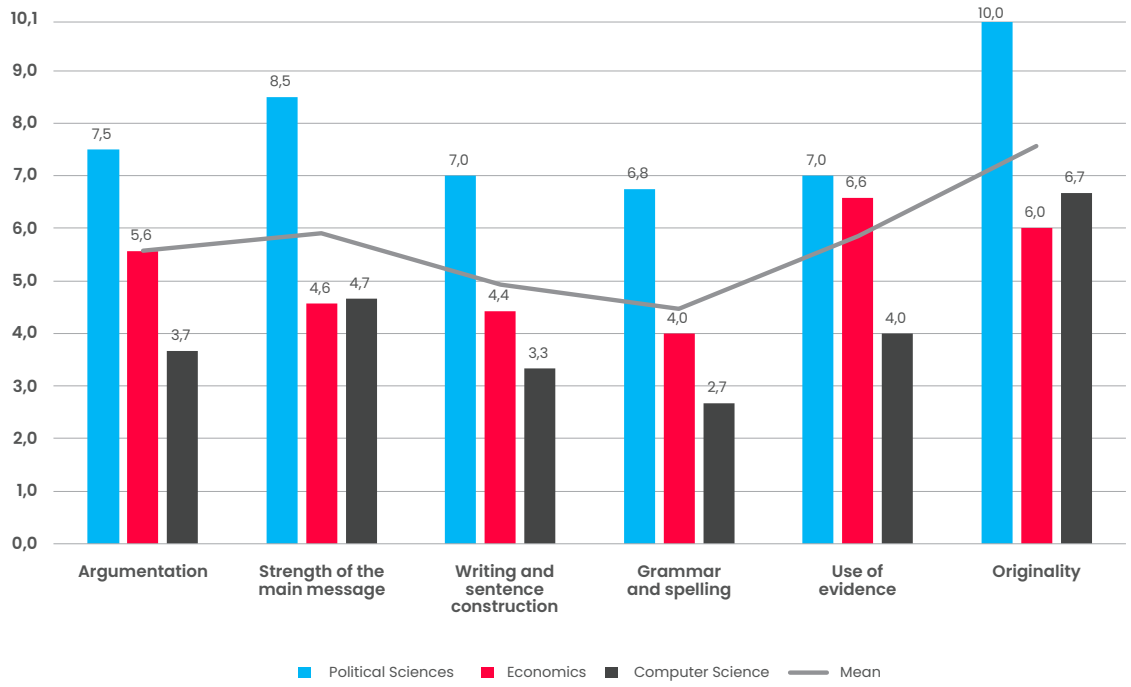
The observed differences between the control group and the treatment groups were not statistically significant. This is the case for both the pre- and post-test groups when all three types of questions are considered (perceptions, practices and attitudes). The value of the F-statistic, which compares the variances between groups to the variances within groups, is not sufficiently high (due to the high p-value), which does not allow us to reject the null hypothesis (no differences between groups). In other words, the results do not provide sufficient evidence to conclude that the treatment groups experienced a meaningful change in their beliefs on gender equality compared to the control group (Appendix 6).

Essay quality

Essays were evaluated based on plagiarism, originality, argumentation, writing (writing and constructing sentences), and use of evidence. Grading was based on these criteria to determine their final essay scores. The mean

score for the essays was 37 out of 60 points, approximately 60% of the maximum possible score. The highest score was obtained by political science students, with an average of 47 points, while the lowest score was recorded by computer science students, with an average of 25 points. Economics students achieved an average score of 31 points, ranking in the middle of the overall distribution. Once we applied the criteria to evaluate each essay, we found interesting variability in the responses. The main contribution of youth participation according to this index is originality (the measure varies between 6 and 10). The main constraint for them is their ability to express their ideas in a formal way, an aspect that is reflected in the low scores for punctuation, grammar, and spelling (the measure ranges from 2.7 to 6.8).

Figure 3. **Graph to show mean essay scores by topic and degree**



Note. Elaborated by authors.

Discussion and actionable recommendations

This research sought to ascertain the effect of information framing on the participation of young people in policy debates around gender equality. This section provides a comprehensive analysis of the findings, highlighting key patterns and implications, and concludes with actionable recommendations to enhance youth engagement in policy discussions.

Impact of information framing

The experiment revealed that the format in which information is presented can play a role in motivating youth participation in policy debates. Using infographics via digital media led to a 6.8% increase in participation for UPEA participants. This suggests that the way information is structured and delivered may be as important as the content in encouraging engagement. However, the impact was not consistent across different student groups, suggesting that other factors may be more influential. While prior interest in the subject matter, the manner in which the information is delivered, and potential professional or academic incentives may have contributed to the increased participation at UPEA, further research is needed to confirm the impact of these factors, and to identify other potential drivers of youth engagement. Interviews conducted with teachers and students suggest that student participation was limited by a number of factors. These included their character traits (such as apathy or introspection), the reduced degree of interaction within each of the groups, and the labour activities of those who work. In addition, a reduced capacity for written communication among students (reported by one of the teachers) may have further restricted their participation.

The importance of information in promoting youth political participation is well recognised. While the observed increase in participation suggests that accessible and well-presented information can empower youth, it is important to consider the evolving nature of digital technologies and their impact on youth engagement. While Cullen and Sommer (2010) highlight potential limitations of online participation, such as lower satisfaction, it is crucial to acknowledge that the digital landscape has significantly evolved since then.

Additionally, the impact of information framing can vary depending on the context. For younger students with less writing practice, the intervention had limited impact. For older students with more experience, while participation was higher, the specific information framing used did not significantly

affect their engagement. This suggests that the effectiveness of information framing may be influenced by factors such as age, academic background, and prior knowledge.

In addition, participation was found to shift over time. The data suggest highest willingness to participate at the initial stages (probably associated with the incentive of receiving a certificate), with a decline in participation at the time of completing each questionnaire, and overall low motivation at the time of submitting the essay. In the majority of cases, the time and effort required to fulfil each requirement outweighed the willingness to participate. This behaviour underscores the dynamic nature of youth participation, and the need to encourage both active engagement and provide tangible outcomes.

Beliefs and quality of participation

The evidence indicates that providing information alone is not enough to change young people's beliefs, probably due to the complexity of belief formation, which involves not only exposure to information but also personal experiences, social influences, and prior attitudes (Abebe et al., 2022). Experimental methods focused solely on information framing may not capture the full range of factors that influence belief change. The indices calculated with the three students samples indicate a favourable attitude towards gender equality among the younger generation. Nevertheless, no significant differences were observed between the control and treatment groups before and after the intervention.

The article indicates that young people's contribution to policy discussions may centre around the originality of their ideas and their use of evidence. The essays submitted by young people achieved the highest scores for both of these criteria. Criteria associated with writing (e.g., sentence construction, spelling, and grammar) were among the lowest-scoring categories (RISE Programme, 2022).

Implications

The article offers insights into youth participation in policy discussions in contexts that are common across the Global South. Key challenges that hinder meaningful youth engagement include balancing work and study, migration to cities—which shifts young people's focus to employment or adapting to urban life—difficulties in consolidating learning, and widespread distrust of institutions. Notably, while most respondents recognised the importance of participating in, and contributing to policy discussions, they

cited family, academic, work, and social obligations as factors limiting their involvement. These can significantly impact young people's ability to engage in public discourse and participate actively in policy debates.

Economic hardships and resource limitations in low-income communities reduce young people's ability to participate effectively.

In addition, individual characteristics—such as knowledge, skills, attitudes, and motivations—as well as broader social and cultural factors influence young people's willingness and capacity to engage in public discourse. For instance, research has shown that social and cultural norms in hierarchical or patriarchal societies marginalise young people and women from decision-making spaces (Umar et al., 2021). Additionally, economic hardships and resource limitations in low-income communities reduce young people's ability to participate effectively (Manzanero, 2021).

Our findings suggest that older age groups participate more frequently and to a higher standard in policy discussions. This can be seen in the percentage of participation observed in the older political science student group (over 11% in both the treatment and the control group), compared to the other younger groups, which had participation rates of 6.8% (economics) and 3% (computer science). As a preliminary hypothesis, it may be argued that this difference could be attributed to their broader understanding of social and political phenomena, as well as greater economic autonomy, which affords them more time and resources to engage in public debates.

On the other hand, it is crucial to acknowledge significant variability in opportunities and platforms available to participate across regions and contexts. For example, regulatory barriers, such as age limits for voting or running for office, often exclude young people from formal political processes (Ozugha & Faruk, 2020; Bowman, 2014). However, the fact that some young people are reluctant to participate does not necessarily indicate that they lack the opportunity to do so (Women Deliver, 2019); rather, they may lack motivation with regard to the issue in question (e.g. gender equality), or do not see themselves having a role in policy discussions (Adu-Gyamfi, 2013; Haid et al., 1999). During the interviews, some participants failed to recall the issues discussed in each group, the questions in the questionnaires, and the data provided during the experiment.

Limitations

The findings presented here are relevant to predominantly urban contexts with populations who have widespread access to basic services (including the internet), who have access to university education, and who have some interest in social research. Degree choice, which defines both students' field of interest and the manner in which they approach problems, also influences the impact of information on participation. It is possible that using the topic of gender equality as a motivator for participation may have influenced the results (UN-Women, 2019; Bayer & Ke, 2013), with a different topic possibly yielding a different set of results (Adu-Gyamfi, 2013).

The utilisation of an experimental methodology reduces measurement biases and allows the formulation of an intuitive measurement. However, two significant challenges emerged during the implementation phase. The first challenge was the exclusion of young people in the control group from the treatment. Some of the students interviewed indicated that they were displeased at being unable to attend the face-to-face workshop at UPEA. The second challenge was the limited timeframe for the research. This restricted the quantity of information provided to each treatment group, thereby limiting the scope for more extensive interaction and feedback. According to the teachers, this would have had a greater effect.

The discrepancy in outcomes observed at UPEA and the lack of impact at UMSA could not be fully explained. It could be attributed, at least in part, to the distinctive attributes of each UMSA cohort including age and proclivity to engage in political discourse. The computer science group was notably younger and less eager to participate, while the political science group was the oldest and it is likely that the students were more interested in the policy debate.

Another potential explanation of the effect observed among the UPEA students is that this university has a partnership with the ARU Foundation, which may have generated interest among students to participate in the initiatives developed under this framework.

Aggregate analysis of all the samples could have given the findings greater generalisability, but was beyond the scope of the research design as originally planned. We preferred to prioritise the local context and the specific characteristics of each group of students to understand the effect of information framing on participation.

Despite these limitations, the article highlights potential strategies to support youth participation and foster more inclusive and equitable societies in other regions of the Global South, by understanding some of the specific challenges faced by youth in Bolivia.

Conclusions and recommendations

The article shows that information affects the meaningful participation of young people in specific contexts. At the same time, it suggests that:

1. Young people's beliefs are not changed by more information.
2. Young people have original approaches to policy discussion, but their input is not manifested through conventional means such as written essays.

A cross-cutting issue concerns young people's rationality in deciding when and how much to participate. The data suggest that there is an opportunity cost associated with each stage of participation that is not necessarily offset by real opportunities to contribute to better policy discussion.

Probably for the same reason, young people value the ways in which they receive information. The greater effect of digital information delivery in accessible formats compared to face-to-face encounters providing the same information supports this view. Based on these findings, recommendations can be made to foster meaningful youth engagement in policy debates.

First, to better understand how to improve the quality of youth participation, it is necessary to understand the behaviour of young people in different contexts. More far-reaching studies, for example at the level of the municipality of El Alto (where UPEA is located) or the municipality of La Paz (where UMSA is located) could complement the demand factors found here with others of a more general scope. Expanding research in this area will enable a thorough analysis of how local governance structures, community resources, and socio-economic conditions influence youth engagement. Identifying variations across different contexts will help policymakers tailor strategies to meet the specific needs and motivations of youth. Specifically, using surveys to gather insights on young people's interests, conditions for participating in public policy debates, preferred interaction methods, and views on conventional inclusion strategies will provide valuable evidence for enhancing youth participation.

Second, the findings highlight the need to expand and improve modes of youth participation, starting with critical analysis of information

dissemination methodologies. Employing didactic techniques, social networks, and audio-visual media should be fundamental to these strategies. Additionally, implementing a robust follow-up strategy is essential for sustaining the interest of young people and guiding it constructively toward public policy discussions. Forming 'horizontal' discussion groups, strengthening social connections among youth, and generating academic, professional, or vocational incentives are key components of this strategy. By directly addressing these specific policy areas, we can foster a more inclusive and effective framework for youth participation in decision-making processes.

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Appendix 1

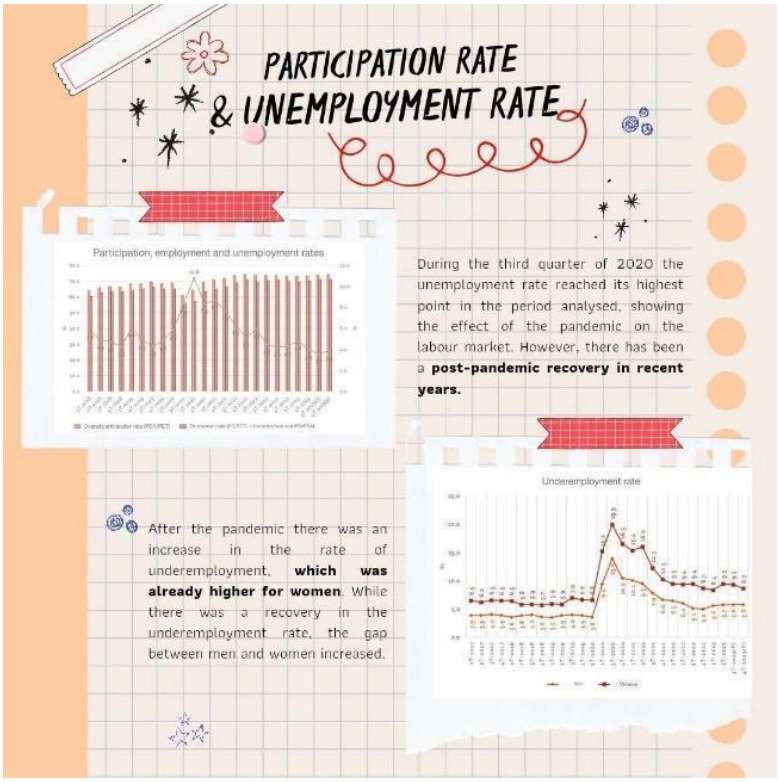
Table A1. Contingency table: Balance of variables of experiment

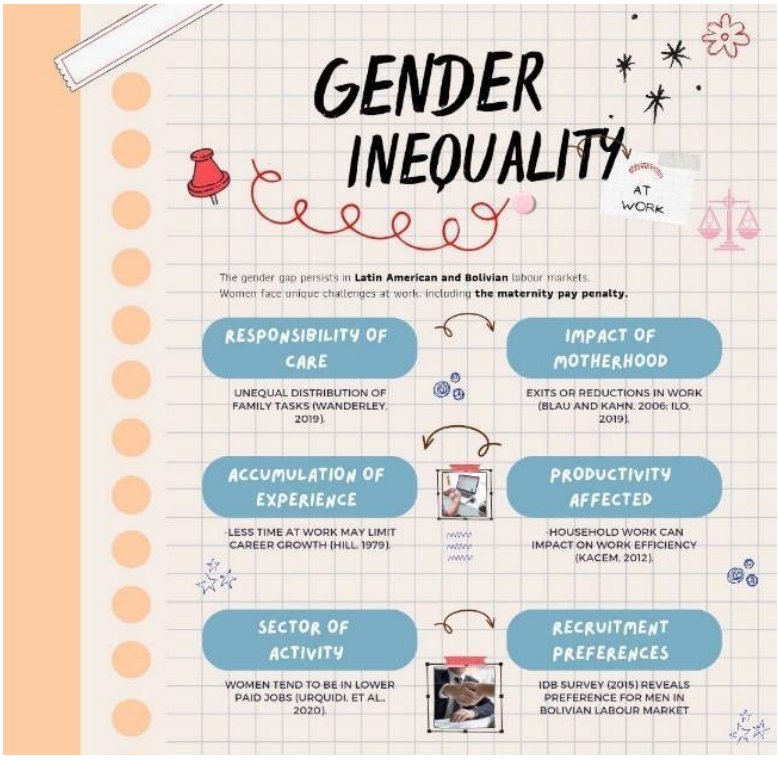
UPEA-Economics				
	Group			
Sex	**1**	**2**	**3**	
Male	14	13	12	39
Female	30	31	31	92
Total	44	44	43	131
Mean age	23.36	23.52	23.3	23.4
Std. Dev. (Mean age)	0.4701	0.3784	0.4641	0.2517
UMSA- Political Science				
	Group			
Sex	**1**	**2**	**Total**	
Male	11	12	23	
Female	7	6	13	
Total	18	18	36	
Mean age	23.94	23.61	23.77	
Std. Dev. (Mean age)	0.7899	0.6474	1.017	
UMSA- Computer Science				
	Group			
Sex	**1**	**2**	**Total**	
Male	22	20	42	
Female	9	10	19	
Total	31	30	61	
Mean age	20.97	21.37	21.16	
Std. Dev. (Mean age)	0.3636	0.3997	0.268756	

Note. Author's calculations.

Appendix 2

Figure A1. **Examples of infographic series on gender inequality in the labour market**





Appendix 3

Table A2. Youth profile. Students who completed surveys before and after treatment

	Political Science	Computer Science	Economics	Statistical Tests			
Sample size (subsample)	26	38	86	p	ECO/PS	CS/PS	CS/ ECO
Mean Age	23.7	20.9	23.3	0.000*	1.0000	0.000*	0.000*
Sex							
Male	69.2%	63.2%	27.9%	0.000*	0.000*	1.0000	0.000*
Female	30.8%	36.8%	72.1%	0.000*	0.000*	1.0000	0.000*
Year of study at university							
1st year	0.0%	18.4%	0.00%	0.000*	1.0000	0.001*	0.000*
2nd year	7.7%	50.0%	5.81%	0.000*	1.0000	0.000*	0.000*
3rd year	26.9%	31.58%	18.60%	0.2623	1.0000	1.0000	0.3530
4th year	34.6%	0.0%	10.47%	0.0001*	0.002*	0.000*	0.2500
5th year	30.8%	0.0%	41.86%	0.000*	0.7340	0.0150	0.000*
Graduate	0.0%	0.0%	23.26%	0.0001*	0.005*	1.0000	0.001*
Municipality of residence							
Batallas	0.0%	0.0%	1.16%	0.6921	1.0000	1.0000	1.0000
El Alto	11.5%	23.7%	95.4%	0.000*	0.000*	0.3460	0.000*
La Paz	80.8%	73.7%	2.33%	0.000*	0.000*	1.0000	0.000*
Viacha	7.7%	2.6%	1.2%	0.1969	0.2160	0.6560	1.0000
What is the language you learned to speak as a child?							
1. Spanish	96.2%	100.0%	91.9%	0.1680	1.0000	1.0000	0.1930
3. Aymara	3.9%	0.0%	8.1%	0.1680	1.0000	1.0000	0.1930
Which of these categories do you identify with?							
1. Indigenous	11.5%	15.8%	52.3%	0.000*	0.000*	1.0000	0.000*
2. Mestizo	53.9%	36.8%	20.9%	0.0035*	0.004*	0.4150	0.2110
3. White	0.0%	0.0%	1.2%	0.6921	1.0000	1.0000	1.0000
4. Afro-Bolivian	3.9%	0.0%	0.0%	0.0915	0.1060	0.1910	1.0000
5. Other	3.9%	7.9%	5.8%	0.7975	1.0000	1.0000	1.0000
6. None	26.9%	39.5%	19.8%	0.0699	1.0000	0.7770	0.0640
Where were you born?							
1. In El Alto	11.5%	10.5%	56.98%	0.000*	0.000*	1.0000	0.000*
2. In Nuestra Señora de La Paz	84.6%	84.2%	0.00%	0.000*	0.000*	1.0000	0.000*

3. In another municipality of the department of La Paz	0.0%	0.0%	37.21%	0.000*	0.000*	1.0000	0.000*
4. In another department	3.9%	5.3%	4.65%	0.9664	1.0000	1.0000	1.0000
5. In another country	0.0%	0.0%	1.16%	0.6921	1.0000	1.0000	1.0000
Where did you live 5 years ago?							
1. In El Alto	19.2%	34.2%	86.1%	0.000*	0.000*	0.4150	0.000*
2. In Nuestra Señora de La Paz	69.2%	63.2%	0.0%	0.000*	0.000*	1.0000	0.000*
3. In another municipality of the department of La Paz	0.0%	0.0%	12.79%	0.0115*	0.0800	1.0000	0.033*
4. In another department	11.5%	0.0%	1.16%	0.0074*	0.011*	0.014*	1.0000
5. In another country	0.0%	2.6%	0.0%	0.2303	1.0000	0.6180	0.2970
What is the current marital or civil status?							
1. Loner	92.3%	97.4%	95.4%	0.6461	1.0000	1.0000	1.0000
2. Married	0.0%	0.0%	2.3%	0.4757	1.0000	1.0000	0.9060
3. Cohabitant or Concubine	7.7%	0.0%	2.3%	0.1669	0.4140	0.1860	1.0000
4. Separated / Divorced	0.0%	2.6%	0.0%	0.2303	1.0000	0.6180	0.2970
Last week did you work for any payment?							
1. Yes, I worked for pay	42.3%	21.1%	43.0%	0.0560	1.0000	0.2500	0.0600
2. Yes, I worked but I did not receive any payment	7.7%	7.9%	8.1%	0.9970	1.0000	1.0000	1.0000
3. I did not work but I was looking for a job.	23.1%	13.2%	22.1%	0.4775	1.0000	1.0000	0.7670
4. I did not work	26.9%	57.9%	26.7%	0.0020*	1.0000	0.028*	0.002*
In the previous month, in what range was the disposable labour income of your entire household (in bolivianos)?							
1. 0 - 1499	23.1%	36.8%	66.3%	0.000*	0.000*	0.7600	0.005*
2. 1500-2799	11.5%	29.0%	24.4%	0.2569	0.5280	0.3250	1.0000
3. 2800-4199	34.6%	13.2%	7.0%	0.0011*	0.001*	0.033*	1.0000
4. 4200-5999	23.1%	10.5%	1.2%	0.0005*	0.000*	0.1510	0.1690
5. 6000-11999	7.7%	7.9%	1.2%	0.1223	0.4110	1.0000	0.2360
6. 12000 o más	0.0%	2.6%	0.0%	0.2303	1.0000	0.6180	0.2970

Note. Author's calculations.
The p-values reported in the table correspond to:
Prob > F: p-value from ANOVA, indicating the probability of obtaining a difference between groups as large or larger if the null hypothesis (no difference between groups) were true.
ECO/PS, CS/PS, CS/ECO: p-values of the pairwise comparisons of the Bonferris test, indicating the probability of obtaining such a large or larger difference between the specified pairs of groups if the null hypothesis (no difference between the two groups) were true.

Appendix 4

Table A3. Treatment and participation

	Political Science		Computer Science		Economics	
	Male	Female	Male	Female	Male	Female
Sample size (subsample)	29	15	42	19	39	92
Average age	26.72	26.13	21.50	20.42	24.44	22.96
Treatment						
Control	11	7	22	9	12	31
Digital	12	6	20	10	14	30
Workshop - - Attended					2	10
Workshop - Did not attend					11	21
Participation						
Participated	3	1	1	1	1	4
Did not participate	26	14	41	18	38	88

Note. Authors´ calculations

Table A4. Statistical tests of differences in response proportions between treatments for each study field

	Economics					
	Source	***SS***	***df***	***MS***	***F***	***p***
	Between groups	0.04	1	0.04	0.22	0.6398
	Within groups	14.24	85	0.17		
	Total	14.28	86	0.17		
	Political Science					
	Source	***SS***	***df***	***MS***	***F***	***p***
Initial form responses	Between groups	0	1	0	-	-
	Within groups	0	34	0		
	Total	0	35	0		
	Computer science					
	Source	***SS***	***df***	***MS***	***F***	***p***
	Between groups	0	1	0	-	-
	Within groups	0	59	0		
	Total	0	60	0		

Subsequent form responses	**Economics**					
	Source	***SS***	***df***	***MS***	***F***	***p***
	Between groups	0.03	1	0.03	0.14	0.7128
	Within groups	19.62	85	0.23		
	Total	19.66	86	0.23		
	Political Science					
	Source	***SS***	***df***	***MS***	***F***	***p***
	Between groups	0.11	1	0.11	0.53	0.4711
	Within groups	7.11	34	0.21		
	Total	7.22	35	0.21		
	Computer science					
	Source	***SS***	***df***	***MS***	***F***	***p***
	Between groups	0.47	1	0.47	2.02	0.1606
	Within groups	13.85	59	0.23		
	Total	14.33	60	0.238797814		
Competition Responses	**Economics**					
	Source	***SS***	***df***	***MS***	***F***	***p***
	Between groups	0.10	1	0.10	3.07	0.0832
	Within groups	2.79	85	0.03		
	Total	2.90	86	0.03		
	Political Science					
	Source	***SS***	***df***	***MS***	***F***	***p***
	Between groups	0	1	0	0	1
	Within groups	3.56	34	0.10		
	Total	3.56	35	0.10		
	Computer science					
	Source	***SS***	***df***	***MS***	***F***	***p***
	Between groups	0.00	1	0.00	0	0.9816
	Within groups	1.93	59	0.03		
	Total	1.93	60	0.03		

Note. Authors´ calculations

Appendix 5

ANOVA analysis

Analysis of variance decomposes the total variability in a data set into components attributable to different sources of variation. This is done by assessing within-group variability and between-group variability. In the case of a repeated measure ANOVA, one can assess whether observed changes in beliefs are statistically significant over time or in response to treatment. To calculate the F-statistic we use:

$$SSA = \sum_{i=1}^{k} n_i(\underline{X}_i - \underline{X})^2 \quad SSA = \sum_{i=1}^{k} n_i(\underline{X}_i - \underline{X})^2 \quad SSE = \sum_{i=1}^{k} \sum_{j=1}^{n} (X_{ij} - \underline{X}_i)^2$$

$$SSE = \sum_{i=1}^{k} \sum_{j=1}^{n} (X_{ij} - \underline{X}_i)^2$$

$$F = \frac{\frac{\sum_{i=1}^{k} n_i(\underline{X}_i - \underline{X})^2}{k-1}}{\frac{\sum_{i=1}^{k} \sum_{j=1}^{n} (X_{ij} - \underline{X}_i)^2}{N-k}}$$

Where:

- k is the number of groups.
- is the size of group i.
- is the observation j.
- N is the total number of observations.
- Sum of squares between the groups (SSA).
- Sum of squares within groups (SSE).

The p-values of the analysis of variance are presented below to test whether there are statistically significant differences between the different groups in terms of their beliefs. Differences between the control group, the digital treatment group, the group that attended the face-to-face workshop and the group that did not attend the face-to-face workshop were analysed. The ANOVA has a null hypothesis stating that there are no statistically significant differences between groups.

Table A5. **ANOVA analysis: Perceptions, Practices & Attitudes p-values**

	Perceptions	Practices	Attitudes
Before	**0.908**	**0.816**	**0.379**
After	0.473	0.404	0.910

*H0: No difference between groups

Note. Authors´ calculations

In all cases, we conclude that there are no statistically significant differences between groups because the p-value of the F-statistic is high. Therefore, the null hypothesis that there are no differences between groups cannot be rejected.

Appendix 6

Sentences and questions used to calculate Belief index

N°	Perceptions
1	I believe in equality between men and women.
2	Women and men have the same opportunities in Bolivia.
3	Gender differences are immutable, and women and men have different (but complementary) social roles.
4	The wage gap is a myth; women already receive equal pay for equal work.
5	Men and women have the same intellectual capacities.
6	Women are as good as men at jobs that require leadership and decision making.
7	Women are as rational and logical as men.
8	Domestic violence is a serious problem that affects both genders equally.
9	The state should impose quotas requiring that fathers and mothers receive a similar amount of maternity/ paternity leave.
10	Women are just as capable as men of leading a team.
11	I would feel comfortable with a woman as a boss.
12	I would not mind if my partner earned more money than me.
13	I agree with the equal participation of men and women in household chores.
14	Men who do not work to support their families are failures.
15	I would be upset if my daughter married a man who earns less money than her.
16	Men should have the same responsibility for raising children as women.
17	In my house, household chores are shared equally between men and women.
18	I have corrected someone who has made a gender discriminatory comment.

19	I have read a book or article about gender equality.
20	I have seen a film or documentary about gender equality.
21	Girls have the same educational opportunities as boys.
22	Girls have the same learning opportunities as boys in your community.
23	Men and women have an equal say in household decisions.

N°	Questions
1	Have you participated in any activities or initiatives to promote gender equality?
2	Have you talked to anyone about the importance of gender equality?
3	Do you think that your participation in a public policy debate (such as gender equality, sustainable development, economic inequality, etc.) could have a positive impact?
4	Are you interested in learning more about public policies that promote gender equality, sustainable development, economic inequality, etc.?
5	Would you be willing to participate in a discussion on public policies on gender equality, sustainable development, economic inequality, etc. if invited?

Appendix 7

Table A7. Estimated statistical power for a two-sample means test by fields of study for the variable responses to competition

Field of study	Control group mean	Digital group mean	sample size of the control group	sample size of the treatment group	Standard deviation both groups	Power
Economics	0	0.07	43	44	0.0196	0.8
Political Science	0.11	0.11	18	18	0.0438	-
Computer science	0.03	0.03	31	30	0.0229	0.05

Note. Statistical power represents the probability of correctly detecting a true difference between groups when such a difference exists in the population. By contrast, researchers may make a Type II error, failing to detect a true difference and erroneously concluding that there is no difference between the groups. This type II error rate is denoted by beta and is conventionally set at 0.20, meaning a desired probability of less than 20% of a false negative conclusion. To determine the sample size needed for a study, researchers must specify beta or the power of the study, which is calculated as 1-beta. A power of 0.80, or 80%, indicates an 80% probability of avoiding a Type II error and detecting a specified effect if it actually exists (Noordzij, Zoccali & Jager, 2011). Data from authors´ calculations

Appendix 8

Youth interview questionnaire

General idea: to identify factors that may be related to the participation of UPEA economics students in the gender equity essay writing competition.

- Q1. how did you hear about the **call** for participation in the competition? was there anything that struck you favourably? anything that you did not like or did not understand?
- Q2. when the call for entries was launched, how did you decide to **participate?** why did you decide to participate (did you not decide to participate)? where were you at the moment (studies, work, family, other)?
- Q3. what do you think about the objective of the call? what do you think about gender **equity** in the Bolivian labour market? to what extent is it a problem that should be addressed by 'public policy'?

Interview for teachers

General idea: to identify factors that may be related to the participation of UPEA economics students in the gender equity essay writing competition.

- Q1. are you familiar with the **call** for participation in the competition? is there anything that caught your attention?
- Q2. What factors do you think might have influenced the **participation** (non-participation) of young people in essay writing?
- Q3. what do you think about the objective of the call? what do you think about gender **equity** in the Bolivian labour market? to what extent is it a problem to which young people can contribute from the 'public policy' point of view?

Young Think Tankers

POTENTIAL IMPACTS OF EU DEFORESTATION REGULATION ON SMALLHOLDER COFFEE FARMERS: EVIDENCE FROM INDONESIA AND UGANDA

AZIZAH FAUZI
REGEAN MUGUME

POTENTIAL IMPACTS OF EU DEFORESTATION REGULATION ON SMALLHOLDER COFFEE FARMERS: EVIDENCE FROM INDONESIA AND UGANDA

Young Think Tankers

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Abstract

This article examines the potential impact of the European Union Regulation on Deforestation Free Products (EUDR) on the livelihoods of smallholder coffee farmers in Indonesia and Uganda, two of the world's leading coffee producers. The coffee sector makes a significant contribution to employment and foreign exchange revenues in both countries. Set to take effect in December 2024, the EUDR requires certain products—including coffee—to be produced on deforestation-free land. Using a mixed-methods approach, which includes household survey data, trade flow analysis and regulation review, we examine each country's preparedness to implement the EUDR, and its likely impact on the livelihoods of smallholder coffee farmers. The study finds that such farmers, who account for over 90 percent of the coffee production in Indonesia and Uganda, are already facing stagnating or declining yields due to limited access to inputs like fertilisers and credit, which reduces their output and household income. It is likely that the anticipated high costs of implementing EUDR traceability requirements will make it even more difficult for these farmers to invest in practices to improve productivity. To mitigate the impact of the EUDR on smallholder coffee farmers, this article recommends partnerships with the private sector in relation to (i) productivity-enhancing agronomic practices, and (ii) the establishment of coffee traceability systems.

Keywords

European Union Regulation on Deforestation Free Products; smallholder coffee farmers; traceability; sustainability; livelihoods; compliance

Evidence for decision-making

1. EUDR requirements risk jeopardising the livelihoods of around 98% of smallholder coffee farmers in both Uganda and Indonesia.

2. Existing government subsidies and interventions in Indonesia and Uganda are not enough to improve the productivity and income of smallholder coffee farmers.

3. Private sector programs offering comprehensive training and close monitoring can improve productivity, income, and compliance with sustainability standards among farmers.

4. EU support for private sector innovation and phased EUDR implementation could ensure the achievement of EUDR goals, without negatively impacting smallholder coffee farmers.

Introduction

In December 2023, the European Parliament and European Council passed the European Union Regulation on Deforestation-free Products (EUDR) law as part of its efforts to mitigate the region's environmental impacts and become the first climate-neutral continent by 2050 (European Union [EU], 2023). The EUDR stems from the region's substantial imports of unsustainably produced, high-value cash crops that drive deforestation in developing countries (Wolvekamp, 2024; FAO, 2022). According to the UN, deforestation accounts for approximately 19% of global emissions (United Nations, 2020).

Small-scale farming is vital for global food production, but climate change, limited training, and poor technology access threaten food security and livelihoods.

High levels of deforestation for agricultural production have been reported in many Global South countries, including Uganda and Indonesia, exacerbated by lax enforcement of regulations (Cuaresma, & Heger, 2019). In Uganda, the agricultural sector contributes up to 40% of Uganda's total GDP and over 90% of foreign exchange earnings (FAO, 2023), with coffee being the country's second biggest export (Observatory of Economic Complexity [OEC], 2023). While in Indonesia, coffee ranks only as the 46th most exported product (OEC, 2024), but it remains a key agricultural commodity and a major contributor to foreign exchange. In 2022, Indonesia's coffee exports generated USD 1.15 billion, accounting for 2.73% of total plantation commodity exports (Ministry of Agriculture, 2023a).

Agricultural development is crucial to alleviate extreme poverty, boost shared prosperity, and address food insecurity in developing countries (World Bank, 2015). Estimates show that in 2014, about 78% of the world's poor households (800 million people) relied heavily on agriculture (World Bank, 2014). Notably, growth in agriculture is twice as effective in addressing poverty in developing countries compared to services and industry (Ivanic & Martin, 2018). Small-scale farming is also essential for global food production, yet challenges such as climate change (closely linked to reduced production), lack of training in modern practices, and inadequate access to technologies (Dhillon & Monchur, 2023) threaten food security and farmers' livelihoods.

Given the significance of agriculture for Global South economies, and the fact that smallholdings make up an estimated 84% of the world's farms

(Ritchie, 2021), this article seeks to explore the potential impact of the EUDR on smallholder coffee farmers,addressing the following research questions:

1. What are the likely effects of the policies and initiatives to be implemented under the EUDR on: a) smallholder coffee farmers in Uganda and Indonesia, and b) agricultural export earnings of coffee grown by smallholder coffee farmers?
2. What measures are being taken to mitigate these likely impacts?

While the EUDR aims to reduce deforestation and contribute to achieving the SDGs, it poses serious challenges for smallholder coffee farmers in Indonesia and Uganda. Already burdened by stagnating or even declining productivity, smallholder coffee farmers in both countries face challenges in improving farm productivity and livelihoods amid pressure to meet global sustainability standards, which could potentially limit their access to global markets. Compliance with the EUDR is likely to place a disproportionate burden on smallholder coffee farmers, further worsening productivity, lowering farm incomes, and pushing them deeper into poverty (Baffoe, 2024; Bledi et al., 2024).

The article aims to investigate the potential negative effects of the EUDR on the livelihoods of smallholder coffee farmers in these countries, and to provide recommendations for mitigating these impacts. Relatedly, the article seeks to discuss ways to bridge the gap between agricultural sustainability efforts in the Global North and the challenges faced by smallholder coffee farmers in the Global South. Through this analysis, the article aims to inform policymakers and key stakeholders about the interconnections between agricultural sustainability policies in the EU and the livelihoods of smallholder coffee farmers in Indonesia and Uganda, contributing to a more comprehensive understanding of global sustainable development in the agricultural sector. The available evidence shows that the EUDR is likely to have an impact on the welfare of smallholder farmers in developing nations (Iryna & Shane, 2025; Melati et al., 2024; Sinkevičius, 2023). Existing studies are explanatory in nature and do not empirically articulate the ways in which regulation affects smallholder farmers in developing countries. Also, the available evidence examines the EUDR's impact on the seven affected commodities, with limited focus on coffee, despite its unique and globally distinctive value chain.

This article contributes to the existing body of literature through an in-depth analysis of the likely effects of the EUDR on coffee smallholders' export and productivity potential. Employing mixed methods, we combine quantitative and qualitative desk reviews to assess its impacts.

Methods

To address the research questions, we used a mixed-methods approach, combining quantitative and qualitative desk review methods to investigate the likely impacts of the EUDR. The approach enabled us to triangulate the different kinds of data on the EUDR with quantitative data on trade flows and productivity of the coffee industry, which was critical to gain insights into the likely impact of the regulation. Further, Indonesia and Uganda are relevant case studies as they heavily rely on the agricultural commodities covered by the EUDR—including coffee—both for livelihoods and foreign exchange earnings. Moreover, coffee production in both countries is dominated by smallholder farmers, who face challenges such as stagnating or declining productivity, linked to land degradation and deforestation, and poor market linkages that force farmers to sell at low farm gate prices.

Qualitative methods comprised a literature review to explore the likely effects of the EUDR on smallholder coffee farmers in Uganda and Indonesia, and investigate possible mitigation measures for such effects. The literature search included a range of relevant policy and academic documents, including EUDR policy, government reports, relevant national-level policies, peer-reviewed journal articles, and project reports, all related to the coffee sectors in both countries. This review process first enabled understanding of the context in which the EUDR will be implemented, exploring existing challenges faced by smallholder coffee farmers, and assessing the existing regulations and policy context in each country prior to implementation of the EUDR. Based on this contextual understanding, it then provided analysis of the anticipated impacts of the regulation.

Quantitative analysis included first, analysis of trends in annual coffee exports from Uganda and Indonesia to EU countries, using import and export data from the ITC Trade Map[1], UN Comtrade[2], and OEC World[3] to estimate the likely impact of the EUDR on exports from smallholder coffee farmers in Indonesia and Uganda. This enabled us to highlight the significance of the EU market for the coffee sector in both countries. Second, the study analysed production and productivity based on the FAO's FAOSTAT database[4], including an examination of the link between coffee production (crop area harvested) and deforestation, to understand whether increased coffee

1. See: https://www.trademap.org/Index.aspx.
2. See: https://comtradeplus.un.org/.
3. See: https://oec.world/en.
4. See: https://www.fao.org/statistics/en

cultivation in both countries could be associated with increased rates of deforestation. We also examined production capacities and productivity in both countries.

To further contextualise the analysis, this study utilises data on the production capacities of both countries based on the number of smallholder coffee farmers. In line with the FAO definition, this study defines smallholder farmers as those managing areas up to 10 hectares (FAO, 2013). For Uganda, the number of smallholder coffee farmers is based on the 2019/20 Uganda National Panel Survey (UNPS) (Uganda Bureau of Statistics [UBOS], 2021). For Indonesia, the number is drawn from Ministry of Agriculture publications. These figures are needed to estimate the share of smallholder coffee farmers likely to be affected by EUDR implementation.

Results

The European Deforestation Regulation: Key highlights

The EUDR, set to take effect in December 2024, is expected to contribute to multiple development goals[5] by reducing global deforestation linked to agricultural production (European Union, 2023). While the EUDR promotes fair prices for smallholders to support a living income and effectively address poverty—a root cause of deforestation (European Union, 2023)—it mainly focuses on EU traders and operators without clearly specifying the reporting of compliance obligations for producers, including smallholder farmers.

Under the EUDR, operators or traders[6] bringing agricultural commodities such as coffee to the EU market must prove that the products do not originate from land deforested[7] after 31 December 2020, or contribute to forest degradation (see Appendix 1 for details; EU Commission, 2023). They must establish a system of due diligence providing information on sources and suppliers of products, including smallholder coffee farmers. They also need to show proof

5. SDG 15 (Life on Land), SDG 13 (Climate Action), SDG 12 (Responsible Consumption and Production), SDG 2 (Zero Hunger), and SDG 3 (Good Health and Well-Being) (European Union, 2023)

6. An 'operator' is any natural or legal person who places or exports products on the market, while a 'trader' is any other person in the supply chain making products available on the market (European Union, 2023)

7. Deforestation means converting forest land into agricultural land, whether human-induced or not. Meanwhile forest degradation means structural changes to forest cover, converting primary forests or naturally regenerating forests into plantation forests or into other wooded land, or primary forests into planted forests (European Union, 2023).

that the products meet deforestation-free and legal standards through geolocation data if necessary, along with risk assessment and mitigation measures. Geolocation enables the use of satellite imagery to tell whether the production area was recently a forested area (Sielski, 2023). If any risks are identified, operators must mitigate these to achieve no or only negligible risk before the products can enter the EU market.

Coffee production trends in Indonesia and Uganda

Estimates from Uganda Panel Survey 2019-2020 (UBOS,2020) show that about 1.91 million households in Uganda, are involved in coffee production, with 97.7% being smallholders (see Table 1). Similarly, in Indonesia there are 1.9 million households involved in coffee production, 98.4% of whom are smallholders, contributing to 99.3% of its total coffee production (Ministry of Agriculture, 2023c).

Table 1. **Share of households and smallholder farming households involved in coffee production in Uganda and Indonesia**

	Uganda (2019)	Indonesia (2022)
Total number of households involved in coffee production (including farmers and plantation workers)	1,900,000	1,905,499
Smallholder farming households growing coffee	1,870,092	1,875,379
Share (%)	(97.7)	98.4

Note. Authors' computation based on UNPS survey data (2020), FAO (2018), and Ministry of Agriculture(2023c)

Indonesia's coffee yields are relatively low compared to other major producers, with production projected to drop by 18% to 9.7 million bags in 2023/2024 due to excessive rainfall (United States Department of Agriculture [USDA], 2023). The country's average coffee yield stands at 0.55 tonnes per hectare, ranking 14th globally by yield (National Research and Innovation Agency, 2023). Relatedly, from 2010 to 2022, coffee production in Indonesia fluctuated, becoming more volatile due to decreases in available land as a result of land use change, together with weather-related challenges, plant pests, ageing coffee plants, and unsustainable practices (Supardi, 2020; see Figure 1).

Notably, Uganda's coffee productivity is declining despite growth in total production. Total coffee production increased by 136% from 166,968 metric

tonnes in 2010 to 393,900 metric tonnes in 2022 (Figure 1). However, productivity declined from 620 Kg/Ha (0.62 tonnes/ha) to 540 Kg/Ha (0.54 tonnes/ha) over the same period. This suggests that the production increases are likely driven by land expansion rather than improved productivity. This decline in productivity is attributed to production-side constraints such as climate change, poor agronomic practices, pests and diseases, ageing trees, and limited access to land and inputs (Agaba et al., 2023; Mulinde et al., 2023).

Figure 1. **Coffee Production in Indonesia and Uganda, 2010-2022**

Note. Authors' own based on FAOSTAT database (2024)

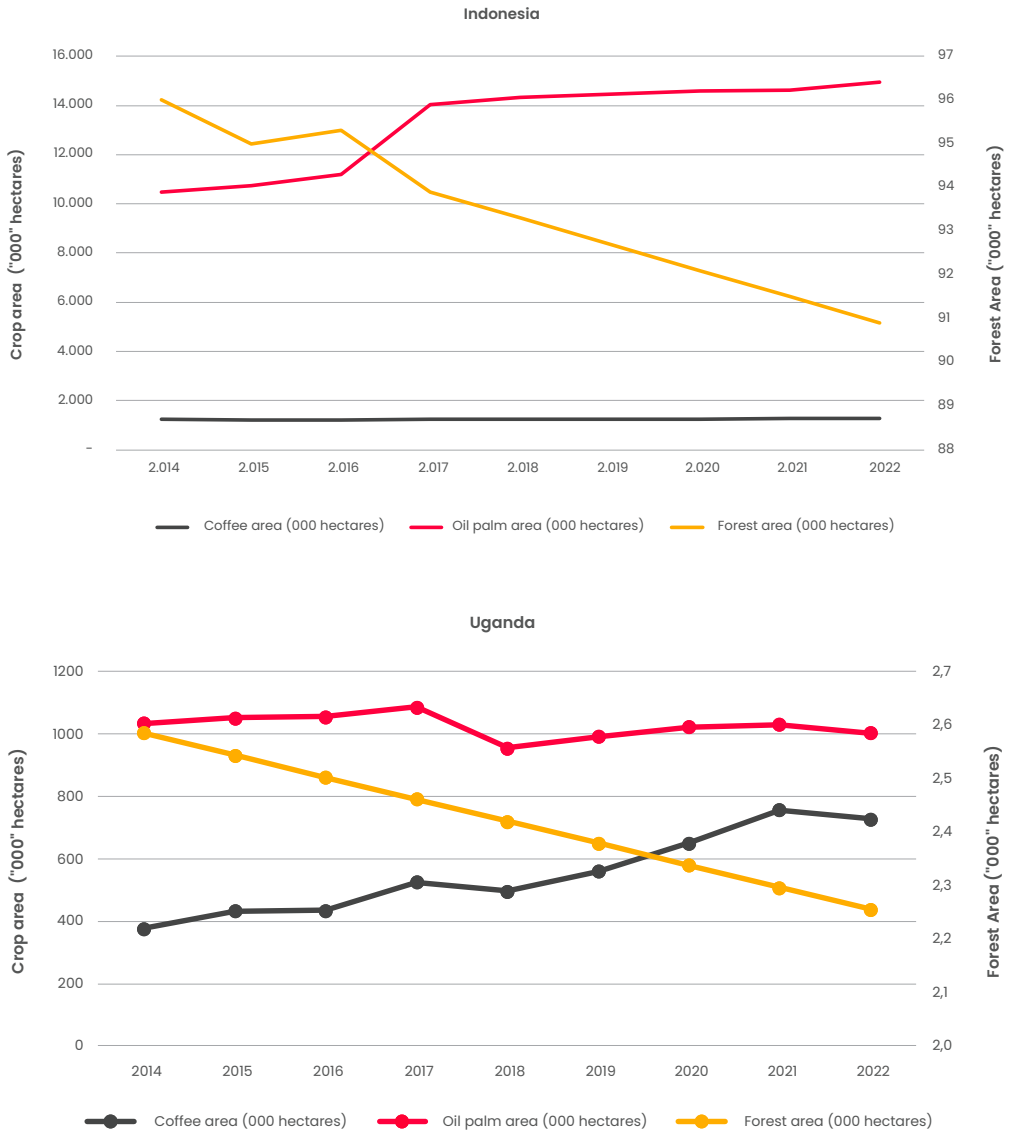
Both countries are aiming to improve coffee productivity through a range of programs. In Indonesia, smallholder farmers in North Sumatra—a major coffee-producing area—receive seed assistance and participate in coffee planting programs (Ministry of Agriculture, 2023b). However, government assistance in the form of subsidised fertilisers and seeds, access to financial services, and land expansion programs are considered ineffective as they fail to account for regional differences, provide effective training, or ensure adequate on-the-ground supervision (Glorya & Nugraha, 2019).

Between 2014 and 2022, Uganda's forest cover decreased by 12% and Indonesia's by 5%, while coffee cultivation expanded by 92% in Uganda and 5% in Indonesia.

Similarly, the Ugandan government provides subsidised fertilisers, improved seedlings, irrigation, pest and disease control, pruning, and affordable credit (UCDA, 2021). However, about 36% of Ugandan coffee farmers adopt none of the practices, while fewer than 50% use at least one, and only 3% adopt all the recommended practices (Asindu et al., 2023). Low adoption of inputs like organic fertilisers (15%) and pesticides (10%) among smallholder farmers in Uganda stems from limited financing and labour (UBOS, 2020).

Figure 2 shows the link between agricultural production and deforestation. The area under cultivation for coffee and palm oil has increased alongside a substantial reduction in forest cover in both countries. Between 2014 and 2022, as forest cover declined in Uganda and Indonesia by 12% and 5% respectively, land used for coffee cultivation increased by 92% in Uganda and 5% in Indonesia, with Indonesia also registering a 43% rise in land used for oil palm. Given the predominance of smallholder production in the coffee sector, this would suggest that smallholder coffee farmers are expanding cultivation into previously forested areas, particularly in Uganda.

Figure 2. **Land used for cultivation of coffee and oil palm, and forested land, in Uganda and Indonesia, 2014-2022, in hectares**



Note. Authors' own based on FAOSTAT database (2024)

Export trade of coffee in Uganda and Indonesia

Uganda's coffee exports increased from USD 372 million in 2012 to USD 900 million in 2023, with EU market share rising from 42% to 61% over the same period (Figure 3). This was largely a result of increased demand for Ugandan coffee in the EU market due to its high quality (Mumbere, 2024). Meanwhile, earnings from coffee exports in Indonesia peaked at 1.2 billion in

2012, but have since been fluctuating and declined to USD 929 million in 2023, with the EU share falling from 25% to 16% over the same period. Indonesia maintains diverse export destinations including the US and Egypt, as well as Germany, Italy, and Belgium (OEC, 2024), while Uganda is more reliant on EU markets for coffee exports.

Figure 3. **Coffee exports and export share to EU from Indonesia and Uganda, 2012-2023**

Note. Authors' own based on ITC Trade Map (2024)

Assessment of existing policy and regulatory efforts relating to EUDR compliance and sustainability in Indonesia and Uganda

Both Indonesia and Uganda have regulations and initiatives relevant to deforestation, environmental sustainability and EUDR compliance, which are outlined in Table 2.

Table 2. **Existing government and private sector policies and initiatives relating to deforestation, environmental sustainability and EUDR compliance**

Policies or initiatives on EUDR compliance and environmental sustainability	Approach	Link to EUDR
Uganda		
Public-private partnership for farmer registration	Uganda Coffee Development Authority (UCDA) partners with private companies such as JDE Peet's & Enveritas to achieve EUDR compliance by 2024 through identifying and fixing non-compliant coffee plots (UCDA, 2023).	Supports EUDR compliance.
National Coffee Traceability System	Long term plan to meet EUDR and EU Corporate Sustainability Due Diligence Directive (CSDDD) requirements while supporting small producers (UCDA, 2023).	Supports EUDR and CSDDD compliance.
Uganda Climate Change Policy (2015) and Uganda Forestry Policy (2001)	Promotes climate-smart agriculture and forest management.	Aligns with EUDR deforestation-free goals, but weak enforcement.
Indonesia		
REDD+[8] (Reducing Emissions from Deforestation and Forest Degradation) & Net-zero Target	International and national commitment to reduce deforestation and achieve net zero emissions by 2060 or sooner.	Aligns with EUDR deforestation-free goals.
Social Forestry Program	The government of Indonesia grants legal access to forest areas for local communities to support community welfare, prevent deforestation, and promote environmentally-friendly agricultural practices through sustainable forest management (MOEF, 2016; Amri & Susanto, 2020).	Aligns with EUDR deforestation-free goals and development goals.
Coffee standards and sustainability certifications	Coffee sustainability certifications are voluntary. Current national coffee standards (Standar Nasional Indonesia) focus instead on bean quality, including moisture content, pest absence, and impurity levels (Association of Indonesian Coffee Exporters and Industries, n.d.).	Has not aligned with EUDR requirements due to its lack of emphasis on traceability and deforestation-free practices.

8. REDD+ (Reducing Emissions from Deforestation and Forest Degradation) is a UNFCCC process that supports countries in reducing deforestation-related emissions and enhancing forest carbon stocks (Green Climate Fund, n.d.).

Company-led partnership program	Private companies like Nestlé employ coffee expert extension officers to assist farmers in cultivating coffee. The program doubled yields to 1.2 tonnes per hectare—twice the national average (Glorya & Nugraha, 2019). It also ensures supply chain traceability through mapping, assessments, and satellite monitoring (Nestlé, 2024).	Aligns with EUDR deforestation-free goals and development goals.

Note. Elaborated by authors.

Discussion

This discussion focuses on the potential impacts of EUDR implementation on smallholder coffee farmers in Indonesia and Uganda. It examines challenges these farmers face, particularly in complying with deforestation-free requirements, and the implications for their livelihoods. Measures currently available that may be helpful to mitigate these impacts, including sustainability certifications, government support programs, and private sector partnerships, are also analysed. By addressing these elements, we aim to provide a comprehensive overview of the potential socio-economic and environmental consequences of the EUDR implementation.

Our analysis reveals that the EUDR's deforestation-free requirements could potentially threaten the livelihoods of smallholder coffee farmers. Uncertainty over who will bear the costs of compliance with the EUDR, such as certification, geolocation, and additional labour data, presents a challenge for EUDR implementation among smallholder farmers (Melati et al., 2024).

Currently, sustainability certifications for coffee remain voluntary and are led by private organisations such as the Rainforest Alliance (RA),[9] and are not yet widely distributed in coffee producing countries. These certifications are designed to promote sustainable agricultural practices and prevent deforestation. However, smallholder coffee farmers in Indonesia face challenges in gaining sustainability certifications due to challenges in accessing information, managing farms, securing capital, and resolving land ownership issues (Wahyudi et al., 2020), together with a lack of motivation arising from the negligible price difference between certified and non-certified coffee (Ibnu & Marlina, 2019).

Research by Zhunusova et al. (2022) finds that the increase in compliance costs related to voluntary sustainability schemes does not automatically

8. RA provides training and certification to combat deforestation by encouraging tree planting on RA-certified farms (Rainforest Alliance, 2022).

lead to higher incomes for smallholder coffee farmers, as seen in Nicaragua and Indonesia. Similarly, a recent study in Rwanda finds that sustainability certification is not necessarily associated with household income (Gather & Wollni, 2022). In Honduras, traceable products do not command a high price based on traceability alone (Melo-Velasco, 2023). These findings suggest that the costs of EUDR compliance, particularly related to traceability and sustainability, would not necessarily lead to higher prices or incomes for farmers. Given the already low productivity levels, the potential increase in costs and uncertainty over price increases could increase the burden for smallholder coffee farmers.

While the Indonesian and Ugandan governments are trying to boost smallholder coffee farmers' productivity through subsidies for fertilisers, seeds, and access to financing, neither government has really succeeded. In Indonesia, relatively low coffee yields and vulnerability to climate impacts, combined with the additional burden of EUDR compliance, are likely to reduce the agricultural export earnings of smallholder coffee farmers. Moreover, the income of coffee farmers remains far from a living wage. For instance, in Aceh, Sumatra (Indonesia), farmers earn on average only 40% of a living income (Fairtrade, 2022).

The EUDR aims to support SDG 2 on zero hunger (European Union, 2023), but tighter requirements without adequate dissemination and partnership programs could further exacerbate poverty and deprivation among smallholder farmers. Evidence indicates that stricter export standards have reduced smallholder participation (Zhunusova et al., 2022). In Kenya, smallholder contributions to green bean production dropped as exporters complied with EU retailers' food safety requirements (Okello et al., 2011). Similarly, in Senegal, smallholder procurement declined as major companies established their own farms to comply with EurepGAP certification (Maertens et al., 2009). Exclusion from the supply chain can lead to reduced rural income, and in some cases, increased inequality (Zhunusova et al., 2022). If the EUDR results in similar outcomes, achieving the SDG targets, especially those related to poverty reduction, becomes increasingly challenging.

EUDR compliance also requires extra time and resources to ensure traceability, specifically to provide geolocation of coffee cultivation. Ensuring traceability requires digital technology tools to allow for the timely capture and submission of plot geo-coordinates. However, farmers often have limited access to smartphones, hindering the generation of this information. Consequently, there is a high risk that implementation costs of the EUDR–in this case obtaining the necessary digital tools and knowledge–

will lead to reduced earnings for smallholder farmers and welfare losses (Ssenyonga, 2024; Martey et al., 2023).

Furthermore, most coffee is traded through multiple middlemen (IDH, 2019). In Indonesia, the robusta coffee supply chain involves farmers, village collectors, district traders, processors, and exporters (Romdhon et al., 2021). Indonesian coffee farmers also typically sell their coffee to cooperatives (Sucafina, 2019), a pattern similar to that in Uganda. This highlights the complexity of implementing effective traceability measures across these actors to meet EUDR requirements.

Another challenge may also arise from the definitions outlined in the EUDR text itself. For instance, the EUDR defines deforestation as the conversion of forest land to agricultural use, whether human-induced or not. However, social forestry regulations in countries like Indonesia legally permit agricultural land within forests to be managed by local communities (see Table 2). This approach also includes an initiative to reduce deforestation through smallholder involvement. Such social forestry programmes are also present in other coffee-producing countries, such as Vietnam, where it has become part of the solution for reducing deforestation (RECOFTC, 2020). Therefore, local context, including the existing regulations in producing countries, should also be highlighted and clarified before EUDR implementation.

Table 2 also highlights programs initiated by companies like Nestlé, which helped farmers improve yields through sustainable agriculture support, showing the potential for private sector collaboration with smallholders to help meet deforestation-free standards. Company-led programs utilising modern technologies such as mapping and satellite monitoring also demonstrate the potential for private sector collaboration with smallholders coffee farmers to support the achievement of deforestation-free standards.

This suggests that private initiatives may contribute to improving productivity, as well as to promoting and adopting sustainability and traceability standards. Instead of providing input subsidies, the productivity gap among farmers should be bridged through widespread training programs and partnerships that also can facilitate market access. Partnerships with key actors, including smallholders in producer countries, are encouraged in Article 30 of the EUDR, through dialogue, administrative arrangements, agreements, and joint roadmaps that aim to safeguard the interests of all involved (European Union, 2023).

Conclusions and recommendations

In conclusion, while the EUDR aims to combat deforestation and support sustainable agricultural practices, our findings reveal that EUDR requirements may create significant barriers for smallholder coffee farmers in Indonesia and Uganda, limiting their participation in global markets and potentially worsening inequality and poverty. High compliance costs pose risks to these farmers' livelihoods, which are already under threat due to productivity challenges. Although government interventions in the form of productivity improvement assistance have been implemented, these are not enough to raise incomes and prepare farmers sufficiently for the impact of the EUDR. Partnerships between private actors and smallholder farmers are necessary to improve farmers' livelihoods and achieve higher productivity through the implementation of sustainable practices.

This article recommends the Indonesian and Ugandan governments support efforts to facilitate partnerships between private sector actors such as coffee buyers, civil society organisations such as the rainforest alliance (RA), and smallholder farmers. These partnerships can focus on training for sustainable agricultural practices and certifications, as private sector-led initiatives may offer more efficient pathways to compliance, and increased productivity.

The EU, as coffee importer and EUDR implementing body, should actively support producers in the Global South in embracing green transformation, rather than relying solely on exclusionary trade measures like the EUDR. Moreover, adopting a phased implementation to allow more time for smallholder farmers with limited capacity to adapt might be useful to ensure that farmers can still meet EUDR requirements. Support for the private sector in the EU to continue innovating in their partnership programs, with an emphasis on knowledge transfer to smallholder farmers, should be highlighted within EUDR policy as crucial mechanisms of cooperation. Additionally, the EU can also address the complexities of implementation related to definitions and local contexts in producing countries by establishing a forum for exchange between the EU and producing countries in the Global South.

Areas for future research

This article has evaluated the likely impact of the EUDR by analysing coffee export data for Indonesia and Uganda, and the challenges faced by smallholder coffee farmers in both countries. We find that the costs of EUDR compliance, such as certification, geolocation, and additional labour data,

could threaten farmers' livelihoods, especially given their limited access to resources. However, since the EUDR has not yet been implemented, this paper relies solely on data available prior to its enforcement. As a result, the findings focus on the likely impact rather than actual post-implementation outcomes. Future research on EUDR implementation is needed to offer more accurate insights into the effect of the EUDR on smallholder coffee farmers.

Furthermore, this article also focuses exclusively on Indonesia and Uganda, and thus may not represent the challenges and experiences of other major coffee producing countries, such as Brazil and Vietnam, among others. Larger scale studies that can cover more coffee producing countries are imperative for better understanding of the effect of the EUDR on smallholder coffee farmers in the Global South. Also, this study focuses primarily on the socio-economic impacts of the EUDR and does not explore ecological effects, such as the regulation's actual impact on reducing deforestation. Future research could benefit from exploring the environmental impact of the EUDR to better understand whether it has successfully contributed to reducing deforestation.

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Appendix 1

The Commission is currently proposing an extension of the implementation timeline to the European Parliament and Council. If approved, large companies must comply by 30 December 2025, and micro- and small enterprises by 30 June 2026, allowing for a phased transition to ensure effective implementation (European Commission, 2024).

If an operator or trader is found to be non-compliant with the regulation, authorities require corrective actions, such as rectifying formal issues, preventing market placement or export, withdrawing or recalling the product, or disposing of it according to the EU's waste laws (European Union, 2023). The operator or trader must also address shortcomings in their due diligence system to prevent future non-compliance. If corrective actions are not taken within the specified time, authorities will enforce compliance using all available legal means (European Union, 2023). Penalties for violations under EU member states' jurisdiction, may include confiscation of products and revenues, temporary exclusion from public procurement and funding, market restrictions for serious or repeated violations, and prohibition from simplified due diligence processes (European Union, 2023).

BUILDING HEALTH EQUITY IN CRISIS THROUGH COMMUNITY-LEVEL ACTION AND RESILIENCE BUILDING: THE CASES OF NIGERIA, NEPAL AND BRAZIL

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REFLECTIVE PIECE

BUILDING HEALTH EQUITY IN CRISIS THROUGH COMMUNITY-LEVEL ACTION AND RESILIENCE BUILDING: THE CASES OF NIGERIA, NEPAL AND BRAZIL

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Abstract

This reflective piece examines health equity during crises in the Global South, focusing on the ongoing conflict in Nigeria, the earthquake in Nepal (2015), and the Zika outbreak in Brazil (2015-2016). Through a systematic review of the literature from 2015 to 2023, it identifies factors that impede and, conversely, support equitable healthcare access, and identifies lessons on context-specific interventions, evaluating their effectiveness in bridging health inequities and building community resilience. Findings highlight the importance of community-centric approaches, adaptive health systems, intersectoral collaboration, and addressing socio-economic determinants. Evidence also shows that culturally adapted interventions, mobile health technologies, and community health worker programs significantly improve health outcomes and reduce disparities in crisis-affected areas. These insights offer valuable guidance for policymakers and practitioners to develop resilient, equitable health systems in resource-constrained settings facing diverse crises, contributing to global efforts to achieve universal health coverage and sustainable development goals.

Keywords

Health equity; community resilience; crisis response; Global South; health promotion; health literacy; adaptive health systems; intersectoral collaboration

Evidence for decision-making

1. Community-led health promotion interventions significantly increase service utilisation and health literacy among marginalised groups during crises, fostering resilience and equity.

2. Integrating mental health support with primary care enhances community resilience and health-seeking behaviours in post-disaster settings.

3. Culturally adapted mobile health technologies effectively bridge healthcare access gaps in remote or crisis-affected areas, improving health outcomes.

Introduction

Health inequities across the globe are exacerbated by crises, which disproportionately impact marginalised communities in the Global South (Stevano et al., 2021; Marmot et al., 2008). The World Health Organization (WHO) reports a life expectancy gap of up to 18 years between low- and high-income countries, which widens during crises (WHO, 2021). As Wasdani and Prasad (2020) report, for example, residents of urban slums in India faced disproportionate risks associated with COVID-19 due to structural constraints. In places like Mumbai, with population densities reaching 420 inhabitants per square kilometre, the "tight quarters and communal spaces of slums are natural conduits for a virus that relies on physical closeness to spread" (Wasdani & Prasad, 2020), creating environments where social distancing measures became practically impossible to implement. These conditions, combined with limited access to sanitation facilities and hand hygiene materials, exacerbated health inequities during the pandemic crisis. Addressing such inequalities requires context-specific health promotion interventions that enhance the resilience and health literacy of marginalised communities. Specifically, health literacy—the ability to access, understand, and use health information—is crucial for empowering communities to make informed health decisions during crises (Nutbeam, 2000).

This study explores factors that impede and, conversely, support community-level health promotion interventions, through three diverse case studies in the Global South: 1) the ongoing conflict in Nigeria, which has displaced over 2 million people and disrupted healthcare services (United Nations High Commissioner for Refugees [UNHCR], 2023); 2) the 2015 Nepal earthquake, which damaged 1,200 health facilities and affected millions (Nepal Ministry of Health, 2017); and 3) the Zika virus outbreak in Brazil, which led to over 3,700 cases of microcephaly and highlighted systemic health inequities (Pan American Health Organization [PAHO], 2017). These case studies represent a range of crises across three Global South countries, providing rich experiences to inform our analysis.

These countries were also selected for their significant socio-economic disparities, as measured by the Gini coefficient – a statistical measure of economic inequality that ranges from 0 (perfect equality) to 100 (perfect inequality). The coefficients reveal varying levels of inequality, with severe disparity in Brazil (53.4), and moderate inequality in Nigeria (35.1) and Nepal (32.8) (World Bank, 2021). Brazil's extreme inequality is further illustrated by income distribution: in 2019, the richest 10% of the population received 57% of

national income, while the bottom 50% received only 10% (World Inequality Lab, 2021). In Nigeria, approximately 40% of the population lives below the poverty line (World Bank, 2022), with stark regional variations: poverty rates reach 87% in the North East compared to 34% in the South West (Nigerian National Bureau of Statistics, 2022). Nepal's national poverty rate is 17%, with a marked urban-rural divide (16% in urban areas versus 27% in rural areas) (National Statistics Office, 2021). Moreover, it is likely that the true scale of economic challenges faced by rural communities in Nepal—where around 80% of the population resides—is masked by official figures. Potential factors contributing to this underestimation include survey limitations and the potential masking effect of remittance income from urban-based workers (US Census Bureau, 2023).

Strong community relations serve as a foundation for successful health and development initiatives in Northeast Nigeria.

Indeed, rural and marginalised communities face greater barriers to accessing healthcare than urban populations in all three countries. In Brazil, while 95% of urban residents live within 5 km of a primary healthcare facility, this drops to 68% in rural areas (PAHO, 2022). In Nigeria, only 20% of rural communities have access to essential healthcare services within a 5 km radius, compared to 75% in urban areas, with the remaining rural populations typically travelling about 10-25 km to reach healthcare facilities (National Population Commission, 2023). In Nepal, the mountainous terrain presents significant challenges, with rural residents having to walk an average of 4 hours to reach the nearest health facility, equivalent to approximately 15-20 km depending on the terrain (Nepal Ministry of Health and Population, 2022).

Shortages of healthcare professionals also manifest differently across urban and rural settings in all three countries. Nigeria reports 0.38 doctors per 1,000 population nationally, with urban areas averaging 0.59 doctors per 1,000 compared to 0.14 per 1,000 in rural regions (WHO, 2023). Brazil shows the starkest urban-rural divide, with an overall national average of 2.1 doctors per 1,000 population but just 0.3 doctors per 1,000 in rural areas (Brazilian Medical Council, 2023). In Nepal, there is also a significant disparity, especially when comparing the capital city, Kathmandu, to rural areas. According to a recent study (Karki et al., 2024), there is one doctor for every 850 people in the Kathmandu Valley, while in remote districts this ratio drops significantly to 1 per 150,000. Additionally, a substantial number of medical

officer positions remain unfilled in rural Nepal, with a vacancy rate of 47% across all districts (Ghimire et al., 2003). Moreover, even in cases where these positions are officially filled, the actual presence of medical officers is often uncertain (Pathak, 2006).

Healthcare funding mechanisms vary significantly across the three countries. Brazil operates a decentralised, public healthcare system which provides free and universal healthcare to all citizens (Massuda et al., 2018; The Commonwealth Fund, 2023). Nigeria employs a mixed healthcare system combining public and private sectors, with significant reliance on private funding due to gaps in public healthcare provision, resulting in out-of-pocket payments accounting for 77% of total health expenditure (WHO Global Health Observatory, 2023). Nepal's healthcare system is similarly mixed, with both public and private sectors providing services (Nepal Ministry of Health and Population, 2022), although only 17% of the population is covered by the social health insurance system (Nepal Health Insurance Board, 2023). The countries also differ in terms of overall investment in the healthcare system, with Brazil investing 9.6% of GDP in healthcare, Nigeria 3.9% (WHO, 2023), and Nepal 5.4% (Nepal Health Insurance Board, 2023).

Life expectancy variations among the three countries reflect complex intersections of healthcare access and socio-political factors. Nigeria's life expectancy of 54.7 years is particularly low, influenced by both direct conflict-related mortality, and indirect effects of conflict on healthcare delivery, including the destruction of health infrastructure, displacement of healthcare workers, and disruption of supply chains for essential medicines and equipment (World Bank, 2023; WHO Regional Office for Africa, 2023). In contrast, Brazil and Nepal maintain higher life expectancies of 75.9 and 70.8 years respectively, linked to their more stable healthcare systems, despite persistent rural-urban disparities (World Bank, 2023).

In this context, this reflective piece seeks to address the following questions:

1. What are some common factors impeding and, conversely, supporting equitable access to healthcare and health promotion interventions during diverse crises in different Global South contexts?
2. What key lessons can be learned across the case studies about using context-specific health promotion and literacy interventions to bridge health inequity gaps and build community resilience?
3. How can these interventions be effectively implemented to enhance resilience in the face of diverse crises?

By examining these questions, we aim to contribute to an understanding of the complex interplay between health systems, community dynamics, and shock events, informing both academic discourse and policy development.

In terms of policy implications, the findings seek to contribute to the goals of achieving universal health coverage, building sustainable health systems, and enhancing community resilience in the Global South. The insights are expected to guide the development of context-specific, evidence-based policies and interventions supporting Global South countries' efforts to ensure good health and well-being during crises, aligning with SDGs 3 (good health and well-being) and 10 (reduced inequalities). The findings are particularly relevant to the implementation of the Pact for the Future, specifically action 54 on strengthening international response to complex global shocks (UN, 2024).

Overall, this piece provides actionable knowledge for policymakers, health practitioners, and community leaders working to build more resilient and equitable health systems in the Global South. By addressing the complex factors influencing health promotion and literacy during crises, we offer a roadmap for evidence-based interventions that empower communities to be able to withstand and recover from shocks, safeguarding hard-won gains in health and development.

Methodological and ethical considerations

This systematic review initially selected 60 full-text articles, which were then screened using the following criteria: peer-reviewed, English language, published between 2015 and 2025, primary research on health promotion during specific crises, explicit statement of study methodology, and adherence to ethical standards. On this basis, the final sample comprised 22 peer-reviewed articles on health promotion interventions during crises in Nigeria (n=10), Nepal (n=7), and Brazil (n=5). The variation in the number of articles per country reflects the uneven availability of research, with greater scholarly attention paid to the Nigerian conflict compared to Nepal's earthquake response and Brazil's Zika outbreak. This led to a more detailed analysis of Nigeria, although efforts were made to ensure rigour across all contexts. Ethical scrutiny revealed varying levels of compliance. Nigerian studies generally upheld strong ethical standards, while some Nepali studies showed gaps in documenting ethical considerations for vulnerable populations. Brazilian studies were generally robust but lacked community engagement in research design. Gaps identified include inconsistent reporting of informed consent and limited privacy protections.

While these limitations do not undermine the findings, they underscore important considerations for future research in crisis contexts.

Articles were sourced using the PubMed, CINAHL, and Web of Science databases. Data analysis was carried out using NVivo 14 for thematic coding and Sci-Space for bibliometric analysis, using both deductive and inductive coding approaches. Analysis aimed to identify both inhibiting and supporting factors in health promotion interventions, with themes developed based on the relevance of codes. The discussion synthesises insights from all three case studies to highlight effective, context-specific strategies for health promotion and community resilience. Limitations include reliance on published literature, which may miss relevant interventions and perspectives, and a focus on English-language publications that could exclude significant studies.

Results

The systematic review yielded significant insights into health promotion interventions during crises in the Global South. The findings are presented according to the research questions.

Factors impeding and supporting equitable access to healthcare and health promotion interventions

Nigeria: Conflict-induced health inequities

In Nigeria, the protracted conflict in the Northeast has severely impacted healthcare access. According to a WHO report (2016), one-third of more than 700 health facilities in Borno State, Northeastern Nigeria, have been completely destroyed, with another 29% partially damaged. Of those facilities not destroyed, 31% are not functioning, mainly due to a lack of access resulting from insecurity. The report also revealed that almost 60% of health facilities have no access to safe water, with 32% having no access to water at all, significantly reducing the population's access to essential healthcare services.

Beyond healthcare, the conflict also impeded critical health promotion interventions, further exacerbating health inequities. For example, the breakdown of sanitation infrastructure led to cholera outbreaks in camps for internally displaced people (IDPs), highlighting how the impact of the conflict on public health measures contributed to poorer health outcomes among displaced populations (Nuhu & Yusuf, 2018). Similarly, the disruption of

disease surveillance in insecure areas hindered the detection and reporting of emerging health threats, leaving vulnerable communities more exposed (Nnadi et al., 2017; Ekezie et al., 2018). These breakdowns in health promotion activities, such as sanitation and disease monitoring, further widened health disparities between conflict-affected populations and those in more stable regions. Also, Adesina et al. (2020) report that poor humanitarian access severely restricts the provision of mental health and psychosocial support (MHPSS) services in conflict-affected areas of Northeast Nigeria. While some organisations like the International Organization for Migration (IOM) and Street Child of Nigeria have established limited presence in Adamawa, Borno, and Yobe States, many parts of Borno remain inaccessible to humanitarian organisations, leaving affected populations without critical mental health services during a time of severe psychological trauma (Adesina et al., 2020).

The Boko Haram insurgency significantly disrupted health service delivery, yet several adaptive mechanisms emerged to maintain essential health services despite these challenges. For instance, in Yobe State, as documented by Ager et al. (2015) indigenous community health care workers demonstrated remarkable commitment by returning to their posts when security conditions allowed, while local communities played a vital role in facilitating access to care through arranging transportation and providing security information. In this case, the state government's political will proved instrumental through financial support, employment policy changes, and staff incentives that helped retain health workers in volatile conditions. Operational adaptations—including the restructuring of shifts to accommodate curfew restrictions, and the implementation of more resilient drug supply chains with three-month instead of one-month supplies—enabled continuity of care. These coordinated responses between healthcare staff, communities, and government represent systematic health system adaptations that maintained essential services during conflict. The study reveals how, despite severe security constraints and workforce depletion, these adaptive mechanisms helped preserve healthcare access for vulnerable populations, highlighting the importance of local ownership, community engagement, and policy flexibility in building health system resilience in conflict settings.

The complexity of health system strengthening in fragile and conflict-affected states requires innovative approaches that address scarcity challenges. As Landry et al. (2021) emphasise in their call to action, fragile contexts often call for creative solutions when resources are limited and basic necessities take priority over healthcare. Community-based

initiatives have emerged as vital components of mental health service delivery in these settings, particularly as mental health care is frequently neglected in low- and middle-income countries, despite being an essential service. The development and implementation of frameworks like RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) shows promise for evaluating complex interventions in humanitarian crisis settings, ensuring that health system improvements are both effective and sustainable. These approaches align with the urgent need to strengthen health systems in fragile contexts if SDG 3 (good health and well-being) is to be achieved by 2030.

MHPSS services in Nigeria's conflict regions involve collaboration among multiple stakeholders to address mental health needs. Adesina et al. (2020) highlight the importance of culturally appropriate interventions and community engagement, whereby organisations work with community leaders to design interventions that are sensitive to local cultures, and recruit volunteers who can communicate in local languages. Here, recommendations include using existing community resources and structures, with the authors suggesting that "cultural practices that allow for communal and extended living should be encouraged" (Adesina et al., 2020, p.21). This strategy of integrating local cultural contexts and community resources aligns with best practices in humanitarian response.

Nepal: Post-earthquake health system challenges

The 2015 earthquake in Nepal presented unique challenges for healthcare access. Immediate post-disaster barriers included the physical destruction of facilities and disruption of supply chains. According to Goyet et al. (2018), 662 (84%) of the 793 public health facilities in the 14 most affected districts were destroyed or partially damaged. The recovery was gradual – by December 2016, 375 health facilities (57% of all damaged health facilities) had been repaired or rebuilt with support from various organisations. However, 61 (20%) of 304 health facilities monitored after February 2016 contained buildings that had been declared unsafe by the authorities, with no major improvement over time. Additionally, the situation was exacerbated by a 4-month closure of the border between India and Nepal, resulting in fuel and medicine shortages, further limiting healthcare provision during the recovery period (Goyet et al., 2018).

The consequences of Nepal's 2015 earthquake included significant challenges related to water and sanitation. Hall et al. (2017) note that water sources suffered damage, and that most people affected by the disaster did

not prioritise hygiene practices such as boiling water. Adhikari et al. (2016) provide concrete data showing that 74% of water samples from earthquake-affected areas were reported to be unsuitable for drinking, and that 38% of households in these areas lacked toilet facilities, creating conditions ripe for disease outbreaks. Moreover, likely as a result of limited resources, greater attention was paid to medical care than to disease prevention and health promotion. Adhikari et al. (2016) point out that although there were calls for preventive measures such as health education, health promotion, and training embedded in community engagement, on the whole these were not implemented. This limited scope of health promotion may have contributed to the increased risk of cholera outbreaks, further burdening the already strained healthcare system (Khan et al., 2018). Also, socio-economic factors and cultural barriers, such as traditional beliefs, have contributed to poor health literacy among communities, limiting their engagement and participation in crucial health promotion initiatives (Ibbotson et al., 2021). Such limitations were exacerbated by a disconnect between existing national policies and their real life application (Hall et al., 2017). In response to the call for a bottom-up approach in policy formation (for example Hall et al., 2017), a revision of such policies should be carried out to bring them in line with current realities.

Problems experienced in the aftermath of the earthquake highlighted the need to look inwards, building local capacity to respond and recover from the crisis. Hall et al. (2017) reported that because aid took several days to get to those who needed it, “disaster-affected communities had to look to themselves and their neighbours for aid.” Also, stakeholders pointed out that NGO and government promises of aid led to dependency, and that public expectations were sometimes greater than available aid (Hall et al., 2017). This highlights the need for capacity building among local communities, to enable them to respond to local emergencies, and providing them with the resilience to recover rapidly.

Mobile medical camps were key in the response to the 2015 Nepal earthquake, addressing immediate healthcare needs and facilitating recovery efforts. These temporary facilities were essential in providing medical services in the aftermath of the disaster, particularly in areas where local health infrastructure was severely damaged. Baskota et al. (2024) note that the establishment of these field hospitals and rehabilitation centres was vital for managing injuries and providing comprehensive care, including physiotherapy and prosthetic services, recognising that the integration of public and private sectors in healthcare delivery improved access to health services and timely emergency responses. For instance,

Chauhan and Chopra (2017) report that mobile surgical teams, such as those from the Indian Army, treated over 7,500 patients and performed 105 surgeries, highlighting the effectiveness of rapid deployment in remote areas.

Additionally, the role of female community health volunteers (FCHVs) in these mobile health camps was crucial (Rawat et al., 2023). Prior to the earthquake, FCHVs primarily provided basic promotive and preventive care. However, in the post-earthquake context, their responsibilities expanded to include treating the injured, providing psycho-social support, and empowering and mobilising communities. Their role also includes delivering supplies, connecting patients with appropriate health facilities, providing guidance to medical personnel, and conducting disease surveillance to prevent infectious outbreaks (Rawat et al., 2023).

Brazil: Zika virus and health system responsiveness

The Zika virus outbreak in Brazil in 2016 highlighted significant socio-economic disparities in healthcare access and disease burden. The disproportionate impact of the outbreak became evident as the incidence of congenital Zika syndrome was markedly higher in economically disadvantaged regions, establishing a clear correlation between lower healthcare access and heightened disease burden (De Amorin Vilharba et al., 2023). A study conducted by Souza et al. (2018) in Recife analysed the ecological distribution of Zika-associated microcephaly cases and identified a significant clustering in low-income neighborhoods. Diderichsen et al. (2018) also found that Zika virus infection in Brazil was linked to poor housing conditions, which is a function of the socio-economic status of a household and therefore linked to social inequalities. Another barrier that disproportionately affected lower-income populations was limited access to preventive measures and healthcare services. Women in low-income communities often lacked the financial means needed to protect themselves from mosquito-borne diseases or seek timely medical care (Anderson et al., 2020). Health inequalities that pre-exist within society are often exacerbated during times of crisis. For example, in general, women from low-income groups faced significant obstacles in accessing critical healthcare services amid the crisis (Tomasiello et al., 2024). This disparity was particularly pronounced among Venezuelan migrant women in Brazil, who incurred substantial out-of-pocket healthcare expenses. This situation underscored their financial vulnerability and the systemic barriers limiting their access to essential health services (Ochoa-Moreno & Moreno-Serra, 2024).

A significant factor supporting improved health outcomes was the expansion of Brazil's Family Health Strategy (FHS) program. This initiative has demonstrated remarkable effectiveness, particularly in addressing health disparities across population groups, with a 2024 study revealing a substantial (25%) reduction in infant mortality rates in municipalities with high FHS coverage, compared to only 11% in areas with low coverage (Dias, 2024). The FHS has proved especially impactful through its preventive interventions and home care services, which notably influenced post-neonatal mortality rates. Beyond maternal and infant health, the program has made significant strides in mental healthcare delivery, with evidence showing that its continuous follow-up and humanised approach led to measurable reductions in depressive symptoms among patients (Leandro, 2025). Critical to this success has been the strategy's integration of family support networks, which proved particularly valuable for enhancing mental health outcomes in underserved rural communities.

Through the scale-up of the FHS program, the Brazilian government was able to leverage its extensive network of community health workers to rapidly disseminate information about Zika prevention, facilitate early detection, and connect affected individuals to the necessary medical services. This targeted, community-based approach helped mitigate the disproportionate burden on lower-income Brazilians during the outbreak.

Key lessons on context-specific health promotion and health literacy interventions

Some of the key lessons emerging from the three case studies in relation to context-specific health promotion and health literacy interventions are as follows:

1. Community engagement: In all three contexts, interventions that actively involved local communities showed greater success. In Nigeria, mobile outreach programs in Adamawa State significantly improved maternal and child health indicators, including a 21% increase in antenatal care coverage and an 18% rise in institutional delivery rates (Hamman et al., 2023). The effectiveness of community engagement was further substantiated by research in Jigawa State, which emphasised the critical importance of incorporating local knowledge in designing health interventions through participatory approaches (Iuliano et al., 2023). This research highlighted that community cooperation and empowerment were not merely beneficial, but in fact essential components for intervention success.

Moreover, communities with high levels of internal cohesion and effective problem-solving capabilities saw better intervention outcomes, underscoring how strong community relations serve as a foundation for successful health and development initiatives in Northeast Nigeria (Iuliano et al., 2023). In Brazil, programs that involved local populations, especially vulnerable groups, demonstrated improved health outcomes and increased knowledge about Zika (Nachtnebel & Kutalek, 2022). Nachtnebel and Kutalek (2022) report that community participation was vital in raising awareness and implementing preventive measures against Zika virus transmission.

2. Leveraging local community resources, including social capital, in crisis response and recovery efforts: Rather than utilising external aid teams, the use of existing local structures, resources, and social capital in response to crises or recovery in Global South communities can provide lasting gains. Nachtnebel and Kutalek's (2022) review of community participation and engagement in the response to the Zika virus outbreak in Latin America (including Brazil) (2015-2019) revealed that building on local capacities is important not only to save costs, but to understand the circumstances, have an impact on existing services on a government, community, and individual level, and to work on the expansion of these existing services and programmes. Their findings also demonstrate that collective community actions can raise social awareness and neighbourhood responsibility, therefore strengthening the implementation and success of interventions, and enabling many community members to participate, thus improving common outcomes.

   Using evidence from Nepal on community-based recovery, Aryal et al. (2018) find that communities with robust social networks demonstrated improved recovery capabilities following disruptions. Their study highlights how family connections, neighborhood ties, and broader community relationships acted as forms of "informal insurance" during recovery, facilitating access to essential resources, information, and emotional support. Specifically, Aryal et al. (2018, p.177) assert that "social ties can serve as an informal recovery structure, providing victims with information, financial help, and physical aid". This relationship illustrates how social bonding within local contexts can function as a vital safety net. In practical terms, the local Nepalese communities formed small cooperative groups to

assist their immediate surroundings, as reported by Aryal et al. (2018, p. 178): "The local people started forming small groups and helping the nearest locality, as immediate rescues were needed. People provided assistance to their neighbors". Key lessons here include that during and after crises, external aid mechanisms to Global South nations, together with actors at the sub-national and local community level, should promote the development of such local networks, supporting and funding these initiatives to expedite community recovery and foster community resilience against future disruptions.

3. Inclusion of mental and psychosocial support in crisis response and recovery: There is a real need for mental health and psychosocial support and promotion in crisis situations. In Nigeria, Giardinelli (2017) reports that many of the victims of the conflict in the Northeast conflict complain of deep fear, sleeplessness and/or nightmares, generalised anxiety, and unexplained somatic symptoms, such as body pain, stomach aches and headaches. Women and girls in particular are often marginalised and stigmatised by their communities, who fear that former abductees could have been radicalised. A mental health and psychosocial needs assessment conducted in IDP camps in Yola, Northeast Nigeria, revealed that a significant majority of respondents reported pervasive feelings of sadness and negative emotional states linked to their experiences of displacement amid ongoing violence (Giardinelli, 2017). Continued uncertainty about their futures, coupled with a yearning to return to their homes, emerged as a critical factor exacerbating these negative psychological responses. Furthermore, the research indicated that all participants—victims of conflict—experienced various forms of loss due to displacement, which included the loss of property (notably homes), death or separation from loved ones, and a diminished sense of identity and social status (Giardinelli, 2017). In terms of the response to these needs, Giardinelli (2017) reports that a recent intervention led to a significant reduction in the severity of depressive symptoms among adolescents residing in IDP camps, underscoring the potential efficacy of targeted psychosocial support strategies (Adesina et al., 2024). However, Giardinelli (2017) also observes that while numerous international aid organisations, such as IOM, UNICEF, Médecins Sans Frontières, and the United Nations Population Fund, provided mental health and psychosocial support specifically tailored to those within IDP camps, there remained a substantial gap in service provision

for the majority of displaced individuals who sought refuge in areas outside the designated camps.

In Brazil, research indicates that interventions tailored to meet the specific cultural needs and dynamics of Brazilian families lead to better mental health outcomes, especially for those with children suffering from congenital Zika syndrome (Lisboa et al., 2024; Williams et al., 2022). This approach fosters equity and inclusivity in the delivery of mental health care (Toktas, 2024). By incorporating local cultural beliefs and practices into interventions, practitioners can create more supportive environments for affected families, while also enhancing the relevance and sustainability of mental health services.

4. Technology integration: Mobile technology applications proved valuable during the Zika virus outbreak in Brazil in addressing multiple aspects of the public health response. The ZIKA app enhanced surveillance efficiency through real-time data collection and route optimisation for health workers (Kostkova et al., 2019), while the ZIKA system technology facilitates Zika virus response by serving as an integrated platform that combines e-learning for health agents, citizen-driven participatory reporting, and real-time forecasting of virus and vector distribution (Beltrán et al., 2018). This comprehensive framework leverages community engagement through participatory surveillance, allowing citizens to contribute crucial field data. The system recalibrates prediction models using this crowdsourced information along with data from health agents, government institutions, and weather stations to generate interactive risk maps, enabling authorities to make rapid, informed decisions and allocate resources efficiently to prevent Zika outbreaks. Additionally, the zCare application helped bridge healthcare gaps by providing accessible information and training to caregivers of children with congenital Zika syndrome when formal services were limited (Kalantari & Motti, 2018). These technological interventions demonstrate how mobile applications can strengthen public health responses during disease outbreaks by improving data collection, communication, resource distribution, and support for affected families.

5. Ensuring equitable healthcare access in crisis regions: Despite significant challenges, there have been notable gains and insights regarding equitable healthcare access in crisis-affected regions in Nigeria. The Northeast of Nigeria, which has been particularly impacted by the Boko Haram insurgency, presents a complex

landscape for healthcare delivery in areas controlled by non-state militia groups. As highlighted by the International Peace Institute (IPI, 2019), there is a paucity of data regarding the healthcare needs of populations in these conflict zones, and a primary reliance on information from IDPs who indicate acute healthcare shortages. The Nigerian government's role in granting or denying access further complicates the operational landscape for humanitarian organisations, undermining their ability to adhere to principles of neutrality and impartiality (IPI, 2019). Nevertheless, humanitarian actors are actively promoting healthcare access by strengthening disease surveillance systems, enhancing preparedness for outbreaks, expanding mobile health teams to reach isolated populations, reinforcing secondary healthcare services, rehabilitating high-priority health facilities, and improving health sector coordination at the local government level (WHO & Federal Government of Nigeria, 2018). Despite the establishment of coordination frameworks such as the Humanitarian Country Team and the Inter-Sector Working Group in the Northeast, as well as the Access Strategy for Borno State (2018), progress in providing healthcare to areas beyond government control has been limited. Most NGOs prioritise improving responses in regions where they have established access, before expanding into non-state controlled territories. Consequently, the only significant healthcare intervention reported in some of these inaccessible areas is a polio immunisation campaign conducted by the NGO eHealth Africa, which is funded by the Bill and Melinda Gates Foundation. This initiative operates with escorts from the Civilian Joint Task Force, a militia formed to combat Boko Haram, as well as support from the Nigerian military to facilitate vaccine distribution in areas engaged in military operations (WHO, 2017).

In the aftermath of the earthquake in Nepal, a crucial intervention in healthcare access was the WHO initiative to engage and train a cohort of 12 Nepalese physicians. These trained doctors provided essential technical assistance to the districts most affected by the disaster (Goyet et al., 2018). According to Goyet et al. (2018), a critical insight gained from this experience was that local medical professionals, equipped with the appropriate expertise and training, can significantly enhance the disaster recovery efforts of health authorities. Their involvement not only supports the management of public health challenges, but also alleviates the operational burdens faced by these authorities during the recovery phase.

Effectiveness of interventions that helped bridge health inequalities and improve service delivery

The effectiveness of context-specific interventions varied across settings. In Northern Nigeria, facility health committees have emerged as crucial mechanisms for improving maternal, newborn, and child health (MNCH) service utilisation. Oguntunde et al. (2018) document how these committees effectively addressed barriers to healthcare access through systematic community engagement and targeted interventions. Their evaluation demonstrated the committees' efficacy in facilitating improved service utilisation patterns, particularly among traditionally underserved populations, through strategic coordination between community stakeholders and healthcare providers.

Nepal's post-earthquake resilience was significantly enhanced through the Comprehensive Health Resilience Program. Implemented in 14 severely affected districts, this program integrated mental health support with primary care, resulting in a 55% reduction in post-traumatic stress symptoms and a 30% increase in health-seeking behaviours among earthquake survivors between 2016 and 2021 (Dhungana et al., 2022).

In Brazil, the Zika virus response revealed significant regional differences in approach to addressing health inequalities. Ceará State demonstrated effective intervention through its Centers for Early Stimulation. These were set up throughout the region, located within polyclinics, and they improved access to specialised care for families in vulnerable and remote areas affected by congenital Zika syndrome (De Albuquerque et al., 2024). This strategic decentralisation of services, supported by public health consortiums and partners such as the Center for Treatment and Early Stimulation of the Federal University of Ceará, helped reduce the burden on families seeking multiple care services for their children. By contrast, Rio de Janeiro's response highlighted challenges in coordinating care networks, with the fragmentation of services leading to duplication and difficulties in providing comprehensive care to affected populations in more vulnerable regions.

Discussion of findings

The systematic review of health promotion interventions during crises in Nigeria, Nepal, and Brazil provides significant insights into health system constraints and equity challenges in Global South contexts. These case

studies underscore not only the structural barriers that hinder health access during crises, but also the potential of context-specific interventions to mitigate inequity, albeit within the limits of existing systems.

In Nigeria, the protracted conflict exemplifies severe degradation of health system functionality, with the destruction of approximately one-third of over 700 health facilities in Borno State highlighting a core erosion of health system capacity (WHO, 2016). The adaptive mechanisms identified by Ager et al. (2015)—including the mobilisation of indigenous community health workers and the articulation of political will by state governments—demonstrate the potential of community-driven approaches to offset systemic deficiencies. This aligns with the broader literature on health system resilience in conflict environments, particularly with respect to the critically underserved domains of mental health and psychosocial support services (Adesina et al., 2020).

Collective community actions can raise social awareness and neighbourhood responsibility, therefore strengthening the implementation and success of interventions and participation

In the context of Nepal, the aftermath of the earthquake exposed pre-existing vulnerabilities that exacerbated healthcare disruptions. The initial damage to 84% of health facilities in affected districts (Goyet et al., 2018) revealed the fragility of health infrastructure in resource-constrained settings. While there was some recovery, with 57% of damaged facilities repaired or rebuilt by December 2016, persistent challenges remained, particularly regarding the safety of existing structures. The deployment of mobile medical camps and field hospitals (Baskota et al., 2024) effectively providing critical services, and the expanded role of female community health volunteers (FCHVs) in delivering psychosocial support and navigating patient referrals, underscore important adaptive capabilities in emergency response (Rawat et al., 2023).

Brazil's response to the Zika virus outbreak highlights the intersection of socio-economic disparities with health system efficacy. The disproportionate burden on economically disadvantaged populations, particularly the elevated incidence of congenital Zika syndrome in low-income neighborhoods (Souza et al., 2018; De Amorin Vilharba et al., 2023), illustrates how entrenched health inequities can magnify disease impacts during public health emergencies. Notably, the effectiveness of the FHS in reducing infant mortality and improving mental health outcomes through its

community-oriented model and integration of family support networks (Dias, 2024; Leandro, 2025) illustrates the capacity of systematic primary care interventions to address health disparities, despite ongoing implementation challenges.

Across these three contexts, community engagement emerges as a key theme. In Nigeria, such interventions have yielded improvements in maternal and child health metrics (Hamman et al., 2023), while research underscores the need to incorporate local knowledge into health intervention design (Iuliano et al., 2023). In Brazil, programs engaging local populations improved health outcomes and increased public awareness regarding Zika (Nachtnebel & Kutalek, 2022).

The role of local social capital during crisis responses is particularly salient in Nepal, where communities with strong social networks exhibited enhanced recovery capacities (Aryal et al., 2018). Such social ties acted as "informal insurance," facilitating access to vital resources, information, and emotional support. Relatedly, Nachtnebel and Kutalek (2022) report that collective community actions in Brazil raised social awareness and neighborhood accountability, bolstering the effectiveness of interventions.

The critical need for mental health and psychosocial support in crisis settings is underscored across all studied contexts. Evidence from Nigeria indicates considerable psychological distress among conflict-affected populations (Giardinelli, 2017), revealing a significant gap in service provision, particularly for displaced individuals outside formal camps. In Brazil, culturally-tailored interventions for families affected by congenital Zika syndrome correlated with improved mental health outcomes (Lisboa et al., 2024; Williams et al., 2022).

Technological integration in public health responses, exemplified by Brazil's utilisation of the ZIKA app and the ZIK system (Kostkova et al., 2019; Beltrán et al., 2018), illustrates how mobile technology can enhance disease outbreak responses through improved data aggregation, communication, and resource distribution.

The experiences of Nepal, Nigeria, and Brazil provide valuable insights into the effectiveness of localised health interventions amid structural challenges in Global South health systems. Nepal's introduction of WHO-trained local physicians in disaster-affected districts (Goyet et al., 2018) illustrates how enhancing local expertise can significantly bolster disaster recovery and health service delivery. In Nigeria, the establishment of facility health

committees has shown positive results in increasing the use of maternal, newborn, and child health services through systematic engagement with community stakeholders (Oguntunde et al., 2018). Meanwhile, Brazil's Centers for Early Stimulation in Ceará have facilitated access to specialised care for families impacted by congenital Zika syndrome, underscoring the importance of targeted support in vulnerable populations (De Albuquerque et al., 2024).

These case studies suggest that while strategic, targeted interventions can indeed foster substantial improvements in health equity, their success is often limited by broader systemic issues inherent within health systems in the Global South. The effectiveness of community-based initiatives, culturally tailored interventions, and the integration of technology reflects critical lessons for future health initiatives, highlighting the need for ongoing investment and the strengthening of health systems to tackle underlying inequities.

Future research endeavours should focus on the long-term sustainability of these successful interventions in resource-limited environments durings shocks or crises, as well as the mechanisms for scaling effective strategies while navigating existing systemic constraints. Additionally, a thorough examination of the role of global health governance frameworks in either perpetuating or mitigating health system challenges in the Global South will provide crucial context for understanding the complex determinants of health equity in these regions, especially during shocks.

Conclusion: Advancing health equity in crisis contexts

This detailed analysis of health interventions across Nigeria, Nepal, and Brazil underscores the urgent need to rethink health system resilience within the Global South. Our findings emphasise that effective responses to crises extend beyond immediate relief efforts; they require the development of sustainable, community-oriented health ecosystems that can endure and adapt to systemic disruptions.

Transformative health equity fundamentally hinges on recognising the agency of communities and leveraging local expertise. The research illustrates that robust responses are rooted in empowering local healthcare practitioners, integrating indigenous knowledge systems, and constructing adaptive infrastructures that can be rapidly reconfigured during crises. This paradigm demands a significant shift from traditional top-down approaches to health interventions, advocating instead for decentralised

governance models that enhance local capabilities and respect community decision-making processes.

Mental health and psychosocial support emerge as critical, yet frequently neglected aspects of crisis response. The case studies highlight the profound psychological ramifications of conflict, natural disasters, and public health emergencies, underscoring the pressing need for culturally-attuned mental health interventions. It is essential for governments and international organisations to move beyond a view of mental health as a secondary issue, and weave comprehensive psychological support into the fabric of crisis response strategies. This requires substantial investment in training local healthcare providers in trauma-informed care, and fostering community-based support networks that cultivate psychological resilience.

Technological innovation emerges as a viable strategy for tackling health system challenges. Brazil's experience notably illustrates how mobile technologies and digital platforms can enhance disease outbreak responses, refine data aggregation, and streamline communication. However, technology alone is not a silver bullet. Its potential is fully realised only when it is intricately linked to local contexts, and developed through collaborative practices that emphasise local technological capacity building, and facilitate knowledge sharing and rapid innovation.

Social capital also emerges as a crucial determinant of health system resilience. Communities characterised by strong social networks exhibit remarkable adaptive capabilities, functioning as informal support systems that provide access to vital resources, information, and emotional support. This signals a need for health interventions that explicitly acknowledge and bolster existing community social networks, moving away from conventional service delivery models towards more integrated, holistic approaches to health and well-being.

Addressing structural inequities remains the most formidable challenge. The case studies starkly illustrate how pre-existing socio-economic disparities are exacerbated during crises, disproportionately affecting vulnerable groups. Future health initiatives must implement multi-sectoral strategies that confront the underlying drivers of health vulnerabilities, extending beyond immediate healthcare provision. This approach requires robust data collection systems that can identify and monitor health disparities, targeted interventions for marginalised populations, and a steadfast commitment to addressing the broader social determinants of health.

As global health stakeholders face increasingly complex challenges—ranging from climate-induced disruptions to sustained conflicts and emerging health threats—our research presents a transformative vision. The most effective responses are those that originate from the ground up, anchored in local knowledge, driven by community resilience, and backed by responsive, adaptable health systems. Success is not found in uniform solutions, but in developing adaptive frameworks that acknowledge the unique strengths, challenges, and potentials of each community.

The future of global health equity relies on our collective capacity to listen, adapt, and co-create solutions that transcend conventional boundaries. It requires a fundamental rethinking of health system design, centred around community agency, culturally relevant technological innovation, and a commitment to tackling entrenched inequities that undermine health and well-being. As we move forward, this approach not only provides a methodology for crisis response, but also paves the way for more equitable, resilient, and compassionate global health systems.

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TAKING RESPONSIBILITY FOR INTERNATIONAL SECURITY: NON-STATE ARMED GROUPS AND UNDER-GOVERNED SPACES IN THE GLOBAL SOUTH

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TAKING RESPONSIBILITY FOR INTERNATIONAL SECURITY: NON-STATE ARMED GROUPS AND UNDER-GOVERNED SPACES IN THE GLOBAL SOUTH

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Abstract

Insufficient attention is given to the ways in which under-governance in ostensibly stable Global South states hinders international security. Non-state armed groups (NSAGs) that participate in transnational threat networks flourish in under-governed spaces, yet little attention is paid to the non-security features that allow NSAGs to thrive. Using the case studies of Jamaica and Trinidad & Tobago, this research aims to understand why enclaves within their national boundaries remain under-governed, thus perpetuating the local and transnational security threats posed by NSAGs. The case studies are analysed within the broader regional context, where examples of NSAGs' potential to integrate into transnational threat networks are found, while Peru stands as an example of successful mitigation of NSAG through land tenure regularisation. The findings provide insights into governance challenges and strategies to mitigate NSAG influence, offering evidence-based solutions and policy recommendations aimed at enhancing governance and international security.

Keywords

Under-governed spaces; non-state armed groups (NSAGs); international security; land tenure regularisation; transnational threat networks

Evidence for decision-making

1. Criminal gangs, terrorist groups, and militant insurgent groups exploit under-governed spaces in Global South countries, contributing to high violence rates, drug trafficking, and international terrorism.

2. Effective legibility, territorial control, and land tenure regularisation reduce the potential for the formation of NSAGs and their influence in under-governed spaces, thereby enhancing national and international security.

3. Political expediency is the primary reason that governments fail to address the proliferation of under-governed spaces.

4. There is a high probability that NSAGs flourishing in under-governed spaces collaborate or become co-opted by transnational illicit networks, posing a danger to both national and international security.

5. Improved land use regulations can diminish NSAG influence by integrating informal settlements into formal governance, thus reducing safe havens for armed groups.

Introduction

The proliferation of threat networks throughout the Global South became the central security concern for the liberal international order upon the Soviet Union's dissolution, particularly after Al-Qaeda successfully prosecuted the 9/11 attack on the United States (Abrahamsen & Sandor, 2018). Owing to their relative underdevelopment, Global South states were simultaneously viewed as passive actors in international security affairs and vulnerable to penetration by such networks. Consequently, developed countries adopted a strategy of coordinating security assistance and development aid to fortify weaker states against transnational threats. However, with the re-emergence of Great Power competition in the twenty-first century, major international players refocused on the threat of conventional war. Southern states have since become more active as intervenors when security threats arise in weaker countries, notably increasing participation, for example, in United Nations peacekeeping missions (Abrahamsen & Sandor, 2018). However, insufficient attention is given to the ways in which even ostensibly stable Global South states undermine international security by neglecting to secure their own territorial integrity, thereby allowing non-state armed groups (NSAGs) to flourish and participate in transnational threat networks.

Advancing technology empowers NSAGs—criminal gangs, insurgencies, terrorists, and hybrids—to unite, expand capabilities, and deepen their threat to global peace.

Advancing technology enables NSAGs, such as criminal gangs, insurgencies, terrorist cells, and hybrid organisations, to continue to converge, augment their capabilities, and extend their reach, further exacerbating their collective threat to global peace (Realuyo, 2016; United Nations, 2023b). Developing countries' security forces, such as those in Jamaica and Trinidad & Tobago, often struggle to keep pace with NSAGs' evolving capabilities and strategies, even with continued security assistance agreements with Northern partners such as the Caribbean Basin Security Initiative. While enhancing security forces' capacity to confront transnational NSAGs remains critical, less attention is paid to the non-security features that allow NSAGs to thrive, participate in international threat networks, and undermine democracy.

Research has shown that NSAGs thrive in developing countries with under-governed spaces, which can be co-opted as safe havens for their unlawful operations (Blake, 2022; Frank, 2022; Frank & Bartels, 2022).

Under-governed spaces are regions where the state's control is tenuous. These areas are often insulated from central authority, with local solidarities that challenge state power. Moreover, these areas are characterised by a sparsity of legitimate and enforced institutions, as well as being relatively inaccessible and largely illegible to the state. Historically, such regions have provided safe havens for resistance movements, criminal activities, and NSAGs, exploiting the absence of effective state oversight (Frank, 2022).

This article examines why such spaces persist even in smaller, stable democratic countries with manageable land areas. With a focus on Jamaica and Trinidad & Tobago, it explores how irregular land regulation undermines democratic control and enables NSAGs to exploit power vacuums and export operations abroad. We argue that these countries fail to consistently enforce the legal frameworks and institutions necessary for democratic control of territory, leaving certain spaces vulnerable to NSAG co-optation. These findings are placed in the context of the Americas, drawing lessons from Peru on how policies like land tenure regularisation can disrupt NSAG safe havens. It concludes with evidence-based solutions and policy recommendations to strengthen Global South governance and international security.

This perspective supports the New Agenda for Peace's promotion of peacebuilding strategies that enhance legal frameworks, economic development, institution-building, and inter-state cooperation (United Nations, 2023a). The UN's Policy Brief 9 highlights Global South states' vulnerability to destabilisation by transnational criminal and terrorist groups due to socio-political instabilities and institutional weaknesses. This article aligns with the Common Agenda's call for comprehensive national strategies to strengthen state institutions, uphold the rule of law, and promote social cohesion. It also contributes to the Sustainable Development Goals (SDGs) by addressing violence, conflict, and weapon proliferation, emphasising the need for developing states to strengthen governance and institutional capacities.

Methods

This article employs a comparative case study of Jamaica and Trinidad & Tobago to examine under-governed spaces and their implications on international security. The research draws on documentary analysis of academic literature, official and media reports, and government documents to examine each country's historical context, governance structures, and NSAG activities, and identify key themes in governance and security.

A main limitation while conducting the study was the sparsity of information available on NSAG spaces in Trinidad & Tobago, making interviews with local experts crucial, as knowledge on this topic is nascent and only now being created. Therefore, semi-structured interviews were conducted with four stakeholders—security officials, analysts, and social scientists, who provided informed consent. The interviews gathered expert insights on governance and security dynamics and captured key themes. This allowed for a more comprehensive understanding of each case study's historical context, governance structures, and NSAG activities.

A cross-case comparison was conducted to highlight similarities and differences between the cases. First, an in-depth case analysis of governance challenges and illicit transnational activities in Jamaica and Trinidad & Tobago was carried out, while the case of Peru served as an example of successfully mitigating NSAG threats through improved territorial governance. Each case was analysed independently to identify unique and common factors influencing governance and security. Finally, patterns were identified through comparative analysis, which yielded broader conclusions about under-governed spaces in the Global South.

NSAG presence in Jamaica and Trinidad & Tobago

Jamaica and Trinidad & Tobago are among several Latin American and Caribbean countries facing internal security threats from NSAGs concentrated in under-governed spaces (See Appendix 1 for a definition of key terms). Despite their relatively small size compared to other countries in the region, NSAGs originating in these nations have played an outsized role in undermining regional and global security. Trinidad & Tobago has sent the most foreign fighters per capita to the Islamic State (IS), contributing to Middle East destabilisation (Causwell, 2018; Cottee, 2021). Meanwhile, Jamaica has the world's second-highest murder rate, driven by criminal gangs that have long played a role in drug trafficking between the Americas and Europe, and collaborate with gangs overrunning Haiti (CAPRI, 2020). NSAGs in both countries contribute to persistently high rates of internal violence, threatening lives, security, democracy, and the rule of law.

The nature of the armed groups varies between the two nations: violent gangs predominate in Jamaica (CAPRI, 2024), while Trinidad & Tobago faces threats from both radical Muslim groups and violent gangs (Rampersad, 2023). Despite posing ongoing domestic and international threats, neither country has made substantive strides in eradicating these armed groups.

Jamaica: How informal communities spawn transnational organised violent groups

The proliferation of informal settlements around Kingston from the 1930s led to public health crises, labour conflicts, and a breakdown in public order, which accelerated the push for Jamaican self-governance. Post-1962 independence, politicians sought to structure communities through social housing projects aimed at alleviating poverty and solidifying political control, thus creating the first 'garrisons' (Patterson, 2019). However, even informal settlements eventually became 'garrisonised' as they grew dependent on political patronage to prevent eviction. Local enforcers, or 'dons', fostered community loyalty to political parties through jobs, goods, services, and violence, while politicians facilitated these 'area leaders' in establishing organised criminal networks (Mogenson, 2005; Moser & Holland, 1997). This reciprocal relationship between local enforcers and political parties transformed communities into isolated gang strongholds, turning them into incubators for NSAGs. These garrisonised communities are now central to Jamaica's organised violence, which accounts directly and indirectly for 90% of the country's murder rate—one of the highest globally (CAPRI, 2024).

Jamaica's under-governed spaces not only serve as safe havens for domestic organised violent groups but also have implications for international security. Jamaican gangs have established networks abroad, particularly in the United States, Canada, and the United Kingdom, primarily through connections with diaspora members (CAPRI, 2020). These networks fuel the illegal firearms market (Miller, 2023) and export criminal tactics. Conflicts originating in Jamaica often find their echoes in U.S., Canadian, and UK cities, where gang-related violence among expatriate communities mirrors and sometimes escalates the hostilities found on the island (CAPRI, 2019). Moreover, Jamaican NSAGs are involved in regional illicit trade, notably with Haitian NSAGs and Central American drug traffickers (CAPRI, 2020).

The evolution of organised NSAGs in Jamaica is intertwined with the country's under-governed urban informal settlements and social housing communities, aligning with the concepts of "urbanisation without industrialisation" or "urbanisation without growth" (Davis, 2004). Rural inhabitants in developing countries were pushed by declining agricultural sectors into urban areas in the 20th century, rather than pulled by job-creating industrialisation. This led to 'over-urbanisation', marked by the rise of 'slums' or 'shanty towns' characterised by squalor and informal land tenure. Such insecure land tenure binds residents in a 'quasi-feudal' relationship with politicians, as they watch the surrounding city develop while their communities remain

unintegrated into mainstream governance. The research identified the continued dependence of politicians on these marginalised communities for electoral support as the main hindrance to their integration (CAPRI, 2024). The cross-border criminal activity from these under-governed spaces underscores the urgent need to transform irregular settlements from gang safe havens into secure, governed spaces.

Trinidad & Tobago: Where the State absents itself, violent groups flourish

Trinidad & Tobago's radical Islamist network originates from a community of over 4,000 Afro-descendant converts, representing approximately 0.25% of the country's population. Militants from this network have been involved in international terrorism, with the twin-island nation having sent the most foreign fighters per capita to the Islamic State (IS) rebel group—the conservative estimate is 100-150 (Cottee, 2021; Causwell, 2018). Currently, the network presents one of the greatest challenges in terms of the radicalisation of local populations in the Caribbean.

Under-governance led to domestic destabilisation in the short term and provided for the incubation of an extremist network participating in international terrorism in the long run.

In the 1980s, a group of Afro-descendant converts to Sunni Islam founded Jamaat al-Muslimeen (JAM) as a haven for marginalised Afro-Trinidadians (Causwell, 2018). In 1983, the group established a compound in the country's capital—Mucarapo, Port of Spain—with a mosque, school, and housing, without governmental approval and on land to which they had no legal rights. This compound rapidly became a recruitment and radicalisation hub. Government seizure of the land led to the only Islamist coup attempt in Western Hemisphere history. Though the coup failed, JAM members were granted amnesty and regained control of the compound. However, the group eventually splintered. (Adams & Pawinski, 2022; Cottee, 2021).

One splinter faction established a new compound in rural Boos Village in Rio Claro, a somewhat remote village that became a hub for militant Islamism (R. Lynch, personal communication, June 10, 2024). During the 2010s, the Boos settlement housed 70% of the country's IS migrants before traveling to Syria. The settlement's isolation provided a buffer from state security, enabling the cultivation of a homogeneous community of Islamist radicals.

The ideological homogeneity, not unlike that of informal communities in Jamaica, further insulated the space from state penetration (M. Pawinski, personal communication, May 31, 2024). Evidence suggests that state authorities were aware of the radicalising activities ongoing at Boos, yet they made no effort to disrupt the settlement. As long as they appeared focused on participating in global jihad by joining IS in Syria, state authorities did not perceive the extremists as a domestic threat (Cottee, 2021).

Many of the migrants found their way to Boos via a satellite mosque in Chaguanas from the Enterprise district. Enterprise is characterised by a prevalence of public housing and gang violence (A. Santaram, personal communication, May 14, 2024). Like Jamaica's garrison communities, the social dynamics of public housing have made policing difficult and thus have been conducive to gangs' flourishing. Other research has laid out that powerful criminal gangs in Port of Spain were consolidated through political patronage and policies from the 1960s (Pawelz, 2020). Biographical evidence indicates that many fighters were initially involved in gang activities before becoming militant Islamists (Adams & Pawinski, 2022; Cottee, 2021). Currently, Enterprise houses the gang 'Unruly ISIS', indicating an ongoing threat of violent Islamism and potential recruitment for global jihadist movements (M. Pawinski, personal communication, May 31, 2024).

Despite social housing communities like Enterprise incubating criminal gangs and Islamic extremism, the government has not sought to disrupt them. This is likely due to political patronage, the same reason for their creation. Trinidad & Tobago's political parties are generally divided racially, with the Afro-Trinidadian People's National Movement (PNM) and the Indo-Trinidadian United National Congress (UNC) competing for influence. Social housing, ostensibly for low-income families, has been used to introduce Afro-Trinidadian voters into predominantly Indo-Trinidadian districts to break the party's local monopoly, a practice called 'house padding' (Lara, 2010; I. Rampersad, personal communication, May 24, 2024). These insular spaces are hard to govern, making them ideal for gang activity and jihadist recruitment. Maintaining public housing in Enterprise is a political choice: the ruling PNM retains its voter base, while the UNC risks accusations of political cleansing if it takes action to dismantle projects housing opposition voters.

Trinidad & Tobago's extremist network was able to take root and spread through under-governed spaces, the maintenance of which can only be explained by political expediency. The global consequences of Trinidadian nationals recruited as foreign fighters for IS underscore the international impact of radical extremism from relatively small but under-monitored

regions. Allowing for, or directly facilitating, the construction of irregular settlements supported the rise of the JAM, the subsequent compound at Boos Village, and the recruiting grounds in social housing communities such as Enterprise. Under-governance led to domestic destabilisation in the short term and provided for the incubation of an extremist network participating in international terrorism in the long run.

NSAG dynamics in Latin America and the Caribbean

Informal and social housing communities in Jamaica and Trinidad & Tobago exemplify under-governed spaces, with insular social dynamics that make them relatively illegible and impermeable to state penetration. Physical isolation further hinders state security access for passive monitoring. Despite being two of the smallest countries in the Latin American-Caribbean region, Jamaica and Trinidad & Tobago's experiences with NSAGs represent broader regional trends. The Americas, an ostensibly peaceful region with no recent inter-state wars, faces several cross-border challenges with organised crime, insurgency, and terrorism (R. Lynch, personal communication, June 10, 2024). Under-governed spaces across the region provide entry points for transnational threat networks.

Hezbollah's presence in the Americas illustrates the region's vulnerability to penetration by external threat networks, facilitated by local NSAGs. Hezbollah is a Shiite Muslim political party and militant group based in Lebanon. The Iran-backed group is driven by its opposition to Israel and its resistance to Western influence in the Middle East (Robinson, 2024). In the tri-border region of Argentina, Brazil, and Paraguay, Hezbollah has exploited under-governance by engaging corrupt officials and manipulating civilian authorities to conduct illegal activities such as arms trafficking, drug trafficking, and money laundering. The proceeds from these activities are often remitted to support their operations in Lebanon and the broader Middle East (Miller, 2023; Realuyo, 2014). Hezbollah's presence has also been noted in Colombia, Venezuela, Argentina, Chile, and Mexico, with smaller communities in Ecuador, El Salvador, Guyana, and Panama. The group's operations in the region highlight the potential for NSAGs to integrate into transnational threat networks and underscore global security challenges arising from under-governed spaces.

Lessons from Peru

Peru stands out in the region for successfully overcoming its most significant NSAG challenge during a period of internal conflict. Sendero Luminoso launched its 'people's war' against the state in 1980 in Ayacucho, later expanding across the country. Many campesinos lacked land titles, making them vulnerable to exploitation, and enhancing the appeal of the insurgency's promise to protect and redistribute land. Over time, Sendero Luminoso established control over significant portions of the Peruvian countryside, created parallel administrative structures, and expanded to informal slums in cities like Lima. Initial efforts to counter Sendero Luminoso either failed or backfired until the government adopted a combined strategy involving civilian self-defence militias, targeted intelligence, and a national land tenure regularisation programme (CAPRI, 2024).

The land tenure programme was arguably key to success, as regularising land rights undermined the insurgency's support base (de Soto, 2014). The Special Land Titling Project (PETT) covered about 90% of the country's informal housing. By 2004, the government had registered 1.2 million households and issued 920,000 titles (Mitchell, 2005). The initiative was funded by USAID in the pilot phase, and then by the World Bank and other donors (Endo, 2004). By formalising land ownership, insurgents were isolated from their support bases and the government curtailed vital resources, safe havens, and potential recruits for the insurgency (Albertus, 2020; CAPRI, 2024). The reduction of the insurgency's influence pre-empted a decline in violence, restoring order and stability to Peru.

Lessons from Peru are useful to counter NSAG activities in other areas, as these groups often exploit the lack of formal land rights to build control and support (Shiffman, 2020). Formalising land ownership weakened the insurgents' base and restored state control. Regularising irregular settlements in Jamaica and Trinidad & Tobago could similarly weaken NSAG influence by integrating those spaces into mainstream governance. While context-specific strategies are needed, the overarching problem is similar: the states' capacity to carry out such interventions—Peru in the 1990s and Jamaica and Trinidad & Tobago in the 2020s—are comparable, and there are no formidable historical differences that would prevent such an initiative from having similar outcomes. The successful intervention in Peru demonstrates the potential of land titling for improving governance, mitigating NSAG influence, and enhancing security globally.

Conclusions and recommendations

Under-governed spaces, often stemming from land tenure irregularities, negatively impact citizen security, transnational stability, and democracy. Secure land tenure supports democratic governance and is highlighted under multiple SDGs, yet progress remains limited in the Global South (Lomborg, 2023). Moreover, the relationship between private land ownership and democratic governance is frequently overlooked in development efforts in the Global South.

Throughout the twentieth century, many Global South countries neglected key social infrastructure, leading to under-governed spaces where NSAGs thrived, worsening domestic and international security.

In democracies, the state decentralises territorial governance and enforces rules that facilitate private land ownership (Mann, 1984). This decentralisation creates a mutually beneficial relationship: landowners depend on the state for property rights enforcement and services, while the state relies on landowners for economic contributions and civil responsibilities. Thus, land tenure in democracies extends beyond property rights allocation, acting as social infrastructure analogous to feudal fiefdoms. It encourages local stewardship of land, political engagement, and a network of mutual responsibilities and benefits, motivating citizens to actively participate in community and national governance. Peru exemplifies this dynamic, where aligned interests between landowners and the state led to stabilised governance.

Throughout the twentieth century, many countries in the Global South variably adopted the decision-making procedures of democratic governance, such as electoral processes, but often neglected much of the social infrastructure that undergirds an effective democracy. The result is incomplete territorial governance, and thus the proliferation of under-governed spaces that serve as fertile ground for NSAGs to emerge and operate, exacerbating security challenges both domestically and internationally. This phenomenon, as seen in Jamaica and Trinidad & Tobago, and in the broader Latin American region, underlines the interconnectedness of under-governance with broader socio-political, economic, and security dynamics. Peru's land tenure initiative offers a blueprint for mitigating NSAG influence, demonstrating that institutional strengthening, enhancing legal frameworks, and increasing state presence are viable strategies for disrupting the environments that foster NSAGs (Azubuike et al., 2023).

This article contributes to a deeper understanding of how under-governance in the Global South links to international security concerns throughout the world. By adapting successful governance strategies from contexts like Peru and applying them judiciously in Caribbean settings, there is a substantial opportunity to improve security and democratic integrity, thus addressing a critical aspect of the global challenge posed by transnational criminal and terrorist groups.

Based on the case studies of Jamaica and Trinidad & Tobago, the following policy recommendations can be made to mitigate the national and transnational security threat that under-governance foments:

1. Pursue land tenure regularisation, which is key to aligning citizens' interests with the states. It provides a basis for improved economic development through reinforcing property rights and integrates these areas into the national polity, economy, and judicial system, leading to improved governance. Where such initiatives are often thwarted by state bureaucracy and vested political interests, these should be identified upfront as elements of global cooperation to be addressed.

2. Strengthen national governance structures as a corollary and subsequent set of ongoing activities to enhance the robustness and efficacy of local institutions, which is vital to sustaining state presence and authority. This involves coordinating improvements in law enforcement capabilities and public service delivery in under-governed spaces in the context of enhanced land use management policies and practices, thus reducing the appeal and influence of NSAGs.

3. Enhance international cooperation specifically targeted to the above reforms, including financial and technical support, and sharing intelligence and relevant best practices. Coordination efforts should focus on tackling the transnational activities of NSAGs, such as arms and drug trafficking, and participation in international terrorist networks.

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Appendix 1

Definition of key terms

Governance refers to the state's capacity to manage and coordinate social relations within its claimed territory (Fukuyama, 2013). Effective governance across a state's territory hinges on the reach and functionality of its institutions, the accessibility of its regions, and the legibility of these areas to the governing authorities (Fukuyama, 2013).

Effective institutions, such as currency and legal systems, shape behaviours within their domain, enforcing rules that facilitate orderly interactions and conflict resolution. By establishing and enforcing clear rules and frameworks that individuals and entities must follow, these rules create predictable environments, encourage cooperation, provide mechanisms for resolving disputes, guide actions and decisions, and promote order and stability within society (Acemoglu & Robinson, 2012).

The **accessibility of a space,** understood as a parcel of territory within a nation-state's borders, uninhabited or peopled, is a prerequisite for governance and is facilitated by a robust institutional infrastructure. Strong infrastructural networks allow the state to project its authority from central to peripheral regions, ensuring uniform governance coverage (Soifer & Vom Hau, 2008). Effective governance involves the state's ability to respond swiftly to threats and maintain order through visible state presence, such as police forces (Mann, 1984).

Legibility refers to the state's ability to identify and monitor citizens, property, and economic activities. High legibility enables effective policy implementation and administration, from taxation to public health initiatives.

Under-governed spaces are characterised by ineffective control, limited state presence, and vulnerability to non-state actor dominance. These spaces often feature weak, ignored, or non-existent institutions, unable to enforce rules or moderate conflict effectively. The ineffectiveness may be due to partial institutional coverage or discrepancies in how laws are applied to different actors, such as state versus non-state entities (Grissom, 2022). Under-governed spaces often suffer from inadequate infrastructure, limiting state presence, and weak responsiveness, allowing non-state actors to fill the power vacuum (Frank & Bartels, 2022). Moreover, they are characterised by a lack of data and visibility, making it difficult for the state to assert control or implement policies effectively (Scott, 1998).

GLOBAL FINANCIAL GOVERNANCE AND DEBT SUSTAINABILITY IN THE GLOBAL SOUTH

LAKMINI FERNANDO

GLOBAL FINANCIAL GOVERNANCE AND DEBT SUSTAINABILITY IN THE GLOBAL SOUTH

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Abstract

Debt in most developing countries is growing, marking the beginning of a new debt crisis and highlighting the need for the global financial system to be transformed to address global inequalities. Despite the importance of debt sustainability analysis (DSA) in assessing debt vulnerability, overoptimistic predictions of economic recovery and unfair treatment of debtors and creditors have weakened its effectiveness. Thus, simple measures that allow regular debt monitoring could complement DSAs. This article suggests that an independently measured safe debt threshold could be used as a complementary measure alongside DSAs. Analysing the public debt-growth nexus in developing countries, this article shows that the debt threshold of Latin America and the Caribbean is 25% of debt-to-GDP. Further, average debt thresholds of countries with the lowest income levels and lowest quality of governance are 37% and 38% of debt-to-GDP, respectively. Debt thresholds of developing countries are much lower than those of advanced economies. Thus, the global financial system should facilitate access to non-debt creating alternative financial options, such as improved taxation and increased flow of official development assistance, to replace the need for new borrowing in developing countries. This article contributes to the indebtedness literature by providing an update on regional debt thresholds, and insights into alternative financing tools to ameliorate the debt problem in Global South.

Keywords

Debt sustainability; Global South; debt threshold; global financial system; alternative financial options

Evidence for decision-making

1. Overly optimistic debt sustainability assessments and unfair debt burden distribution amongst debtors and creditors increase debt vulnerabilities in the Global South.

2. Maintaining debt at safe thresholds could be considered a complementary measure to the IMF's debt sustainability analysis (DSA) for developing countries.

3. The global financial system needs modifying to ensure debt sustainability and increased availability of alternative financial options for developing economies.

4. Improved taxation and increased flow of official development assistance would replace the need for new borrowing in the Global South.

5. The global financial system needs modification to ensure financial sustainability and inclusivity, taking into account social, economic, and political dimensions, and human rights.

Introduction

Increasing indebtedness in developing countries is marking the beginning of a new debt crisis (Gaspar et al., 2023), reigniting the long-standing debate on the fairness of global financial governance. High levels of debt reduce economic growth and increase risk of default, where governments fail to repay debt, as occurred for example in Sri Lanka and Zambia, among others (Rehbein, 2023; Adrian et al., 2024). Debt is sustainable if a country can finance its policy objectives and repay debt. Otherwise, debt restructuring is needed to avoid default risk that leads to losses in international capital market access and output.

Global public debt reached USD 97 trillion in 2023 (United Nations Trade and Development [UNCTAD], 2024). Developing economies accounted for 30% of this debt, and spent USD 443.5 billion on debt servicing in 2022 (World Bank, 2023). Asia is the most indebted region in the Global South, although Africa is the worst affected as its debt is growing faster than gross domestic product (GDP) (UNCTAD, 2024). The majority of the 54 countries in default risk are in the Global South (United Nations [UN], 2023a; 2023b). Levels of high indebtedness have recently increased in developing countries, driven by the impacts of the pandemic and rising inflation and energy prices, and exacerbated by debt surcharges, traditional lender policies linked to conditionalities, and poor access to finance (Toussaint, 2023; Romeu, 2024). Unsustainable debts trigger fiscal adjustments, reducing a government's capacity to guarantee human rights (Munevar, 2021). Also, limited access to development finance pushes developing countries to borrow from more expensive sources (Bretton Woods Project, 2024). As a result, debt servicing costs increase substantially, making it even more challenging to resolve the debt crisis. Globally, the impacts of colonialism and ongoing imperialism are linked to high indebtedness, while poor governance affects it domestically.

Injustice in the global financial architecture threatens debt sustainability in the Global South (Essl et al., 2019; Sial et al., 2023). In 1996, the World Bank and the International Monetary Fund (IMF) launched the Heavily Indebted Poor Countries (HIPC) initiative to reduce unsustainable debt in poorer countries. The IMF's debt sustainability analysis (DSA) is a tool used to resolve potential debt crises (Rehbein, 2023). Yet, overly optimistic post-pandemic economic recovery projections for the Global South, unfair burden sharing among debtors and creditors, and the neglect of political-economic factors have undermined its effectiveness. Further, developing countries often face higher borrowing costs and receive limited financial assistance in times of crisis. For instance in 2021, while the IMF allocated USD 160 billion (1% of total debt

burden) in emergency assistance for the European Union, Africa received only USD 34 billion (4% of total debt burden) (UN, 2023a). Thus, equality in global financial governance is a fundamental requirement for sustainable debt management in the Global South, and would enable further improvements in financial systems at the national level.

In terms of the impact of the debt-growth nexus, managing debt within a safe threshold is preferred, since debt beyond this limit could reduce growth (Chudik et al., 2017). These debt thresholds vary across countries and over time (Herndon et al., 2014). Relatively, developed countries have larger debt thresholds of around 90-100% of debt-to-GDP than developing countries (Reinhart & Rogoff, 2011; Checherita-Westphal & Rother, 2012). Growth impacts of debt vary based on both level and composition of debt, which is not covered in the DSAs (Matsuoka, 2020; Rehbein, 2023). As DSAs have several limitations (Flassbeck & Panizza, 2008), debt thresholds could be used as a complementary tool alongside DSAs to prevent unsustainable debt accumulation.

In this context, this article aims to answer the following question: how should the global financial system be modified to enable debt sustainability in the Global South? The article objectives are threefold: to estimate debt thresholds, to propose modifications to the global financial architecture, and to explore alternative financing modalities. Despite extensive research on indebtedness, heterogeneity in debt thresholds across developing countries remains relatively under-explored. This study makes an important contribution to the indebtedness literature by providing an update on debt thresholds against heterogeneity factors (geographic location, income and governance quality) that can be used as a complementary measure to DSA. Debt threshold is a simple measure that keeps debt in check, prevents unsustainable debt accumulation, and detects inaccuracies in DSA estimations. Further, this study provides useful insights for the 'Summit of the Future' and the 'Fourth International Conference on Financing for Sustainable Development'. In this regard, the article argues for the creation of an unbiased global financial architecture that facilitates increased availability of non-debt creating alternative financial options, such as improved taxation and increased flow of official development assistance (ODA) to developing economies. This would ameliorate the debt problem in the Global South by replacing the need for new borrowing.

The remainder of the article is structured as follows: section two presents the methods used, section three contains the research findings, and section four presents the conclusions of the study.

Methods

This study investigates the public debt-growth nexus by identifying debt thresholds and various heterogeneities in developing countries using dynamic panel threshold regression (DPTR). Debt thresholds are sensitive to estimation techniques (Ndoricimpa, 2017). This article uses DPTR because it is considered a superior technique for the estimation of non-linear functions, allowing simultaneous estimation of threshold level and coefficients of different regimes and their significance (Hansen, 1999; Caner & Hansen, 2004; Kremer et al., 2013; Fernando, 2021). Also, DPTR addresses endogeneity and serial correlation issues in a dynamic setting. DPTR is used extensively to analyse debt thresholds of developed countries, but is seldom used in developing countries. In line with the external debt-growth nexus literature, this article adopts a Solow-growth specification, since this neoclassical model clearly describes the long-term relationship between growth and production factors (Siddique et al., 2016).

Equality in global financial governance is a fundamental requirement for sustainable debt management in the Global South.

This article uses a panel of 111 developing countries covering three regions as follows: Africa (47), Asia (38), and Latin America and the Caribbean (26), for the period 1993-2022. Heterogeneity estimations are limited to relevant subsamples.

The study uses the following model:

$$\Delta gdp_{it} = \chi \Delta gdp_{it-1} + \beta_1 d_{it} I(d_{it} \leq \gamma) + \beta_2 d_{it} I(d_{it} > \gamma) + \alpha' X_{it} + \eta_t + \mu_i + e_{it} \text{ ---- (1)}$$

The outcome variable is real GDP growth rate (Δgdp_{it}). Public debt (d_{it}) is both the threshold variable and the regime dependent regressor, and has two coefficients (β_1 and β_2). The threshold variable splits the sample into two 'regimes' based on whether the threshold variable is lower or higher than the threshold level (γ). β_1 is the marginal impact of the threshold variable when the threshold variable is less than or equal to the threshold value (low-debt regime), and β_2 is the marginal impact of a threshold variable when the threshold variable is greater than the threshold value (high-debt regime).

This specification contains a set of standard Solow growth determinants (X_{it}): trade openness, public investment, population growth, and secondary school enrolment; its coefficient vector, α, estimates the effect of a change in each variable on real GDP growth rate. The unobserved heterogeneity is controlled by using year- (η_t) and country-specific (μ_i) fixed effects.[1]

Public debt data are taken from the IMF's global debt database (IMF, 2024), and all other explanatory variables from the World Bank (World Bank, 2024). Based on Kourtellos et al. (2013), governance quality data is obtained from the 'Freedom in the World Survey'. Governance quality, represented by political rights and civil liberties, is measured on a scale from 1 (highest) to 7 (lowest) (Freedom House, 2024). Countries are categorised into three groups based on governance quality (i.e. the combined average ratings of political rights and civil liberties): free (1-3); partly free (3-5.5); and not free (5.5-7).

Results

Debt sustainability is not an isolated technicality, but rather represents a historical continuum, rooted in colonialism, and linked to the challenges of neoliberalism and ongoing imperialism (Sial et al., 2023). Interpreting the Global South's debt crisis as a technical issue, and highlighting the incompetencies of debtor governments, often distracts from the need to understand the role of colonialism and extractive imperialism, with powerful governments and institutions still now exercising control over the Global South. Thus, addressing unsustainable debt requires recognition of multifaceted factors, including political economic factors and the protection of human rights (Munevar, 2021; Bretton Woods Project, 2024). The debt burden impedes access to development finance, limiting the capacity of Global South governments to respond to the needs of their citizens. To improve this, DSAs need to go beyond financial sustainability and promote inclusivity in terms of human rights, and social and environmental dimensions. In this regard, this study proposes an independently-measured debt threshold that can be used as an effective complementary measure to DSAs in avoiding unsustainable debt in developing countries.

Another factor which points to the importance of a simple, independently-assessed debt threshold is the cost associated with delays in DSAs (Rehbein, 2023). There are several factors that may cause delays, including that a DSA will be implemented only after an IMF program is approved in a debtor

1. Please see the technical supplement in the Appendix for more details.

country (and delays in IMF program approval would mean irreversible economic impacts). In addition, when a DSA needs national government approval, it becomes a public document and this affects negotiations with creditors. Moreover, pooling local and foreign currency debts in DSAs is erroneous as capacity to rollover different debts is different. Debt un sustainability is costlier for debtors and creditors alike, thus alternative approaches that protect social, political, and economic objectives are encouraged (Munevar, 2021). In this context, the use of independently-measured debt thresholds is useful to monitor debt levels and to prevent unsustainable debt build-ups.

Table 1 shows the DPTR debt-growth nexus estimates in developing countries. The threshold estimates ($\hat{\gamma}$) of debt-to-GDP for all Global South regions, Asia, Africa, and Latin America and the Caribbean are 38%, 32%, 40% and 25% respectively. Yet, threshold effect is significant only in Latin America and the Caribbean (p-value=0.01). As such, this region can enjoy a maximum of 25% debt-to-GDP without compromising its growth, while in the other regions no threshold effect is observed.

Table 1. **DPTR debt-growth nexus estimates**

	Developing economies	Asia region	Africa region	Latin America and the Caribbean region
	(1)	(2)	(3)	(4)
Threshold estimates $\hat{\gamma}$	37.549	31.690	39.552	25.160
95% confidence interval	[37.07 37.70]	[30.82 31.95]	[36.09 39.56]	[24.75 25.19]
Threshold effect test: p-value	0.157	0.331	0.675	0.010
Threshold effect	No	No	No	Yes
Impact of debt on growth				
$\hat{\beta_1}$	-0.007	-0.021**	0.002	-0.050***
	(0.005)	(0.010)	(0.008)	(0.010)
$\hat{\beta_2}$	0.010***	0.011***	0.021***	0.001
	(0.001)	(0.002)	(0.004)	(0.002)
Regime independent controls	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Countries	111	47	38	26
Observations	2,886	1,222	988	676

Note. ***, ** and * indicate significant p values at 1%, 5% and 10% level. Data from the IMF's global debt database and the World Bank's World Development Indicators from 1993-2022 World Bank. (2024).

Impact of debt on growth is shown by β_1 (low-debt regime) and β_2 (high-debt regime). The main focus is on β_2 which represents the high-debt regime or the debt above the safe debt threshold of 25% of debt-to-GDP. Though not significant, the regime-dependent coefficient at high-debt regime is positive for Latin America and the Caribbean region (0.001). Hence, as the public debt level exceeds the threshold value of 25% debt-to-GDP, a 100% increase in public debt leads to a 0.1% increase in economic growth. This means although debt exceeds the threshold level of 25% debt-to-GDP, it does not negatively impact on growth. So, accumulating debts around this threshold is still growth-enhancing. This could be because the debt threshold of 25% is well below the region's average debt level of 65% of debt-to-GDP, or due to the presence of more than one debt threshold. The estimations for multiple thresholds however, show no significant threshold effect. Second and third thresholds are at 54% and 76% debt-to-GDP, but none are significant. In comparison to the HIPC initiative, current debt of developing countries is largely held by private creditors. In this article, debt threshold estimation does not consider variations in debt composition. Due to this limitation, results need to be interpreted with caution. Future studies considering variations in debt composition would provide more precise debt threshold estimations.

Heterogeneity analyses of income and governance quality were limited to sub samples to avoid the generalisation of results across a varied group of countries, and to accurately reflect individual country dynamics. This helps to identify specific country-level factors and glean more precise policy implications.

The income-based heterogeneity analysis categorised countries into four groups: low-, lower middle-, upper middle- and high-income. The threshold effect of 37% of debt-to-GDP is observed only for low-income countries. Marginal impact of debt in the high-debt regime (β_2) is significant and positive for this group. With increasing income, however, the debt threshold effect disappears. Low-income economies accumulated substantially larger debt stocks, and 95% of countries in the low-income group are from Africa. As production structures vary significantly across levels of development, the presence of debt thresholds may have been impacted by existing structural differences. Further, debt in most developing countries is either non-concessional or sourced from private creditors, and thus involves high debt repayments (Essl et al., 2019). High interest payments absorb more revenue while reducing fiscal space for public spending, leading to macroeconomic instabilities. Debt repayments are more manageable for higher-income countries. Hence, with increased income, countries accumulate high debt levels that are still not growth-reducing, such that their debt thresholds are

insignificant. Therefore, reducing debt vulnerability through strengthened DSAs and improved public financial management practices are critical.

The debt-growth nexus depends on country characteristics such as institutional quality and governance quality (Kourtellos et al., 2013). Countries with better governance quality enjoy higher debt thresholds, while countries with poor quality governance have comparatively lower debt thresholds (Cordella, 2010). In terms of governance quality, countries are categorised into three groups: free, partly free and not free. A debt threshold effect of 38% of debt-to-GDP exists for countries with the lowest quality governance ('not free'). Beyond this, a 100% increase in debt leads to 1% growth increase. Further, investment inflow is also unrelated to the quality of governance in developing countries. This could contribute to there being no observed growth-reducing effect in poor governance quality countries. Future research could usefully explore other possible relationships between debt and growth.

The article found that the debt-growth nexus depends on a multitude of factors, which supports the argument that DSAs should go beyond simple technical analysis to include other social, political and economic factors like institutional and political frameworks (Guzmán & Stiglitz, 2024). Failure to restructure unsustainable debts can cause recessions in economic activity and efficiency loss (Rehbein, 2023). In severe cases, debt relief would be essential for both debtor and creditor to minimise further output losses. Overoptimism in DSAs leads to greater IMF lending and reduced debt write-off by private creditors, leading to more benefits for creditors and increased risk of debt crisis for the debtor country. Thus, it is crucial to address politics and power in order to minimise negative economic and distributional effects. DSAs are forward-looking and based on the evolution of the economy. Differences in opinion are common during debt negotiations, with creditors often arguing that debtor countries have better repayment capacities than they actually do. Developing countries often delay debt restructuring for political economic reasons, meaning the crisis becomes long-lasting as recovery is costlier. The debtors prefer to pass the problem to the next government and the creditors expect a possible positive shock for better deals in debt negotiation. Thus, DSA efficiency relies heavily on the degree to which all these are addressed in coordination with all relevant stakeholders in a timely manner.

Discussion and actionable recommendations

Ensuring debt sustainability

Debt sustainability is crucial for economic growth and stability. This article argues for creating a robust global financial architecture that enables debt sustainability in developing countries. The existing global financial system, built in the aftermath of World War II to address political economic power dynamics of the time, is now outdated and heavily favours developed nations (UN, 2023a). In this regard, the study proposes that debt be maintained at an independently-measured safe threshold as a complementary measure to DSA, and that global financial systems facilitate the increased availability of non-debt creating alternative financial resources to avoid the need for new borrowing.

Debt in developing countries was the lowest during 2008-2012, but has increased continuously thereafter.

It is argued that the debt threshold is not common to all developing countries (Pescatori et al., 2014, Chudik et al., 2017 & Bentour, 2021). Similarly, this article finds a debt threshold of 25% of debt-to-GDP only for Latin America and the Caribbean. Heterogeneity analyses suggest average debt thresholds of 37% and 38% debt-to-GDP for countries classed as low-income and as having poor governance, respectively, with most countries in these two groups being in Africa. Poor governance, historical imbalances and the extractive nature of imperialism lead to high indebtedness (Fosu & Gafa, 2023; Sial et al., 2023). In 2022, Africa had the highest average debt of 66% of debt-to-GDP. Also, beyond debt thresholds, high debt is not growth-reducing for these two groups. However, this does not necessarily negate the need to reduce debt or improve income and governance quality, since the Global South's debt vulnerability is a multifaceted issue. Hence, it is critical to understand how debt is being used to maintain power, and what changes are required in the global financial system to ensure debt sustainability in the Global South.

Country characteristics play a significant role in the debt-growth nexus (Kourtellos et al., 2013). Despite short-term benefits, long-term high debt is growth-reducing due to the crowding out of private investment, increased interest rates, and by the need for future tax increases or spending cuts to

accommodate future interest payments (Reinhart & Rogoff, 2010; Fan et al., 2024). Further, increasing debt is growth-enhancing when countries have low initial debts, but growth-reducing when initial debts are high or show increasing debt trends (Soyres et al., 2022). This study reveals that debt in developing countries was the lowest during 2008-2012, but has increased continuously thereafter (see Appendix, Figure A1). Therefore, high debt levels are considered sustainable as long as there is a decreasing trend.

Developed countries account for most global debt (see Appendix, Figure A1). The debt threshold for France (1862-2008) is 80% debt-to-GDP, and beyond this level debt is still growth enhancing. For Greece (1914-2008), the United Kingdom (1862-2008), and the United States (1871-2008), the 99% debt threshold is growth reducing (Lechtenberg, 2017). Countries with decreasing debt trends, such as France, show positive growth effects. Therefore, the debt-growth nexus is impacted by debt trajectory, and debt sustainability is supported by a decreasing debt trend. The HIPC initiative reduced debt in developing countries. Yet, this declining trend reversed in 2012, and by 2022 overall debt had increased by 55%, with debt in Africa (66%) and Latin America and the Caribbean (65%) exceeding the Global South average in 2022. Low-income countries recorded the highest average debt from 2019-2022 at 73%. Drivers of recent debt in developing countries are linked to a combination of factors, including the impact of the pandemic, rising inflation, and rising energy prices rooted in recent wars and conflict. This is exacerbated by debt surcharges, traditional lender policies linked to conditionalities, and problems faced by developing countries in relation to access to finance. Therefore, global financial governance should coordinate and provide early debt resolutions to ensure efficient debt restructuring and continuous debt sustainability assessments.

Continuous debt monitoring improves growth prospects. Therefore, debt portfolios should involve careful review of the development needs and priorities of each country. Also, there are many factors a country should examine in terms of debt financing, namely: the interest rate of the debt instrument, currency mix, the share of fixed versus floating interest rates in the portfolio, the maturity profile, the choice of domestic versus external debt, and the share of nominal versus inflation-indexed instruments (World Bank, 2023). With increasing debt vulnerabilities in developing countries, active debt portfolio management is essential to ease debt service burdens. Such management includes repurchases, swaps, and cancellations. Also, properly managed portfolios can provide financial incentives such as debt buybacks (a risk management tool that can reduce the debt stock when traded at deep discount), debt exchanges (swapping outstanding

debt for new debt) or debt-for-nature swaps (partial debt relief in exchange for green investments in debtor countries) (Chamon et al., 2022). These tools are more beneficial than issuing new debt. Hence, the global financial system should create a conducive environment for developing countries to implement hem. Yet, unsustainable debt is also partly due to a lack of awareness, accountability, and political commitment. National governments therefore also have a crucial role to play in improving debt management, including through continuous capacity development in sustainable debt management.

In addition, DSA is a vital tool that helps restore stability in countries which have defaulted on their debt (Spiegel et al., 2024). Yet, its success is ensured only when it goes beyond mechanical/technical analysis and follows a holistic approach considering the political and economic realities of a given country. Developing countries are highly vulnerable during crises. Thus, the global financial system can facilitate 'state contingent debt instruments', incorporate beneficial alterations to debt contracts, and establish impartial institutions to manage crises (Griffiths, 2019). This article also highlights the role of alternative financial instruments in avoiding the need for new borrowing. Strengthening domestic resource mobilisation or taxation is a key tool for improved state performance (European Network on Debt and Development [Eurodad], 2024). Inefficiencies in international and national tax systems have led to a global revenue loss of USD 480 billion. Financial globalisation threatens national tax policies, especially in developing economies. As a result, unlike in developed countries, increased per capita income does not necessarily ensure increased tax collection in developing countries. Creating better global tax governance that improves national revenue collection and prevents illicit financial flows helps address this issue.

The role of private creditors has gained much attention since the last debt crisis. Creditors and borrower countries' behaviour is critical for debt sustainability. Private lenders reduced lending to developing countries by 23% to USD 371 billion in 2022, yet collected USD 556 billion in repayments (Committee for the Abolition of Illegitimate Debt, 2023). Thus, repayments are now exceeding lending to developing countries. This ought to be addressed through reform of the economic model and systems followed by lenders. Further, increased accountability improves the behaviour of both borrower and lender. Debt transparency can be improved by disclosing the real debt stocks and debt risks. This avoids 'hidden debts' such as contingent liabilities and direct borrowings of state owned enterprises. Also, creating a public borrowing registry and sharing lending contracts with the public

increases accountability and transparency. Therefore, all parties should be encouraged to follow principles promoting responsible sovereign lending and borrowing (UNCTAD, 2012).

Despite its economic importance for countries in the Global South, disbursement of ODA has reduced over recent years. In 2022, only USD 213.2 billion was disbursed, which is not sufficient to cover financial needs in developing countries. Also, ODA is now increasingly given as concessional loans rather than grants. Between 2021 and 2022, ODA grants to developing regions fell by 8% to USD 109 billion, while loans increased by 11% to USD 61 billion. Further, high-income countries failed to meet the annual USD 100 billion climate finance budget for low- and middle-income countries during 2009-2020 (Oxfam, 2023). These trends have collectively contributed to increased debt vulnerability in developing countries. Therefore, donor countries are well-positioned to enable developing economies to use financial aid to leverage economic growth and secure other financing resources, through revising the conditions of ODA and ensuring they adhere to climate financing commitments.

Conclusions

History shows that unsustainable debts trigger financial crises, and yet public debt in developing countries is again rising at an alarming rate. Debt sustainability is crucial for growth and development, yet sustainable debt management is challenging, as it goes beyond a simple technical exercise, involving broader social, political, and economic dimensions and human rights. However, the global financial system is rooted in historical inequalities, and neglects the needs of the Global South. Reduction of the Global South's debt burden requires significant transformation of the global financial system, including debt restructuring through reliable debt sustainability assessments. This study proposes that governments consider keeping debt at an independently-measured safe threshold level to keep debt in check. This simple measure could be used as complementary to the DSA, to avoid erroneous estimations and for effective monitoring. In addition, the global financial system should facilitate increased availability of non-debt creating alternative financial options such as improved taxation and increased flow of ODA grants to developing economies. This would replace the need for new borrowing, and encourage improvements in national financial systems and processes.

Private creditors play a significant role in current debt accumulation in developing countries. However, the DPTR estimation used in this study does

not account for the variations in debt composition. Thus, future research on debt threshold effects could usefully examine variations in debt composition of developing countries to address this limitation.

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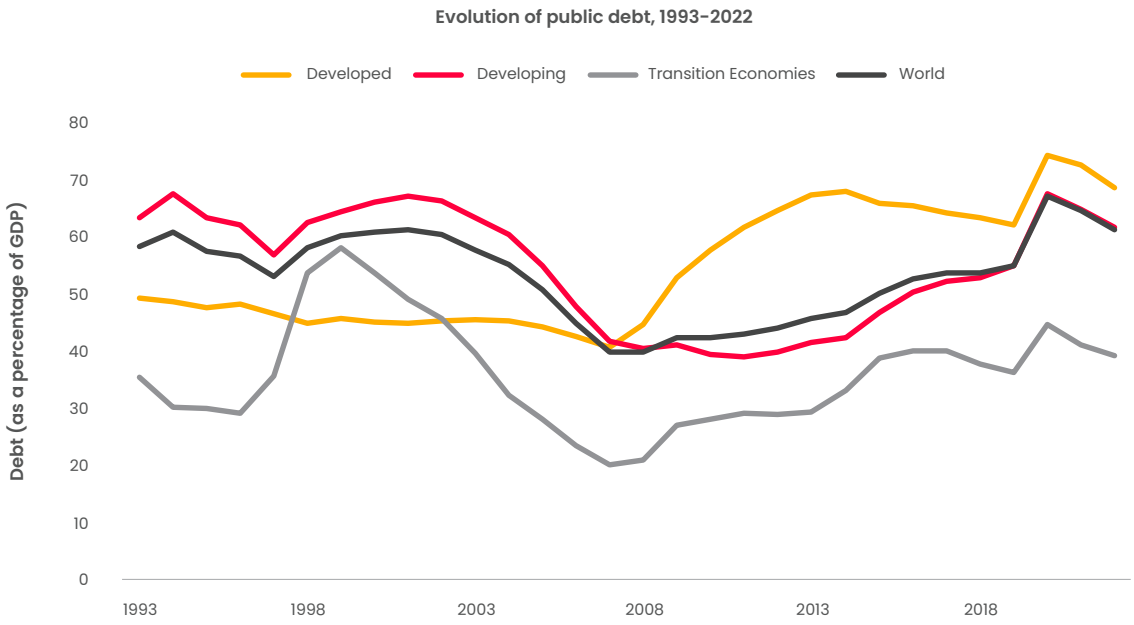
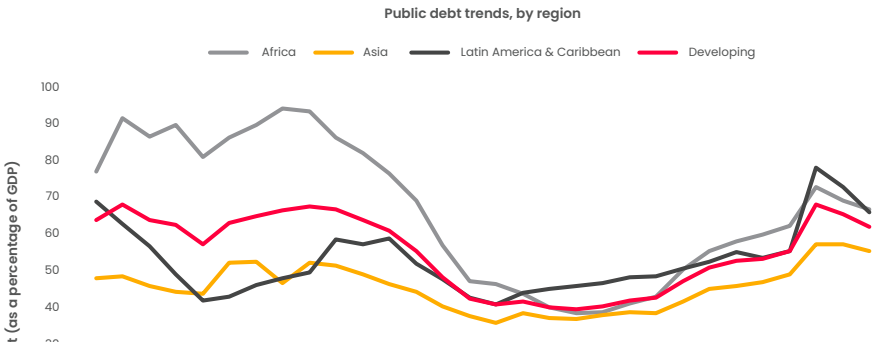
Appendix 1

Figure A1. **Public debt trends, 1993-2022**





Note. Data from **Global Debt Database** (1993–2022) by the International Monetary Fund (1993-2022)

Methods – Technical supplement

The DPTR technique is an advancement of the static panel threshold estimation model of Hansen (1999) and the dynamic cross-sectional threshold model of Caner and Hansen (2004), and captures the dynamic impact of debt on GDP growth. The model considers potential dynamic feedback effects by incorporating lagged dependent variables to understand how past GDP growth influences current public debt levels. This helps understand the full impact of debt on economic growth. The general specification in equation (1) allows only one threshold, but the estimation procedure in Hansen (1999) allows a number of thresholds. Future analysis allowing more thresholds would improve the findings.

The potential endogeneity between public debt and GDP growth is another concern. To deal with endogeneity, equation (1) includes a set of instruments: T-1 moment conditions (lags of dependent variable) as instruments (Caner & Hansen, 2004). Also, high debt levels might not only affect growth but could also be a result of low growth. This reverse causality could lead to biased results. The model explicitly assessed causality considering time variation in debt-growth nexus. This includes contemporaneous growth (indicates causality is ambiguous), five-year forward (leading) average growth (indicates causality running from debt to growth), and five-year past (lagging) average growth (indicates reverse causality from growth to debt). Autocorrelation in the error term for growth means negative shocks to growth are persistent and the shock is passed to the debt process, increasing the level of debt in the long run. Therefore, in a contemporaneous regression, autocorrelation in the growth equation will erroneously lead to the conclusion that public debt is bad for growth. Averaging growth into the future over several years reduces this bias. Therefore, this study focuses mainly on the forward five-year average growth to mitigate bias in the estimates. The model includes year- and country-specific fixed effects to control for unobserved heterogeneity. However, there can still be other time-varying factors at the country level that are not captured. These could influence the relationship between public debt and GDP growth, leading to biased estimates. Therefore, a linear-time trend is included as a robustness check, yet the significance and direction of the results remain the same.

SAFEGUARDING INFORMATION INTEGRITY IN THE AGE OF AI: PERSPECTIVES FROM INDIA FOR THE GLOBAL SOUTH

RANJINI RAGHAVENDRA

REFLECTIVE PIECE

SAFEGUARDING INFORMATION INTEGRITY IN THE AGE OF AI: PERSPECTIVES FROM INDIA FOR THE GLOBAL SOUTH

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Abstract

Information integrity refers to the accuracy, consistency, and reliability of information (United Nations, 2023). It is threatened by information pollution, which takes various forms, including misinformation, disinformation, malinformation, fake news, and hate speech. While information pollution has a long history, generative artificial intelligence (GAI) has added a new dimension to the problem. GAI is unregulated and freely available, making it easy to create and spread false information. This creates an urgent need to improve monitoring and accountability mechanisms aimed at safeguarding information integrity. This reflective piece analyses the consequences of information pollution in the spheres of politics and health in India and discusses key lessons for the Global South. Based on a literature review and key informant interviews, the paper recommends practical solutions: multi-stakeholder engagement, oversight mechanisms, and accountability guidelines for intermediaries. The reflective piece also argues for the creation of a Global South consortium to combat information pollution and calls for enhanced global collaboration on prebunking, media and information literacy, and fact-checking mechanisms.

Keywords

Misinformation; disinformation; information pollution; India; Global South; artificial intelligence; social media.

Evidence for decision-making

1. Misinformation, disinformation, malinformation, fake news, and hate speech (all examples of information pollution) are a global risk, hindering human progress and need to be addressed immediately across the Global South.

2. Strategies to safeguard information integrity in the face of new technologies, such as generative artificial intelligence (GAI), are very limited in the Global South. Efforts to strengthen these strategies should focus particularly on ensuring information integrity for vulnerable groups such as minorities, migrants, low-literacy, non-English-speaking, and Indigenous groups, especially given rising majoritarianism.

3. There is a lack of international cooperation to address the issue. The reflective piece proposes a high-level Global South consortium to fund research and advocacy on information pollution and develop context-specific guidelines and policies. Users may be empowered by improved media and information literacy through the development of sophisticated tools and initiatives to address information pollution.

Introduction

In the run-up to the 2024 parliamentary elections in India, an inaccurate message misinforming voters that they could cast their vote even if their name was not on the voter list went viral. The Election Commission of India later clarified that there is no such 'challenge vote' and that anyone not on the voter list cannot vote (First Post, 2024).

In May- June of 2018, misinformation about child abductors was shared on WhatsApp and circulated in various Indian states, including in vernacular languages, with gory images and videos of alleged child kidnappers being assaulted by the public. This fake news resulted in the death of more than 20 innocent people by lynching (Sinha et al., 2019).

It is claimed that drinking lemon juice mixed with baking soda or aspirin will cure COVID-19. This is false (National Academies, 2020). Misleading messages such as these have become an increasingly familiar sight on social media and messaging platforms. These are examples of information pollution and its possible consequences for individuals and society more widely. Reliable and accurate information is crucial for human progress. Information pollution damages the foundations of human development and directly hinders the achievement of the 2030 Agenda. For instance, during the COVID-19 pandemic, an 'infodemic'[1] of mis- and disinformation undermined public health measures and vaccination drives (World Health Organisation [WHO], 2020).

Propaganda and political polarisation, driven by the pursuit of political advantage, are among the key catalysts of information pollution in the political sphere.

1. This refers to excess information (including false or misleading information) that spreads in digital and physical environments during a public health emergency (Wilhelm et al., 2023).

Information pollution has a long history and takes various forms, including misinformation,[2] disinformation,[3] malinformation,[4] fake news,[5] and hate speech.[6] However, generative artificial intelligence (GAI) is fundamentally changing how information is created, distributed, and consumed. GAI systems can generate text (such as Google's Gemini, Meta's LLaMa, or OpenAI's ChatGPT), visuals (such as Stable Diffusion or OpenAI's DALL-E), or audio (such as Microsoft's VALL-E) by applying machine learning to large quantities of training data (Simon et al., 2023). The output is generated with great speed and ease and is now so sophisticated that it is often almost impossible to tell if content is human- or AI-generated (Groh et al., 2022). The inability of the public to discern which information is accurate and trustworthy becomes a pressing challenge.

As new technologies are making it easier than ever to create and disseminate content, misinformation and disinformation have been identified as the biggest short-term risks facing the world (World Economic Forum, 2024). Experts surveyed for the 2024 Global Risk Report chose misinformation and disinformation as the number one risk in India, ahead of infectious diseases, illicit economic activity, and labour shortages (World Economic Forum, 2024). In a recent report, Blair et al. (2023) note that there is an acute need for research on information pollution in the Global South, where it has proven to be a serious challenge with devastating consequences. Further, because of the lack of studies on countering information pollution in the Global South, there is a risk that findings from the Global North will be applied to the Global South, or that Global South countries will be generalised. This gap in scientific knowledge is alarming, especially given that strategies and interventions that work in the Global North might not be effective in Global South contexts.

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2. Misinformation is the unintentional spread of inaccurate information shared in good faith by those unaware that they are passing on falsehoods (United Nations [UN], 2023).
3. Disinformation refers to false or misleading content that can cause harm, irrespective of motivations, awareness or behaviours (Frau-Meigs, 2024).
4. Malinformation refers to information that is based on real facts but is deliberately manipulated, presented out of context, or shared with the intent to cause harm. Unlike misinformation (false but shared without harmful intent) or disinformation (deliberately false and meant to deceive), malinformation is rooted in truth but is weaponised to damage reputations, incite violence, or undermine trust in institutions. Examples include leaking private information to harm individuals, selectively presenting truthful data to mislead, and using real events to fuel hate speech or conflict (Wardle & Derakhshan, 2017).
5. Fake news is false or misinformation presented as news, including news satire, parody, fabrication, manipulation, advertising, and propaganda (Tandoc Jr et al., 2020).
6. Abusive or threatening speech or writing that expresses prejudice based on ethnicity, religion, sexual orientation, or similar grounds.

The Summit of the Future (UN, 2024) outlines a vision for an open, free, and secure digital future for all, anchored in global cooperation for human development and SDG progress. In the Pact for the Future (2024), its outcome document, UN member states reaffirmed their commitment to integrity in public information to achieve an information ecosystem—particularly online—that is inclusive and safe for all. To achieve this vision, it is crucial to understand the incidence and consequences of information pollution in the Global South, as well as to identify measures to strengthen information integrity, defined as the accuracy, consistency, and reliability of information (UN, 2023). This reflective piece seeks to analyse the drivers and consequences of information pollution in India and to propose strategies to safeguard information integrity.

Methods

This piece employed a mixed-methods approach, conducted in five phases, to understand the factors that contribute to information pollution in India and its consequences and to explore strategies to safeguard information integrity in the Global South.

The first phase included the analysis of two systematic reviews (Blair et al., 2023; Muhammed & Matthew, 2022) and one book (Sinha et al., 2019), providing a comprehensive overview of scholarship on countering information pollution. Blair et al. (2023) synthesise evidence from 176 intervention tests reported in 155 unique studies conducted in both Global North and Global South countries. Muhammed and Mathew (2022) employ a structured approach based on Webster's guidelines to identify relevant literature on the spread of misinformation focused on politics, health and disaster. Two of these three themes—health and politics—emerged frequently in the analysis and the interviews, and so are the main focus of this paper. For historical documentation of the prevalence of misinformation in India, the book India Misinformed (Sinha et al., 2019) was included in the literature review. The author of this book was later interviewed at length.

In the second phase, drawing on the UNDP's strategic guidance conceptual framework (UNDP, 2023), a questionnaire was developed to determine drivers and purveyors of information pollution in India in the following areas: (1) socio-political; (2) media and information; and (3) health communication see Appendix 1).

In the third phase, 50 instances of misinformation collected from WhatsApp, Boom Live, and the Alt News website—well-known social media platforms—

were examined to explore the nature and diversity of misinformation in India. Additionally, 12 monthly and two annual reports from Boom were analysed to gain a deeper understanding of the range of misinformation and the responses of fact-checkers.

In the fourth phase, key informant interviews were conducted with technology experts and people actively involved in combating information pollution through fact-checking and advocacy. Twenty organisations in India were identified, and from 18 responses, six informants were selected for semi-structured interviews based on their expertise, research, and advocacy work (see Appendix 2). Interview transcripts were manually coded for thematic analysis.

Finally, in the fifth phase, analysis was further narrowed to focus on emerging regulatory frameworks in India relating to information on politics and health specifically, and measures adopted by governments to enhance information integrity.

Results

A number of key themes emerge from the findings relating to information pollution and its consequences, specifically: polarisation, health infodemic, technology-mediated tools, human factors and governance. These themes are discussed in greater detail in the following section.

Polarisation

Key informant interviews found political polarisation, which is on the rise across the world (Kubin & Sikorski, 2021), to be one of the main drivers of information pollution in India, propagated by political parties. From around 2014, the ruling Bharatiya Janata Party (BJP) was the first political party in the country to leverage social media (Carney, 2024). Carney (2024) describes in detail how WhatsApp has become a powerful tool for political campaigning in India, with the BJP being a pioneer in leveraging the platform for electioneering. The party established an extensive network of WhatsApp groups, supported by tens of thousands of "IT cell" volunteers responsible for disseminating campaign content (Murgia et al., 2019). This strategy was integral to the BJP's digital outreach, with the party's social media head famously referring to the 2019 general election as a "WhatsApp election," a phrase that gained traction in both national and international media (Perrigo, 2019). Inspired by the BJP's success, other political parties have adopted similar tactics, further entrenching WhatsApp as a key platform for political

communication. The use of WhatsApp for election campaigns has since expanded globally, particularly in developing democracies, enabling political parties to engage with remote voters (Renno, 2019).

Both the government and opposition parties are failing to prevent information pollution. In fact, they are causing what is known as 'demographic anxiety'—a fear of specific demographic groups. This anxiety is mainly caused by misinformation campaigns driven by nationalism.

An expert in politicians' use of social media and misinformation in India explained in an interview that dangerous online speech and propaganda pose three main challenges: sophistication, believability, and virality. He reported that due to high levels of polarisation and distrust of mainstream media, some citizens quickly believe negative information about groups they view as opposing their interests, making believability particularly strong. Additionally, he noted that various groups, including politicians, have established networks that can rapidly spread content, enhancing virality. AI will grow in sophistication, allowing political parties to use data to refine propaganda that can effectively influence voters.

Health infodemic

The World Health Organisation (WHO, 2020) defines the term 'infodemic' as the spread of too much information, including false or misleading information, in digital and physical environments during a disease outbreak. Infodemics cause confusion and risk-taking behaviours that can be harmful. It also leads to mistrust in the health authorities and undermines the public health response. An infodemic can intensify or lengthen outbreaks when people are unsure about what to do to protect their health. It can quickly fill information voids and amplify harmful messages (WHO, 2020). For example, during the COVID-19 pandemic, there was an information void in the state of Karnataka in India relating to the gap between the first and second vaccination doses (Ranjini, 2021). There was also hesitancy toward the second dose among those who had developed fever, swelling, vomiting, nausea, headache and other mild ailments when they took the first dose. There was no mechanism to resolve queries and doubts about the vaccine, side effects, personal medical conditions, or even about the interval between the two doses. While many doctors and health workers recommended eight to ten weeks between doses, as per WHO guidelines, the Government of India facilitated vaccination with a four-week gap. This created confusion among the population. While there was information overload on some issues, there was an information void on certain other issues. This led to the spread of

misinformation. Thus, the main problems in the vaccination drive were related to information and two-way communication between the authorities and the population (Ranjini, 2021).

Technology-mediated tools

GAI can deliberately generate factually incorrect content and articulate it in reasonably good language, mostly English, with a high degree of persuasiveness. It has the potential to create misinformation with ease and spread it at scale. AI is trained on massive volumes of unfiltered or minimally filtered data from the internet, which means there is a potential for biases in these datasets to perpetuate existing systems of segregation, social dominance, and inequality, as noted in an interview by an AI scholar. Experts interviewed for this reflective piece noted that these tools can generate misleading content through voice clones, deepfakes or robocall messages, making it harder to tell if the content originates from a human or a machine. This has led some to declare that GAI is the ultimate disinformation amplifier (DW Akademie, 2024). Popular messaging platforms such as Twitter and WhatsApp have also facilitated the spread of information pollution since these are anonymous, end-to-end encrypted, and, as a result, dangerously unrestrained.

Human factors

The Healthy Indian Project (THIP) was established as a health literacy platform dedicated to empowering Indians with the knowledge and skills needed to make informed healthcare decisions. By providing accessible, culturally sensitive education and resources, THIP bridges the gap between medical information and public understanding. In an interview, the founder of THIP outlined key human factors contributing to information pollution, drawing from extensive hands-on experience and valuable insights from the field (Table 1). This list categorises how and why various individuals or groups generate, amplify, or fall victim to misinformation, disinformation, and other forms of digital content distortion.

Table 1. **Types of drivers of information pollution**

Category	Human drivers of information pollution
1	Those for whom sharing is a way of keeping in touch with their friends and family. They share and spread misinformation without understanding the consequences or without even reading the messages completely.
2	Those sharing information with a genuine intention to help others, however, have low media and health literacy and thus cannot discern what is true or false.
3	People who share information after it has worked for them. These people have good digital literacy and a medium level of health literacy. They were the most problematic group during the COVID-19 pandemic since they shared misinformation stating that some alternative medicine worked for them.
4	Those with certain cultural and medicinal biases confidently share information, saying that they are experts on the topic.
5	Conspiracy theory peddlers, who believe in their stance, support dubious claims and spread misinformation.
6	Those who have a high degree of digital and health literacy who deliberately create and spread misinformation to gain viewership/likes/leads. This could also be big media houses, social media influencers and others who knowingly share misinformation.

Note. Data from expert interview

Governance

India does not currently have specific laws or statutory rules to regulate AI. However, various frameworks, advisories and guidelines have been adopted,[7] and the Indian Government made amendments to the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules 2021 for an open, trusted and accountable internet. As per this regulation, foreign technology companies such as WhatsApp, Facebook, Twitter, Netflix, Amazon, etc., are required to deploy technology-based regulation measures, have a physical presence in India, maintain appropriate human oversight, and periodically review automated tools.

In a recent development, the Artificial Intelligence (AI) Action Summit, convened in Paris in February 2025, was co-chaired by French President Emmanuel Macron and Indian Prime Minister Narendra Modi. At this summit, approximately 60 countries, including France, China, and India, endorsed a joint declaration titled the "Statement on Inclusive and Sustainable Artificial Intelligence for People and the Planet". In his opening statement, Modi said that "Governance is also about ensuring access to all, especially in the

7. For a detailed discussion see Harmon et al. (2024); for comparison with other countries see Baldota (2024).

Global South. It is where the capacities are most lacking—be it computer power, talent, data, or the financial resources," also adding that "we must address concerns related to cyber security, disinformation, and deep fakes." Some of the principles emphasized in the declaration are: guaranteeing equitable access to AI technologies while addressing disparities in digital access; encouraging open, ethical AI systems that are secure, reliable, and accountable[8]; and enhancing global collaboration and establishing comprehensive governance frameworks for AI[9].

Media and information literacy educates the public to discern credible information in the context of evolving generative AI.

In summary, the study reveals that propaganda and political polarisation, driven by the pursuit of political advantage, are among the key catalysts of information pollution in the political sphere. This conclusion is drawn from extensive research and in-depth analysis conducted by the author. Conversely, despite the spread of health misinformation, there is no evidence of malicious intent in health-related information pollution. In addition, information pollution disproportionately affects minorities, migrants, and low-literacy communities, making them more vulnerable to manipulation. Furthermore, tools like Deepfakes amplify the scale and reach of false information. Overall, the significant challenge of AI-generated misinformation remains unregulated, and the study finds that Global South governments and institutions are ill-equipped to safeguard information integrity in the face of rapidly evolving technologies, leading to an urgent need for stronger policies and technological cooperation.

Government responses

During the 2024 parliamentary elections, the Election Commission of India issued guidelines on the responsible and ethical use of social media platforms and avoidance of wrongful use by political parties and their representatives during general and by-elections. It warned political parties, their representatives, and key campaigners against using deepfakes, AI-generated distorted content that spreads fake information, mis- and

8. See website: https://www.elysee.fr/en/emmanuel-macron/2025/02/11/statement-on-inclusive-and-sustainable-artificial-intelligence-for-people-and-the-planet
9. See website: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2101947

disinformation, and against distorting facts which lowers the standards of electioneering. Most importantly, it directed that "whenever such deep fake audios/videos are posted, they should be taken down immediately within three hours of being ordered to take down the content" (Election Commission of India, 2024).

Institutional interventions can dramatically improve information integrity. For example, the Government of Karnataka in southern India sponsored a trial intervention called the "Information Disorder Tackling Unit", which was operational for 90 days before the general elections. The authorities reviewed around 64,000 internet articles daily. A total of 84,47,361 posts were scanned during this period, in which 182,450 threats were identified. A total of 537 fact checks were conducted, and 39 were escalated for legal review, of which 18 first information reports were filed relating to disinformation. Politics and elections accounted for 54% of all fact-checking (Joshi, 2024). The government published these misinformation reports online. While this initiative might be driven by political motives from a specific party, it serves as an example of strategies that policymakers and governments can adopt.

The findings reported here point to three main tools necessary to safeguard information integrity in India: strengthening institutions at different levels, technological innovation, and collaborative policy formulation/regulations.

Strategies to safeguard information integrity

The literature review and key informant interviews suggested the following strategies to safeguard information integrity:

- Inoculation (prebunking), involves preparing individuals to recognise misinformation by forewarning them, making them more resistant to it later (Compton et al., 2021).
- Debunking, which corrects misinformation after it spreads, using fact-checking, individual rebuttals, or platform-based algorithmic corrections.
- Credibility labels/tags, which are stamps that provide a quick true/false check on misinformation, are marked by fact-checkers without detailed explanations.
- Contextual labels/provenance cues offer background information to help users understand the origins and context of information but not its truthfulness.
- Media and information literacy, which educates the public to discern credible information in the context of evolving GAI.

Evidence on interventions and recommendations

Information pollution disproportionately affects marginalised, minority, migrant, and low-literacy groups, who are more vulnerable. There is also an urgent need to develop better monitoring capabilities and accountability mechanisms in different areas, including technology companies and platforms, government, and media, among others. Collaboration between different groups and actors is essential to facilitate fact-checking and safeguarding information integrity. Collaboration among various stakeholders plays a crucial role in verifying facts and protecting information integrity.

International cooperation

The research agenda on information integrity is relatively new and has focused mainly on US and European contexts. The reflective piece showed that there are few fact-checking organisations and credible verification bodies. There is a need to promote context-specific research and the mapping of the information ecosystem in the Global South and to develop a Global South-specific network, similar to the International Fact-Checking Network or the Vaccine Safety Net. On the technical front, there is a need for more projects like the Coalition for Content Provenance and Authenticity, which is building a system to provide provenance and history for digital media, providing tools for creators to claim authorship as well as empowering consumers to make informed decisions about what to trust.

Collaboration between different groups and actors is essential to facilitate fact-checking and safeguarding information integrity.

The findings also point to the following recommendations in terms of information governance:

- Convene a high-level group to strengthen the capacity of various institutions in the Global South to counter threats to information integrity. Specifically, it recommends establishing a Global South consortium on information pollution, supporting research and advocacy efforts. Such a consortium would develop guidelines and policies specific to the Global South context to mitigate this problem. Given the fast-paced evolution of GAI, the group should frame (self)

regulations collaboratively with technology companies, platforms, and governments.

- Fund fact-checkers, which are organisations dedicated to debunking misinformation across media platforms and verifying claims from political figures and authorities.
- Enforce platform alterations: compel social media platforms (e.g., Facebook, Twitter, YouTube, WhatsApp) to address issues such as fake news, fake user accounts, originator of messages, and monitor illegal content, specifically to modify interfaces and algorithms to limit misinformation spread. For example, WhatsApp could reduce its message-forwarding limit from over 200 to five recipients to help curb false information.

To conclude, an informed citizenry is key to human progress and democracy. GAI introduces a new layer to the issue of information pollution, intensifying the need for improved monitoring systems and accountability measures. The unregulated and easily accessible nature of GAI allows anyone to generate and spread misinformation at scale. Analysis revealed that propaganda and polarisation motivated by political gain are the main drivers of information pollution. While information pollution in health is often unintentional, without malicious intent, it can have serious consequences and also needs to be addressed.

This reflective piece argues for concrete strategies to enhance information integrity in the Global South, including practical interventions, multi-stakeholder collaboration, oversight frameworks, and accountability standards. It emphasises pre-bunking, promoting media and information literacy, and fact-checking information through government and other entities. Lastly, it proposes creating a Global South consortium to tackle information pollution and support research and advocacy efforts in the Global South.

Limitations of the study

Analysis of hate speech, although important, is beyond the scope of this reflective piece since it requires a different technical and methodological approach. The reflective piece primarily focuses on India, with insights applicable to the broader Global South. This specific geographical focus may limit the generalisability of the findings to other regions within the Global South.

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Appendix 1

Interview guide

This research focuses on misinformation and fake news in two important domains: politics and health. Some of the questions that I would like to ask you are as follows:

1. Misinformation: Who is producing it?
2. Who is consuming it?
3. How is it being spread?
4. What is being spread? Different types?
5. What is the overall prevalence? How big is this problem?
6. What is the impact of misinformation and fake news on these two domains - Politics and health?
7. What are the current models for mitigating/fact-checking?
8. What are the strategies to control the spread of misinformation? What can be done to stop it? In India and in the Global South?
9. Any initiatives that you are part of?
10. Do you think international attention and cooperation is required, particularly in the Global South, to address this issue? If so, how?
11. What are your recommendations for the future?

Appendix 2

List of key informants interviewed

1. Amrita Sengupta was interviewed on May 7, 2024.
2. Joyojeet Pal, interviewed on May 8, 2024
3. Padmini Murray was interviewed on May 3, 2024.
4. Pratik Sinha, was interviewed on May 4, 2024.
5. Suditpa Sengupta, was interviewed on May 7, 2024.
6. Tarunima Prabhakar, was interviewed on May 3, 2024.

BREAKING CHAINS, BUILDING BRIDGES: RETHINKING JUST TRANSITIONS FROM A GLOBAL SOUTH PERSPECTIVE

LANTA DANIEL

BREAKING CHAINS, BUILDING BRIDGES: RETHINKING JUST TRANSITIONS FROM A GLOBAL SOUTH PERSPECTIVE

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Abstract

Industrialisation, while crucial for economic growth, often leads to greenhouse gas emissions and resource exploitation, posing significant environmental challenges. Industrialisation is a crucial means for Global South countries to create much needed jobs for growing youth populations, but the potential for sustainable green industrialisation is limited by a lack of technology and financial resources. The article explores this tension by examining the concept of a 'just transition', its implications for the Global South, and how the global community may support industrial transitions while minimising environmental impacts. Through analysis based on a literature review and interviews, the paper recommends the prioritisation of local employment, skill development, and green technology transfer through foreign direct investment in the Global South, and the adoption of energy efficiency standards to reduce energy waste and carbon emissions. It also suggests that Global North countries may support Southern industrialisation by accelerating their own green transition and leveraging their resources.

Keywords

Just transition; green industrialisation; Global South; employment creation; climate change

Evidence for decision-making

1. **Prioritise job creation and energy efficiency in green transitions.** Global South governments should focus just transition efforts on job creation, developing energy efficiency regulations, and structural transformation.

2. **Accelerate green transitions globally. Renewable energy alone cannot meet the Global South's energy demands.** Global North countries can compensate by accelerating their own transition to eco-friendly practices, technology transfer and adoption of equitable practices.

3. **Invest in sustainable local development.** Investors and funders can foster just transitions in the Global South by incentivising local employment, skills development and green technology innovation.

4. **Advocate for climate justice.** Governments and civil society must advocate for climate reparations. The UN, World Bank, and development institutions should prioritise integrating differentiated responsibilities into their funding and policy frameworks to advance climate justice.

Introduction

The Sustainable Development Goals (SDGs) are now considered a cornerstone of international development, emphasising progress without environmental damage (United Nations, 2015a). As many countries in the Global South become increasingly industrialised, and given that industrialisation often negatively impacts the environment (Saha et al, 2023; Ruba et al, 2021), it is crucial that environmental sustainability be an integral part of development. However, calls to ensure development is environmentally sustainable must be understood in the context of global inequities and historical responsibilities. In this way, it is vital to critically examine the SDGs through a justice lens from a Global South perspective (Chen, C. W., 2023; Garcia- Pena et al., 2020).

Ensuring that development is environmentally sustainable must be understood within the context of global inequities and historical responsibilities.

In contrast to the economically advanced nations of the Global North, overall countries in the Global South have higher poverty rates, higher unemployment rates, and fewer decent job opportunities, all of which may be related to lower industrialisation levels (Aryeetey & Baah-Boateng, 2015; Tregenna, 2007; Dinh et al., 2012; Kruglikova & Shatokhina, 2015). The Global South also leads in population growth, with sub-Saharan African (SSA) countries projected to contribute an additional 23–38 million people to the global population each year (Gu et al., 2021). Together, these factors make it advantageous—in development terms—for Global South countries to pursue a strategy of industrialisation. Yet, this has global environmental consequences.

Countries like Bangladesh and Vietnam provide pertinent examples of this tension. Both countries have rapidly industrialised through the growth of their textile industries, lifting millions out of poverty. However, this industrial growth has come at a significant environmental cost (Saha et al., 2023; Ruba et al., 2021; Sharpe et al., 2022). While the SDGs emphasise poverty reduction and decent work, achieving these universal goals without harming the environment is challenging. There is an urgent need to find a balance between the drive to industrialise in the Global South on the one hand, and the need to tackle environmental challenges on the other. However, the struggles of the Global South are often sidelined in globalisation debates, perpetuating marginalisation and invisibility, as highlighted by Arundhati

Roy's metaphor of globalisation as a blinding light leaving many in darkness (Nixon, 2011; Davis, 2012; Nhamo, 2017).

This article examines the trade-offs between green transition[1] and industrialisation[2] processes in the Global South. Many countries in the Global South face two competing needs: first, the need to generate employment through industrialisation to accommodate an increasing number of young people who lack access to decent jobs,[3] and second, the pressure to transition towards eco-friendly production methods,[4] which requires financial and technological resources generally lacking in the Global South. These dual demands speak to the concept of a 'just transition',[5] which—according to the International Labour Organization (ILO)—involves a fair and inclusive shift to a sustainable economy, providing decent job opportunities and ensuring no one is left behind (ILO, 2015). This article aims to explore the practicability of this concept, and to propose a forward-thinking approach, addressing three crucial questions: i) What does a just transition involve?; ii) What could just transitions mean for Global South countries?; and iii) How can the global community collaborate to facilitate a just transition in the Global South while minimising environmental repercussions?

Methods

This article employs a narrative review of literature supplemented by key informant interviews (KIIs) to explore the concept of a just transition in countries dealing with trade-offs between environmental protection and industrialisation. Literature was identified both through recommendations from experts and reviewers who had read the preliminary abstract, as well as Google Scholar keyword searches using terms such as "just transition," "green transition," "employment creation," "environmental policies," "climate change," "industrialisation," and "Global South." A snowballing technique was also employed, sourcing additional literature from the reference lists of already sampled works.

The selected texts were published within the last five years, focused on the Global South, and/or addressed key themes such as green transition,

1. SDG 13: Climate Action
2. SDG 9: Industry, Innovation, and Infrastructure
3. SDG 8: Decent Work and Economic Growth
4. SDG 12: Responsible Consumption and Production
5. SDG 10: Reduced Inequalities

industrialisation, and employment, aligning closely with the study's regional scope and research objectives. The article also incorporates key reports, working papers, and policy documents from reputable organisations such as the African Union, UN, and ILO, which—while not peer reviewed—are critical for understanding the broader policy and contextual framework. Together, the sources provide important insights into industrialisation, sustainability, and socio-economic development, particularly in the Global South.

The literature review was supplemented by five KIIs. Each interview lasted 30-50 minutes and was guided by two questions: (1) What does the notion of 'just transition' mean for the Global South in light of green transitions and industrialisation for employment? and (2) In the spirit of leaving no one behind as stipulated in the SDGs, what are the emerging issues and challenges when it comes to green transition and industrialisation for the Global South? Interviews were conducted with purposively selected Tanzanian experts with 17 to 24 years' experience in relevant fields, comprising an environmental policy expert, an economist specialising in sustainable development, an industrial strategist focusing on green technologies, and government officials. Tanzania was selected due to the authors' familiarity with the local context and established networks, enabling efficient research within a limited timeframe. Prior to the interviews, informed consent was obtained and anonymity guaranteed.

Due to the limited specific literature on the green transition-industrialisation trade-off for the Global South, narrative synthesis is used which allows flexibility in exploring this topic. However, given that the review is not systematic, this method may introduce bias and subjective interpretations. Additionally, time constraints and limited resources meant the study was not able to use surveys or include a larger number of KIIs. Efforts have been made to minimise bias, but these limitations remain. The findings and conclusions should therefore be considered within the context of these methodological constraints. Nevertheless, the exploratory nature of this study provides foundational analysis, identifies research gaps, and seeks to inform future research and policy development.

Overall, the study aims to deepen understanding of the trade-offs faced by the Global South in working towards just transitions in the context of the SDGs and historical inequalities, and advocates for a paradigm shift towards a justice-informed approach to inclusive and sustainable development.

Just transition revisited

The concept of the 'just transition' centres around environmental justice concerns in an attempt to rethink development through the growth of low-carbon, sustainable and inclusive economies. In its 2015 Guidelines, the ILO defines just transition as greening the economy while prioritising fairness, inclusivity, and creating decent work opportunities for everyone (ILO, 2015). The UN emphasises that just transition strategies, policies, and measures aim to ensure that no individual or community is disadvantaged in the shift towards green industrialisation (Tavares, 2022). It also serves as a unifying framework, bringing together diverse stakeholders including social movements, trade unions, environmentalists and policymakers, all united in the effort to ensure that equity is better integrated into low-carbon transition strategies (IPCC, 2022). Interview respondents highlighted that the essence of a just transition extends beyond mere environmental considerations, embodying a comprehensive commitment to equity both socially and economically (see Table 1).

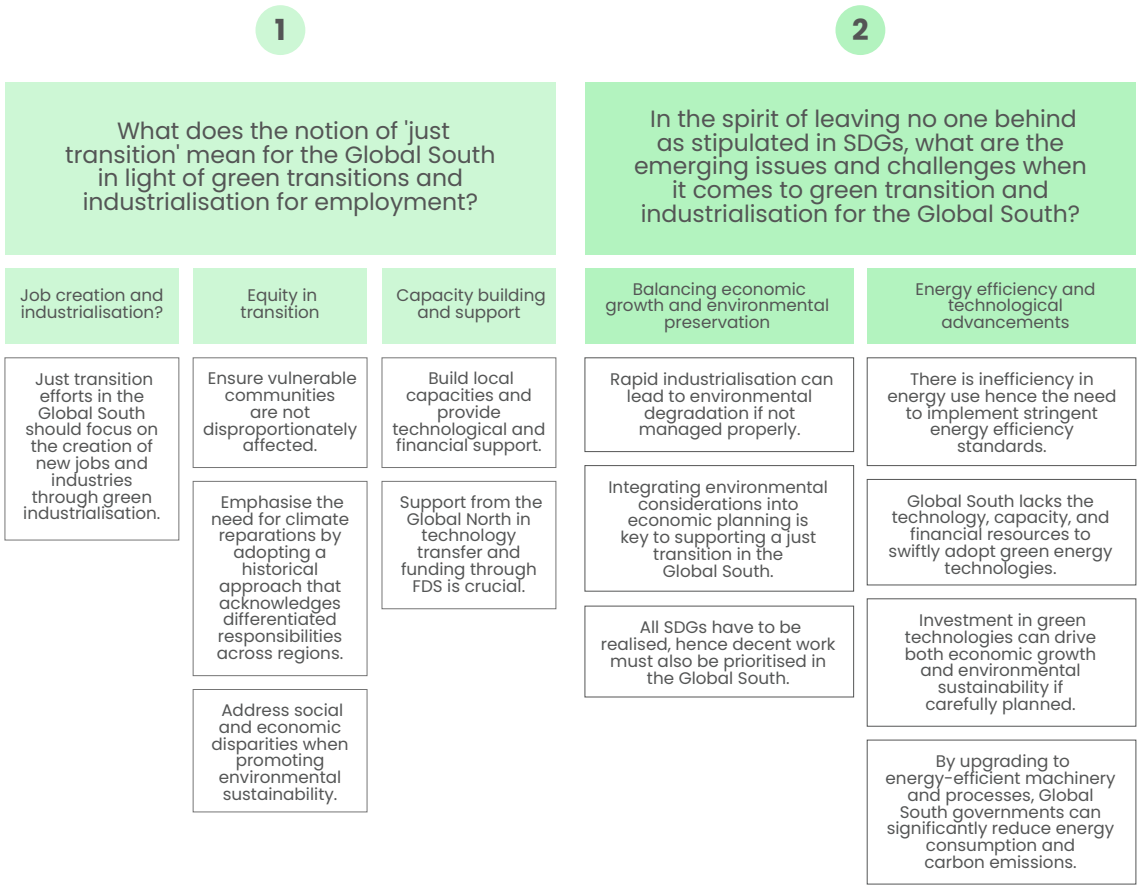
The concept originates in the 1990s, when growing awareness of environmental degradation led to the introduction of new environmental regulations. However, these regulations often resulted in unintended consequences, including job losses in industries that relied heavily on polluting practices (Tavares, 2022). Unionists and activists, recognising the potential for adverse impacts on workers and communities, began calling for mechanisms to mitigate these effects and ensure a fair transition to more sustainable economic practices. This grassroots movement gave rise to the formation of the Just Transition Alliance, a coalition that brought together unionists and environmentalists in a shared commitment to addressing the intersection of labour rights and environmental sustainability (Morena et al., 2020). In this way, as noted by interviewees, although environmental policies might impact industrial employment, green industrialisation can also be an opportunity to create new jobs and industries.

Just transitions in the Global South: The role of industrialisation in development

In countries of the Global South, such as those in SSA, the challenge is less about job loss brought about by a shift to green industries, and more about pre-existing widespread unemployment (Mbatha, 2021; Kappel, 2021). Indeed, key informants argued that for Global South countries, just transitions must focus on job creation. This aligns with Africa's Agenda 2063, which emphasises the need for structural transformation and industrialisation to

address youth unemployment (African Union, 2015). The UN Addis Ababa Action Agenda also includes an explicit commitment to industrial development for economic growth, diversification, and value addition in low- and middle-income countries (United Nations, 2015b). The fact that industrialisation, particularly in manufacturing, has historically created significant primary and secondary job opportunities (Bivens, 2019; Nosbuch & Bernaden, 2012), means that the push for a green transition may end up exacerbating global inequality.

Table 1. **Summary of interview findings**



Note. Elaborated by the author

Swilling and Annecke (2012) argue that in certain contexts, efforts to make consumption and production more environmentally friendly may overlook this pressing challenge. They caution that significant investments by the private sector to develop low-carbon, resource-efficient economies, while failing to address existing inequalities, could lead to an unjust transition (Swilling & Annecke, 2012). The interviews also highlighted that while countries in the Global North possess the technology and resources to invest in eco-friendly methods of production and consumption, those in the Global

South face technological, financial, and human resource constraints. Consequently, these countries find it harder to capitalise on these advancements, potentially exacerbating existing inequalities (see Table 1).

When discussing industrialisation, particularly in manufacturing where there is a significant employment multiplier effect, the role of the energy sector is vital. A green transition must be based on green and renewable energy. However, many Global South countries lack the resources to adopt green energy technologies swiftly. Without access to the means to make green industrialisation work, there is a risk that many countries in the Global South will be forced to make a choice between prioritising employment through industrialisation or addressing the climate crisis—both of which would have negative consequences.

Many countries in the Global South risk having to choose between prioritising industrialisation for employment or addressing the climate crisis.

In response to growing energy demands linked to industrialisation, the African Common Position on Energy Access and Just Transition was endorsed in 2022, aiming for universal energy access while prioritising African development. Africa plans to use its energy resources, including non-renewable sources, and seeks global support in line with the Addis Ababa Action Agenda (African Union, 2022). Interviews emphasise the need to integrate environmental considerations into economic plans even with limited financial and technological resources. Efforts can be introduced in short-term plans, to be fully realised in long-term plans as capacities are built. Since energy inefficiency remains a problem, implementing stringent energy efficiency standards and adopting advanced technologies to reduce energy waste and carbon emissions emerged as key priorities. It should be noted, however, that the issue of how Global South countries with limited resources can be supported to access these advanced technologies must be addressed, as also emerged from the interviews (see Table 1).

While employment remains a key focus for the just transition in this context, some perspectives diverge. Anabella Rosemberg (2020) highlights a lack of understanding among labour activists as to how environmental crises could render their efforts to protect workers' rights and create new job opportunities futile if there is ultimately no planet left for workers to inhabit (Rosemberg, 2020; Morena et al., 2020). It is worth asking whether it is not

possible for collaborative efforts between the Global North and South to avert such a scenario, while at the same time enabling the Global South to focus on job creation for its youth.

Reflecting on just transitions, global inequalities and responsibilities

A just transition approach to development aspires to balancing the need for environmental and economic sustainability, with the livelihood needs of individuals and communities. This is a unique challenge for the Global South, where the need to create jobs through industrialisation may limit the potential for environmental sustainability. In such a context, green industrialisation has the potential to bridge this gap between the seemingly contradictory demands to industrialise and to protect the environment. Yet, the green industrialisation capacity of different countries is highly uneven.

It is useful, then, to take a broader view, one that considers historical legacies, and asks how the Global South, especially SSA, ended up facing such a challenging dilemma. Nixon, in his book "Slow Violence and the Environmentalism of the Poor," discusses the effect of Global North industrialisation, whose effects on the Global South have been slow, long-term, and often unnoticed in terms of environmental pollution (Nixon, 2021). The repercussions of waste dumping practices in Africa, for example, persist to this day. Indeed, the Global North is still responsible for a disproportionate amount of pollution (see for instance Ulgen, 2021). Moreover, industrialisation in the Global North, largely fuelled by resources from the South, has long given the North a developmental advantage, which persists to today in the form of huge social and economic inequity between North and South. Therefore, the challenges faced today by countries in the Global South to make a just transition to a greener economy are rooted in historic global inequalities. From this perspective, and given that the Global North has both technical and financial capacities, a just approach might well also require that the Global North supports Global South countries more proactively in this endeavour, in the interests not only of historical justice but also in averting global environmental catastrophe. In sum, a historical perspective is crucial for understanding the current challenges faced by the Global South, as the legacy of global inequality continues to disadvantage these regions in their efforts to transition to a greener economy.

This is not so say, however, that Southern countries should not be proactive when it comes to transitioning into green technologies. Rather, they should act within their capabilities, while building capacities in green energy

technologies. For instance, to try and combat energy loss and thus contribute to greening the economy, the African Union has devised a comprehensive common strategy that outlines short-, medium-, and long-term energy development plans (Afriican Union, 2022). These pathways aim to accelerate progress towards universal energy access, while ensuring that crucial development objectives are not compromised. Within this strategy, Africa intends to utilise all available energy resources, both renewable and non-renewable, to meet its energy demands. Natural gas, low-carbon hydrogen, and nuclear energy are anticipated to play pivotal roles in expanding modern energy access in the short to medium term, while the uptake of renewables will be promoted in the long term to achieve a low-carbon, climate-resilient energy sector.

The critical need for energy for development—whether green or otherwise—has been demonstrated by Northern countries themselves when faced with resource shortages. The energy crisis caused by the Russia-Ukraine war, for example, forced some rich Global North countries to revive coal-fired power plants (Cernoch, 2024; Belaid et al., 2023). Yet, this is a reality that many countries in the Global South have been facing for years, and still face today. This article underscores the fact that the Global South's energy needs cannot be fully met by renewable sources alone in the short to medium term, challenging the dominant narrative that exclusively prioritises green energy.

Moreover, prevailing global development finance mechanisms fail to adequately address the historical responsibility for the disproportionate and severe impacts endured by climate-affected communities in the Global South, as argued by Perry (2021). There is an urgent need for a substantial overhaul of development financing to address past injustices. Overall, there must be recognition of differentiated responsibilities concerning global goals, particularly on climate actions, to facilitate a collective, fair, and equitable global development agenda. The findings of this article suggest that any meaningful discussion of just transitions must include provision for climate reparations and differentiated responsibilities, reflecting the unique challenges and contributions of the Global South.

Conclusions and recommendations

This article highlights the need for just transition actions in the Global South to focus on offering job creation to address persistent unemployment. It also underscores the need for a historical approach which acknowledges differentiated responsibilities through climate reparations. Moreover, it recognises that the Global South's energy demands cannot be fully met

by renewable sources alone in the short to medium term, challenging the dominant narrative that exclusively prioritises green energy. Overall, therefore, the study calls for fair and equitable collaborations between the Global South and North. Based on these considerations, the following recommendations are proposed:

1. The Global North should assist in offsetting the environmental impact of the Global South's industrialisation through financing the adoption of cleaner technologies in the South, providing direct support for carbon offset projects, and speeding up their own transition to eco-friendly practices because they have the means (money and capabilities), as compared to the Global South.
2. Foreign direct investment to the Global South should prioritise projects that integrate profit-making with Global South transformative development. This involves focusing on sectors offering opportunities for local employment generation, skill development, and technology transfer, especially green technologies. By negotiating investment agreements that prioritise technology transfer and knowledge sharing, industries in the Global South can become more eco-friendly.
3. The Global South should strive to develop energy efficiency initiatives through implementing stringent energy efficiency standards and regulations across industries to significantly reduce energy consumption and carbon emissions. This may include measures such as upgrading industrial machinery to more energy-efficient models and optimising manufacturing processes.

Achieving green industrialisation in the Global South requires a multi-faceted approach. Collaborations which are fair and equitable between North and South are essential for overcoming challenges and maximising opportunities for sustainable global development. If each region is left alone to fight to achieve these goals, the end result will be shared failure, and the SDGs will remain an elusive agenda.

Areas for further research

Despite an insightful review, this paper has limitations in its reliance on a small sample of key informants and the use of narrative synthesis, which while flexible, may introduce biases. A broader range of perspectives could uncover additional nuances or contradictory viewpoints that were not captured in this study. Additionally, due to the rapid pace of technological advancements in green energy and industrial practices, literature reviewed may not fully account for innovations or disruptions that could

significantly alter the trajectory of a just transition, particularly in terms of job creation and environmental impact. Nevertheless, the exploratory nature of this study provides foundational analysis, identifies research gaps, and informs future research and policy development.

Future research could explore additional methodologies not used in this Zstudy, such as surveys and a larger number of KIIs to enhance generalizability. Case studies could also be conducted to inform public policies and establish best practices. Additionally, narrowing the scope of the study—either by focusing on specific regions, levels of economic development within the Global South, or targeting a particular sector or type of climate crisis—could provide more targeted insights.

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CLIMATE-INDUCED DROUGHT AND FINANCIAL SYSTEMS: THE CASE OF PARAGUAY

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CLIMATE-INDUCED DROUGHT AND FINANCIAL SYSTEMS: THE CASE OF PARAGUAY

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Abstract

The increasing severity and frequency of drought driven by climate change is significantly impacting agriculture. Drought causes social and economic damage, increases the risk of default, and reduces the value of assets linked to agricultural production. This is particularly detrimental to Global South countries, where agriculture supports many people's livelihoods. This article aims to investigate the effect of climate change-induced droughts on financial systems, using Paraguay as a case study. A Structural Vector Autoregressive model (SVAR) was used to understand the spreading dynamic of climate shocks with impulse-response functions. Findings indicate that a drought shock results in more than USD 500 million increase in modified credits in Paraguay after 3 years, and that targeted financial measures can prevent farmers' credit profiles from default. The article offers actionable recommendations aligned with SDG 13 (climate action) and SDG 8 (decent work and economic growth), and Economic Growth, aiming to contribute towards a global financial system that works for all, as envisioned in the Pact for the Future.

Keywords

Drought; financial system; agriculture; climate change; Paraguay; Global South; SVAR.

Evidence for decision-making

1. Droughts increase the risk of loan defaults and reduce the value of assets linked to farming. This severely affects the financial systems of agriculture-dependent countries.

2. The effect of a drought shock implies more than USD 500 million increase in modified credits set by Paraguay after 3 years.

3. Renewed, refinanced, and restructured credits, along with transitional complementary measures issued by the Central Bank of Paraguay kept farmers' credit profiles from default.

4. In countries with fully privatised agricultural insurance, public subsidies can incentivise private investment or agricultural resilience and help mitigate climate risks for small-scale farmers.

Introduction

Severe weather events, intensified by climate change, pose several risks to global macro-financial stability and economic growth (Kim et al., 2022). Developing economies heavily reliant on climate-sensitive sectors, such as agriculture, bear its effects at a higher scale (The World Bank & United Nations Capital Development Fund, 2024; Abbass et al., 2022). The agricultural sector stands out in the Global South, with most small-scale farmers living in Asia and Sub-Saharan Africa, where agriculture contributes approximately 15% of the gross domestic product (GDP) and supplies over 40% of jobs (Chiriac & Naran, 2020). In Latin America and the Caribbean (LAC), 18% of the total population lives in rural areas, and agricultural activities contribute around 7% of GDP, employing 14% of the workforce (World Bank Group, 2024a).

One phenomenon that heavily affects agriculture is drought (Meza et al., 2020). Depending on its duration and intensity, drought can cause devastating social and economic damage among others due to production loss, and financial institutions are not indifferent to such climate disruption (Özsoy et al., 2020). Production loss caused by droughts leads to an increasing risk of default and a decreasing value of agricultural assets. The Basel Committee on Banking Supervision [BCBS] (2022) highlights the importance of identifying and understanding the risks associated with severe weather in credit portfolios, and the relevance of establishing action schemes to mitigate climate-related impacts. Among its high-level principles for risk management and prudential supervision, BCBS includes imposing loan limitations on high-risk sectors. In contrast, some authors manifest that encouraging farming activities helps to achieve sustainable economic growth in agriculture-dependent countries (Abidi et al., 2024; Galbiati et al., 2023).

This article aims to investigate the effect of drought on the financial system, using Paraguay as a case study. The agriculture sector in Paraguay employs approximately 16% of the working population (National Institute of Statistics, 2020) and constitutes 10% of the total GDP, or 30% when adding industry derived from agricultural products (Central Bank of Paraguay [CBP], 2024a). Additionally, Paraguay is severely affected by droughts (Benítez Schneider, 2016; González Santander, 2016), with fluctuations in temperature and precipitation affecting main yields such as soybeans, corn, wheat, sesame, beans, sugar cane, cassava, and cotton (Economic Commission for Latin America and the Caribbean [ECLAC], 2014).

In 2019, a severe drought in Paraguay led the Central Bank to issue a set of measures targeting the agricultural sector to mitigate its economic impact.

These included considering individuals working in agriculture and livestock as eligible for credit if they had suffered losses (CBP Resolution No. 5, 2019; CBP Resolution 10, 2019), making reserve requirements in foreign currency available for credits and modifications in credit conditions (CBP Resolution No. 14, 2019), and formalising credit conditions adjustments along with additional support for affected agricultural activities (CBP Resolution No. 21, 2019). This article analyses such measures on credits to estimate the effect of drought on the Paraguayan financial system. It uses this estimate to contribute to understanding the multi-effects of climate change, in line with Sustainable Development Goal (SDG) 13 (climate action) and SDG 8 (decent work and economic growth). Ultimately, the article aims to contribute to building a global financial system that works for all, as envisioned in the Pact for the Future (United Nations [UN], 2024).

Methods

A Structural Vector Autoregressive (SVAR) model was employed to understand the spreading dynamic of climate shocks with impulse-response functions, as implemented in Waiguru, Kyalo, & Gichuhi (2018). Climate, financial, and agricultural variables were considered due to their relationship with climate change (Campiglio et al., 2022; Grippa et al., 2019; Kjellstrom et al., 2019). Additionally, a multi-sector analysis was conducted, incorporating the financial sector, the agricultural sector, and climatic factors.

Climatic variables

The level of precipitation in millimetres was employed to capture drought. Monthly data from the World Bank's Climate Change Knowledge Portal (2024b) was transformed to quarterly data by adding the monthly values in each quarter. The historical average level of precipitation for 1950-1999 was used to calculate the precipitation deficit, defined as follows:

$$pdeficit_t = 100 \times (\ln(\underline{phist}) - \ln(precip_t)) \qquad t=1,\ldots,88.$$

Where *precip* is the quarterly precipitation level, $\underline{phist}$ is the historical average, and *pdeficit* is the precipitation deficit expressed in percentage terms.

Financial variables

The total credit portfolio, as well as renewed, refinanced, and restructured credits, transitional measures, and COVID-19 measures,[1] referred to hereafter as "3RMC19", were sourced from the Financial Bulletins of the Superintendency of Banks published by the Paraguayan Central Bank (2024b). The set was constructed by adding the monetary value of each variable. A more detailed description of these variables can be found in Appendix 1.

Production loss caused by droughts leads to an increasing risk of default and a decreasing value of agricultural assets.

COVID-19 measures were included as a component of the set because the first two years of the pandemic coincided with the aftermath of the severe drought under study, faced by Paraguay in 2019. Producers who had difficulties paying off their debts because of production damage, aggravated by the pandemic's trade restrictions, took advantage of the general financial relief measures issued to face the impacts of COVID-19.

Agricultural variables

Agricultural GDP data, expressed in monetary terms, was used to capture the effect of climatic shocks on the economy. The data was taken from Quarterly National Accounts Bulletins (CBP, 2023), and all variables were unified to quarterly frequency. The series was seasonally adjusted using the US Census Bureau's X-13 seasonal adjustment (SA). The Hodrick-Prescott filter helped obtain the cyclical component of the series in logarithms. The cyclical component is interpreted as deviations (in percentage) with respect to the trend.

SVAR model

The Vector Autoregressive (VAR) method helps understand how climate shocks spread through the economy. In its reduced form, VAR(p) considers a system of equations where the variables of interest depend on the p lags of all variables. With this methodology, the error terms are likely correlated

1. These modifications in credit conditions are authorised and regulated by the CBP.

with each other. Hence, it cannot be studied how innovations in one of them affect the system while keeping the other terms constant. However, a VAR*(p)* in reduced form can be viewed as a representation of the data produced by a SVAR*(p)* model. With this model, unlike the VAR method, the innovations are attributed to one of the variables, keeping the others constant. Once the VAR(p) model is estimated in its reduced form, the structural model can be recovered by orthogonalising the errors in the reduced form model (Sims, 1980). Hannan-Quinn criterion is used to define the number of *p* lags.

Following the SVAR model, the vector y_t of endogenous variables contains:

$$y\_t=[pdeficit_t, agrgdp_t, credit_t, 3RMC19_t]' \qquad t=1,...,88.$$

Where $pdeficit_t$ is precipitation deficit, $agrgdp_t$ is agricultural GDP, $credit_t$ is total credit portfolio, and $3RMC19_t$ is the 3RMC19 set as a percentage of the total credit portfolio. More details on the technical aspects of the model can be found in Appendix 2.

Finally, impulse-response functions are used to measure the effect of precipitation deficit on the Paraguayan financial system.

Diagnostic tests

Stability diagnostic tests were performed on the SVAR estimates to ensure the reliability of the results. This test verifies that the statistical properties, such as mean, variance, and autocorrelation, do not change over time, which also satisfies stationarity conditions. Next, diagnostics on the residuals were performed to validate the results and precision within the model. The Lagrange Multiplier (LM) test was used to check serial correlation and ensure the appropriate use of lags in the model. Lastly, the homoscedasticity assumption was verified using heteroscedasticity tests that combine levels, squares, and cross terms.

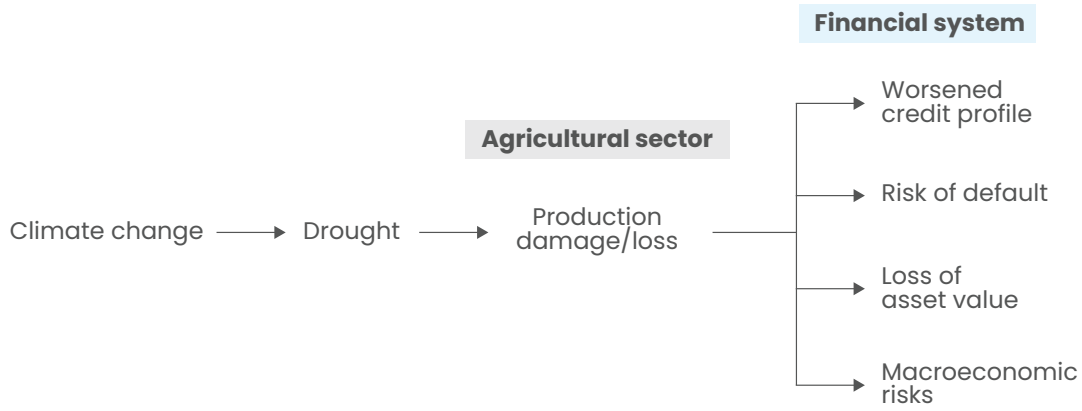
Results

Transition channel of climate shocks on finance

This article considers the effect of climatic shocks on the financial system via agricultural damage or loss caused by drought. The transition channel is illustrated in Figure 1. Here, the agricultural sector is represented by agricultural GDP, while the financial system includes the total credit portfolio and the modifications of its conditions (3RMC19). The effects include a worsening of

credit profiles, risk of default, loss of value in assets linked to agriculture, and macroeconomic risks.

Figure 1. **Transition channel of climatic (drought) shocks**

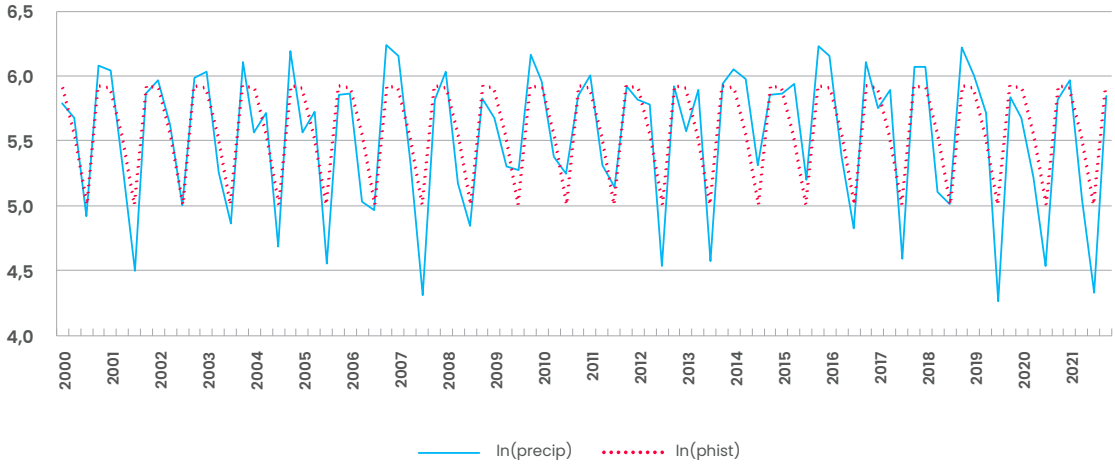


Note. Elaborated by the authors

Drought shocks

Precipitation under historical average levels reveals drought events. Figure 2 presents quarterly precipitation levels, *ln (precip),* compared to their corresponding historical average, *ln (phist).* The data shows that droughts were experienced in 2007, 2019, and 2021, with quarterly precipitation significantly under average levels. The third quarter of the year has the lowest precipitation level, which is considered a seasonal behaviour.

Figure 2. **Precipitation levels in Paraguay, period 2000-2021**

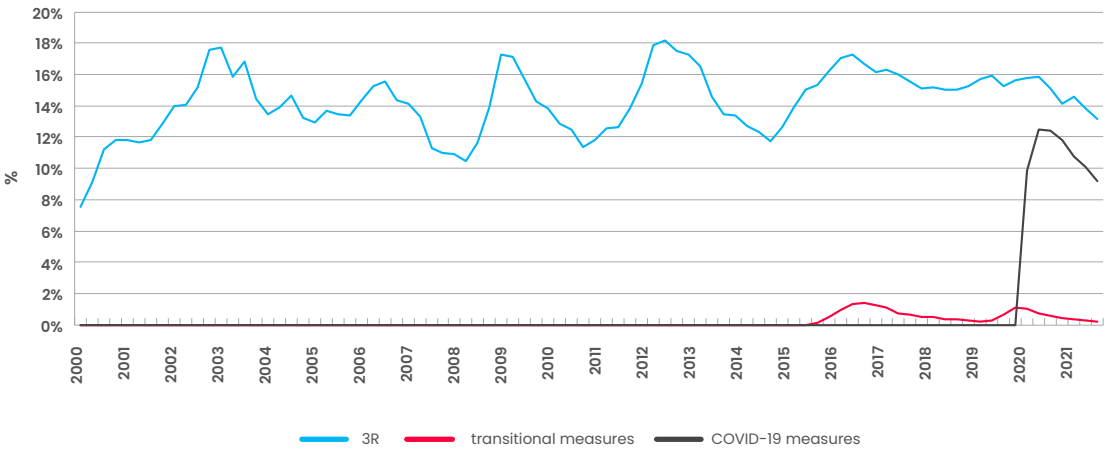


Note. Adapted from Climate Change Knowledge Portal by World Bank Group (2024b).

Modifications in credit conditions

The set of renewed, refinanced, and restructured credits, as a percentage of the total credit portfolio, presents a regular performance (Figure 3). While there are highs and lows within the range of 10 to 20%, the set represents around 14% of the total credit portfolio on average. Transitional measures have appeared since 2016, with low proportions of the total credit portfolio (less than 2%). For the case of COVID-19 measures, there is a visible peak of 12.5% in 2020, followed by a decreasing trend to 9% in the last quarter of 2021.

Figure 3. **Modifications in credit conditions, period 2000-2021**

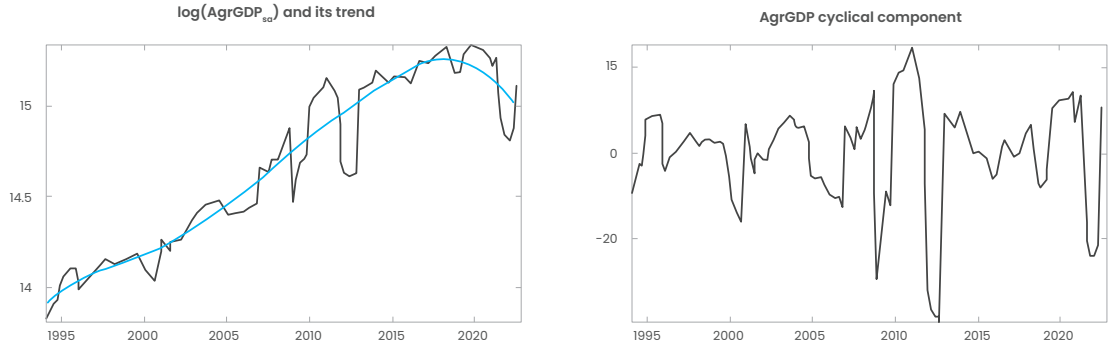


Note. Adapted from Financial Bulletins of the Superintendency of Banks by CBP (2024b).

Agricultural GDP

Agricultural GDP exhibits an increasing trend, as shown in Figure 4 (left). When taking into account the cyclical component (right), 2001, 2009, 2013, and 2020 have the most noticeable drops. These years coincide with the precipitation deficits seen in Figure 2, except for 2009 when the Great Recession repercussions could have impacted GPD.

Figure 4. **Agricultural GDP of Paraguay, period 2000-2021**



Note. Adapted from Quarterly National Accounts Bulletins by CBP (2023).

Summary of findings

Table 1 presents the summary statistics of the variables discussed above. There is an average precipitation deficit of 5.5% with respect to the quarterly historical average, indicating drought, and its standard deviation is 27%. The agricultural sector has a cycle that, on average, represents 0.1% of its trend, but with a volatility of almost 13%. The modification in credit conditions average is 15.3% of the total credit portfolio, with around 4% of the standard deviation.

Table 1. **Summary of variables, period 2000-2021**

Variable	Mean	Standard deviation	Percentiles (5% – 95%)
pdeficit	5.5	27.1	(-30.6 – 49.7)
*agrgdp**	0.1	12.8	(-30.2 – 18.6)
ln(credit)	4.3	1.1	(2.9 – 5.7)
3RMC19	15.3	3.9	(11.1 – 25.2)

Note. Adapted from Climate Change Knowledge Portal by World Bank Group (2024b), Quarterly National Accounts Bulletins by CBP (2023), and Financial Bulletins of the Superintendency of Banks by CBP (2024b).
* The cyclical component of agricultural GDP.

Diagnostic tests

There was no stability issue present within the model, as all inverse roots lie within the unit circle. This implies that statistical properties remain constant over time. The outputs from this and the subsequent tests are in Appendix 3. Furthermore, the LM test rejects the null hypothesis of no serial correlation at lag 1, while it cannot reject further lags. This result supports the idea of one lag specification, in line with the results from the Hannan-Quinn criterion used in the study. Finally, the heteroscedasticity tests showed evidence in favour of homoscedasticity. Overall, the diagnostic tests evidenced a correct model performance.

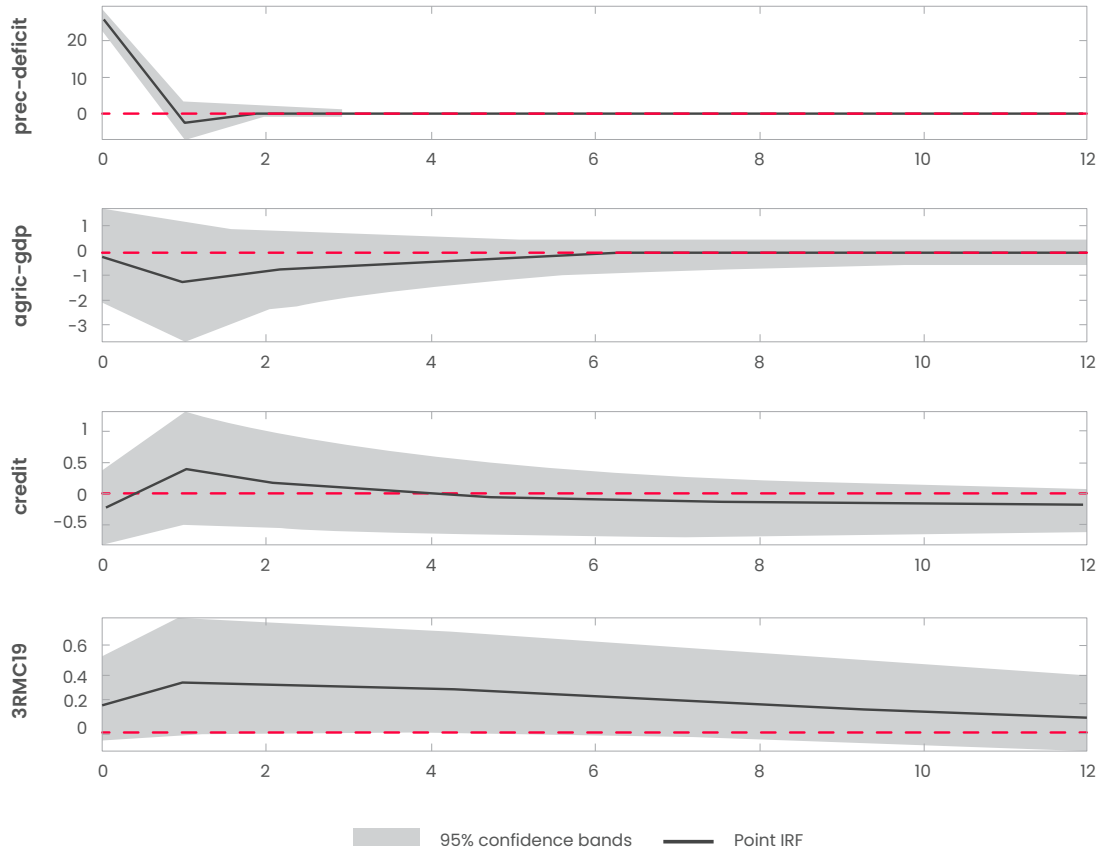
The '3RMC19' credit portfolio included COVID-19 measures that aided producers in debt recovery following the 2019 drought.

Impulse-response functions

After the estimation and diagnostic tests, impulse-response functions show statistically significant effects of a precipitation deficit on 3RMC19, mainly within the second and fourth quarter after the shock (Figure 5). The shock leads to a drop in agricultural GDP and a contraction in the total credit portfolio. However, the effects on agricultural GDP and total credits are not statistically significant at the 5% significance level. With the significant effect on 3RMC19, one standard deviation (27%) increase in precipitation deficit generates 0.2 percentage points[2] increase in 3RMC19, reaching three percentage points after 3 years. Since the total credit portfolio value at the end of 2021 was approximately USD 16,700 million, the effect of three percentage points constitutes more than USD 500 million after 3 years.

2. Note the difference between the concepts of percentage and percentage points. Percentage relates two quantities as a fraction with 100 as denominator. Percentage points is the difference (arithmetic subtraction) between two percentages.

Figure 5. **Agricultural GDP of Paraguay, period 2000-2021**



Note. Elaborated by the authors.

Discussion and actionable recommendations

Effect of drought on the financial system

This article investigated the effect of climatic shocks on Paraguay's financial system by analysing agricultural production damage or loss caused by drought. The results demonstrate a significant reaction to drought of modified credit conditions, indicating that climate disruptions affect the Paraguayan financial system. It is estimated that modifications in credit conditions (3RMC19) increase by around USD 500 million after 3 years.

The results also show that the measures taken by the Central Bank kept farmers' credit profiles from default. When the 3RMC19 set increases, it means that credits are not being paid and, instead of labelling those credits as defaulted, they are reshaped. Hence, 3RMC19 appears as a financial tool to prevent the agriculture sector from default.

The key role of Central Banks

Several macro-financial risks emerge from climate change, with repercussions on economic growth and price stability. The results of this article suggest that without measures to overcome the financial effects of severe weather, the default rate would have been higher, and credit prices could have gone out of control. This highlights the crucial role that central banks have in maintaining price stability and looking after the financial system in the face of intensifying climate change, as has been argued in similar studies (Carè et al., 2024; Kim et al., 2022; Ciccarelli, & Marotta, 2021).

As each country has different regulations, there is no unique formula to safeguard agriculture from climatic disruptions through finance.

The case of Paraguay serves as a model for supporting agricultural activities through credit condition modifications that provide relief to debtors. The 3RMC19 measures were timely and prudential, making them trustworthy. For example, the Central Bank saved a portion (say 5%) from the remaining balance of the modified credit as a contingency reserve (CBP Resolution No. 5, 2019). Similarly, the bank's emphasis on supervision to validate that each request was indeed related to the impacts of drought increased the effectiveness of measures and helped avoid negative incentives.

As each country has different regulations, there is no unique formula to safeguard agriculture from climatic disruptions through finance. However, relief from default appears crucial to foster agricultural resilience when extreme weather events take place. In this way, central banks can safeguard the financial system while supporting agricultural growth. One important factor for the effectiveness of measures in the case of Paraguay was the independence of its Central Bank (declared through its Organic Charter, Law No. 489 Article 1), which increased trustworthiness. The institution's credibility is essential to de-risk and incentivise investment. In the Paraguayan case, the measures to modify credit conditions (3RMC19) were well received.

Lessons for climate finance

The results of this article provide evidence that financial measures can help support the agricultural sector when facing severe consequences from adverse weather events. Recognising the effect of climate change on financial stability is particularly important for Global South countries, where agriculture

supports many livelihoods. In Paraguay, for instance, the agriculture sector holds one of the major shares of the credit portfolio and faces severe consequences from adverse climatic situations (Abbass et al., 2022).

While there are ambitions to improve climate finance in the Global South, it is crucial that national authorities take the lead in understanding the financial consequences of climate change and ensuring economic stability. Existing policies are often designed at the micro level, highlighting the need for broader strategies to mitigate the macro-financial impacts of climate change. Intersectoral coordination and renewed strategies are needed, for which international capacity sharing would be of great help. This is in line with the Pact for the Future's goal of scaling up climate adaptation finance, capacity-building and technology transfer to support climate action and build resilience in developing countries (United Nations, 2024). Increased development cooperation, SDG investments, and a renewed international financial architecture can also support developing countries in reaching the SDG targets (United Nations, 2023).

Beyond finance, it is important to keep in mind the human face behind it all. Around 1.4 billion people—18% of the global population—are employed in agriculture, shouldering the main economic effects of climate change (Meza et al., 2020). In countries with fully privatised agricultural insurance, such as Paraguay, public subsidies can help de-risk and incentivise private investment in favour of farmers' relief. Public subsidies for agricultural insurance have been shown to reduce the cost of policies in Brazil, Chile, and Uruguay (García, 2024). Additionally, building a specific public fund for extreme weather events can act as a guarantee for the financial sector in the face of severe climatic disruptions. Private investors may feel confident to loan or invest in agriculture knowing that there is some backup from the government. This can contribute to building a more enabling regulatory and investment environment, as envisioned in the Pact for the Future (UN, 2024).

Conclusions and future research

This research represents the first effort to address the effects of climate disruption on the financial sector through modified credits, based on the case of Paraguay. Evidence was found in favour of implementing financial measures to support farmers facing the consequences of adverse climatic situations. Further research is needed to consider a combination of other climatic variables (floods, temperature, wind speed) or climate indices with alternative approaches for the financial sector (e.g., asset valuation, crop yields, commodity prices, or insurance).

Given that COVID-19 measures included in the study were for general financial relief during the pandemic, the 3RMC19 set covered climatic and non-climatic issues during this period. Unfortunately, data about the COVID-19 measures is not disaggregated by activity, which would have led to more precise results. Nevertheless, the study's results shed light on the relevance for central banks to embed climate-related risks into their policy framework.

More could be done to mitigate the financial effect of climate disruptions on agriculture. A range of financing instruments could be implemented, including but not limited to public funds, agricultural insurance, and green loans. International organisations could also contribute with a call for proposals on the topic, such as PPPs for climate-related projects, R+D on drought-resistant crop varieties, and technical assistance for farmers. These actions would represent a remarkable support for agricultural resilience in the face of climate change, while also looking after the financial system.

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Appendices

Appendix 1. Financial variables description

Variable*	Definition
Total credit portfolio	The total set of credits of the banking system, expressed in monetary terms.
Renewed	Credits with a delay of 1-60 days, in which interest and other applicable charges are paid.
Refinanced	Credits with a delay of 1-60 days, in which interest and other required charges are paid, plus 10% of the unpaid capital.
Restructured	Credits in which their structure is modified (dues, rates, places, others).
Transitional measures	Applied since December 2015, these measures allow for the formalisation of credit renewals, refinancing or restructuring, including interest and other charges, to interrupt the calculation of the default period.
COVID-19 measures	Exceptional complementary support measures applied since April 2020, for the formalisation of credit renewals, refinancing or restructuring.
*All variables expressed in monetary terms in this study are in Guarani (₲), the Paraguayan national currency. To September 2024, USD 1 is equivalent to approximately ₲ 7,800, according to the CBP	

Appendix 2. SVAR model

A SVAR model was applied. To recover data of the structural model, a reduced form of VAR(p) helped by orthogonalizing the errors. VAR(p) in its reduced form can be represented as:

$$y_t = c + A_1 y_{t-1} + \cdots + A_p y_{t-p} + u_t$$

Where y_t is a $K \times 1$ vector of endogenous variables, c is a $K \times 1$ vector of constants, A_i for $i = 1, \ldots, p$ are $K \times K$ matrices of autoregressive coefficients, and u_t is a $K \times 1$ vector of errors assumed to be normally distributed $u_t \sim iidN(0, \Sigma_u)$, with covariance $\Sigma_u = E(u_t u_t')$.

The SVAR(p) model can be as follows:

$$B_0 y_t = \mu + B_1 y_{t-1} + \cdots + B_p y_{t-p} + w_t$$

Where B_i for $i=1,\ldots,p$ are $K \times K$ matrices of autoregressive coefficients, B_0 reflects the immediate relationship among the model's variables, w_t is a $K \times 1$ vector of structural shocks without serial correlation and diagonal covariance matrix $\Sigma_w = E(w_t w_t')$ with complete rank.

VAR(p) in its reduced form and SVAR(p) are linked through $A_i = B_0^{-1} B_i$ and $u_t = B_0^{-1} w_t$. Also, by construction, $\Sigma_u = B_0^{-1} B_0^{-1\prime}$ is a system of equations in the elements of B_0^{-1}.

B_0^{-1} estimation requires additional restrictions to the data generation process. The first method to determine B_0^{-1} was proposed by Sims (1980). The basic idea is to establish short-term restrictions to the B_0 matrix of how shocks affect variables in the system.

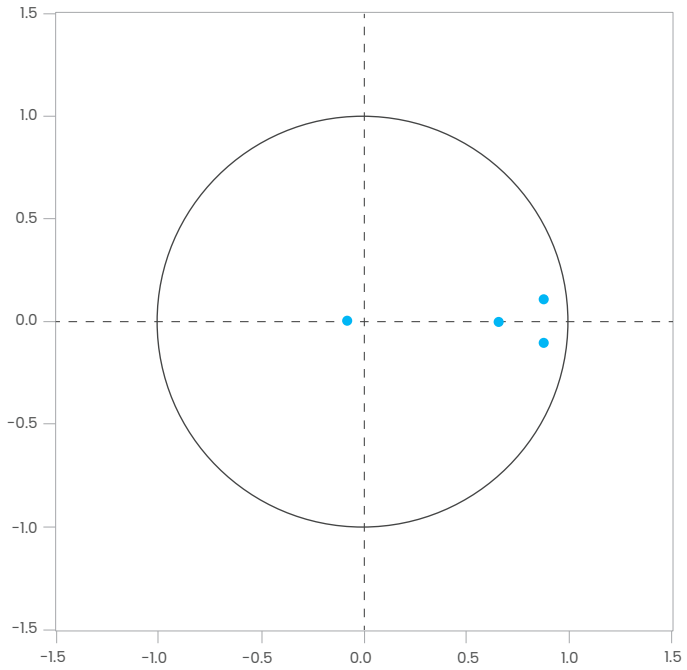
Once Σ_u is estimated from the reduced form of VAR(p), the Cholesky decomposition establishes $\Sigma_u = PP'$, where P is a triangular matrix.

The triangular structure of P has an economic interpretation that justifies the order of the variables. The order should be from the most (contemporaneously) exogenous to the most endogenous variable of the system. Therefore, the precipitation deficit variable is considered to be affected only by its own shocks, i.e. an agricultural or financial shock does not affect droughts, but climatic shocks affect all variables in the system. 3RMC19 is the most endogenous variable that contemporaneously reacts to all shocks.

Appendix 3. Diagnostic tests

Figure A 1. Stability test: Inverse roots of AR characteristic polynomial

There is no stability issue, as all inverse roots lie within the unit circle.



Note. Elaborated by the authors.

Table A1. VAR residual serial correlation LM tests

LM test rejects the null hypothesis of no serial correlation at lag 1, while it cannot reject for further lags. This result supports the idea of one lag specification.

Null hypothesis. No serial correlation at lag h						
Lag	LRE* stat	df	Prob	Rao F-stat	df	Prob.
1	33,15005	16	0,0071	2,158184	(16.229,8)	0,0071
2	15,37657	t6	0,4973	0,963573	(16,M9.8)	0,4978
3	12,02201	16	0,7425	0,747991	(16.229,8)	0,7427
Null hypothesis. No serial correlation at lags 1 to h						
Lag	LRE* stat	df	Prob	Rao F-stat	df	Prob.
1	33,15005	16	0,0071	2,158184	(16.229,8)	0,0071
2	51,40342	32	0,0163	1,669157	(32.263,4)	0,0165
8	91,71533	48	0,0001	2,073212	(48.260,1)	0,0002

*Edgeworth expansion corrected likelihood ratio statistic.

Table A2. VAR residual heteroskedasticity tests

Evidence in favour of homoscedasticity.

Null hypothesis: homoscedasticity
(Levels and squares)

Joint test:					
Chi-sq	df	Prob			
93,80759	80	0,1386			
Individual components:					
Dependent	R-squared	F{8,78)	Prob.	Chi-sq(8)	Prob.
res1*res1	0,116179	1,281641	0,2653	10,10754	0,2576
res2*res2	0,146497	1,673507	0,1182	12,74522	0,1209
res3*res3	0,039736	0,403454	0.9J54	3,456999	0,9025
res4*res4	0,064824	0,675840	0,7113	5,639646	0,6875
res*res1	0,660941	0,632738	0,7479	5,301899	0,7249
res3*res1	0,083107	0,883737	0,5341	7,230300	0,5120
res3*res2	0,120461	1,335354	0,2388	J0.48012	0,2329
res4*res1	0,104008	1,131789	0,3517	9,048662	0,3382
res4*res2	0,132675	1,491466	0,1739	11,54276	0,1728
res4*res3	0,061225	0,635879	0,7453	5,326608	0,7222

(Includes cross terms)

Joint test:					
Chi-sq	df	Prob			
155,5468	140	0,1746			
Individual components:					
Dependent	R-squared	F{8,78)	Prob.	Chi-sq(8)	Prob.
rest*res1	0,14438	0.B67819	0,5955	11S6102	0,5613
res2*res2	0,233619	1,567716	0,1098	2D.324B3	0,1202
res3*res3	0,096212	0,547481	0,8957	B.370476	0.B691
res4*res4	D.104672	0,601246	0,8554	9.J064fi7	0,8242
res2*res1	0.2J6110	1.417B32	0,1674	18,80159	0,1727
res3*res1	0,147709	0,891725	0,5708	12,85591	0,5379
res3*res2	0,236375	1.59f93?	0,1024	20,56463	0,1133
res4*res1	0,13780	0,821988	0,6433	11,98904	0,8072
res4*res2	0,18347	1,155571	0,3277	15,96287	0,3157
res4*res3	0,082166	0,4604	0,9465	7,148479	0,9288

Note. Elaborated by the authors.

THINK TANKS FROM THE GLOBAL SOUTH: OPPORTUNITIES TO MAKE A DIFFERENCE TO THE GLOBAL AGENDA

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THINK TANKS FROM THE GLOBAL SOUTH: OPPORTUNITIES TO MAKE A DIFFERENCE TO THE GLOBAL AGENDA

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Abstract

The multilateral development agenda is extremely complex, consisting of a wide array of issues that are increasingly interconnected and technically challenging. International finance and trade, climate change, and the emergence of new technologies all require updated multilateral responses. The recent *Summit of the Future* resolved very few of the issues on the table, while also adding new concerns to the agenda, and highlighting the need to revitalise multilateralism. Think tanks from the Global South play a critical role in supporting these negotiations, by undertaking targeted and coordinated research initiatives around key issues. There is also a need to improve links between think tanks and the negotiators involved in such political processes. Existing networks could be utilised, and formal mechanisms could be established to ensure timely and relevant inputs, including through specific negotiating language. Funding mechanisms also need to be established or existing ones repurposed. Additionally, think tanks can propose and promote initiatives that go beyond existing negotiating frameworks and make ' outside the box' contributions to advance the global agenda for the benefit of the people of the Global South.

Keywords

Summit of the Future; Global South; think tanks; development.

Introduction: The global agenda after the Summit of the Future

On 22-23 September 2024, in the days preceding the 79th session of the General Assembly of the United Nations (UN), over 130 heads of state and government, together with a range of UN agencies, non-governmental organisations, civil society organisations, academic institutions, private sector actors, and youth representatives, gathered at UN headquarters in New York for the *Summit of the Future: Multilateral Solutions for a Better Tomorrow.*[1] On the first day of the summit, the General Assembly adopted 'The Pact for the Future' resolution, the culmination of a complex negotiating process that began in 2020 (United Nations, 2024). The pact commits to bold and transformative actions to implement the 2030 Agenda for Sustainable Development, placing poverty eradication at its core. The pact includes 56 actions in five sections: sustainable development and financing for development, international peace and security, science technology and digital cooperation, youth and future generations, and transforming global governance.

Through the resolution, world leaders pledged to close the SDG financing gap in developing countries, to ensure that the multilateral trading system continues to be an engine for sustainable development, and to accelerate reform of the international financial architecture to strengthen the representation of developing countries. The pact includes a commitment to reform the UN Security Council, recognising the urgent need to make it more representative and accountable. The document also contains terms relating to gender equality and the empowerment of women and girls, as well as a commitment to promote and respect the human rights of young people.

The pact also contains two annexes, the first of which —"The Global Digital Compact —aims to eliminate all digital divides, fostering an inclusive, open, and secure digital space that respects and promotes human rights, and to enhance the international governance of artificial intelligence. The second annex—"Declaration on Future Generations"—establishes guiding principles, commitments, and actions to promote international stability, peace, and security, ensuring peaceful, inclusive, and just societies, addressing inequalities within and among nations, together with the special needs of developing countries and vulnerable groups.

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1. https://www.un.org/en/summit-of-the-future

In his opening address, UN Secretary-General António Guterres said that the summit was needed "because our world is heading off the rails" as "resources that could bring opportunities and hope are invested in death and destruction", and because multilateralism itself needed to be rescued "from the brink". Now, having "unlocked the door" by adopting the pact and its annexes, he urged the international community to act on its shared responsibility to "walk through it". He emphasised that success would not be measured merely by agreements but by tangible actions that improve people's livelihoods. While the summit was expected to deliver meaningful multilateral reform, countries failed to reach consensus on contentious issues. However, ongoing reform of the international financial architecture, the measurement of progress beyond GNI, reform of the Security Council, and the strengthening of the UN, were not ruled out. The summit also opened several new spaces in the multilateral sphere, such as the appointment of an envoy for future generations, and the launching of specific initiatives for closing the digital divide.

Think tanks from the Global South are able to provide unique expertise across the vast scope of issues on the summit's agenda. It is crucial that they systematically engage in key discussions, providing action-oriented inputs, and bringing the needs and interests of the people from Global South to the centre of debates.

In this context, the Global South perspectives include concrete examples of this type of contribution.

Relevance of the contributions of this publication

The authors and articles featured in this journal directly engage with the actions outlined in the Pact for the Future while also contributing to broader global conversations and summits on development, governance, climate change, and technology. By linking specific research findings to multilateral commitments, these contributions provide the empirical and analytical backing necessary to ensure that the needs of the Global South remain central to policy discussions. This interplay between research and policymaking is critical to bridging knowledge gaps and reinforcing dialogue.

1. **The impact of information framing on youth engagement in public policy debates** is linked to actions 35 and 36 of the pact, relating to the strengthening of "meaningful youth participation" at the national and international levels. The article addresses a significant challenge in the promotion of youth participation, namely the match of supply

and demand, including the spaces and mechanisms needed to drive the process. There is a call for a multifaceted approach to address those issues, as participation of young people in decision-making is deemed essential to ensure an inclusive society.

2. **Potential impacts of EU deforestation regulation on smallholder coffee farmers: Evidence from Indonesia and Uganda** contributes to action five of the pact, to "ensure that the multilateral trading system continues to be an engine for sustainable development". The article shows that most small coffee farmers in both countries would not be able to meet the traceability standards of the new European Union Regulation for Deforestation Free Products (EUDR), and that the investment required for that purpose would affect the ability of the producers to invest in increasing their productivity. The article makes concrete proposals to address the issue, including recommendations for the EUDR to be implemented in ways that are less detrimental to small producers from the Global South.

3. **Building health equity in crisis through community-level action and resilience building: The cases of Nigeria, Nepal and Brazil** is linked to action six of the pact, to "invest in people to end poverty and strengthen trust and social cohesion". The authors find that culturally adapted interventions and other targeted actions improve health outcomes in crisis affected areas.

4. **Taking responsibility for international security: Non-state armed groups and under-governed spaces in the Global South** is linked to actions 24 to "prevent and combat transnational organised crime and related illicit financial flows" and 28 to "seize the opportunities presented by science, technology and innovation for the benefit of people and planet". Through analysis of the situation in Trinidad and Tobago and in Jamaica, the study highlights that non-state groups in under-governed spaces represent risks for the affected countries, as well as for international security in general. The article highlights the success of the land tenure program in Peru as a good response model, and calls for enhanced governance at the local level and international collaboration to assist those processes.

5. **Global financial governance and debt sustainability in the Global South** is linked to action four of the pact, and also to the upcoming *Financing for Development* conference. The article includes a proposal for measurements to complement the established debt sustainability

analysis, and finds that the debt carrying capacity of developing countries is well below that of the developed economies, and that there is a need for increased investment in the development of non-debt alternatives. The above articles provide useful inputs to several specific ongoing negotiations. It is therefore incumbent upon the relevant actors to ensure that these inputs are brought to the attention of negotiators from the Global South, to strengthen the bargaining position on those related issues.

6. **Safeguarding information integrity in the age of AI: Perspectives from India for the Global South** addresses objective five on artificial intelligence of the digital global compact "to enhance international governance of artificial intelligence for the benefit of humanity". The reflective piece addresses the need to control "information pollution", which has been exacerbated by generated artificial intelligence. The publication includes a specific call to establish a Global South Consortium to combat information pollution.

7. **Breaking chains, building bridges: Rethinking just transitions from a Global South Perspective** is linked to action nine of the pact, which includes a call to "strengthen our actions to address climate change". The paper calls for support for industrialisation in the developing world through the transfer of resources and technologies from developed countries, to minimise the environmental impact and to generate local employment.

8. **Climate-induced drought and financial systems: the case of Paraguay** informs action four of the pact, as well as the upcoming *Fourth Financing for Development Conference* scheduled for 30 June - 3 July 2025 in Madrid, Spain. The article includes an innovative analytical angle to measure how climate change-induced droughts affect the financial system in Paraguay, allowing countries from the Global South to strengthen arguments around compensation for such externalities.

Towards a more systematic engagement of Global South think tanks

As noted, these high quality, peer-reviewed *Global South Perspectives* articles and reflective pieces make concrete contributions to specific global debates, incorporating a range of perspectives from the Global South. In the complex landscape of multilateral negotiations, it is extremely important that proposals by developing countries are underpinned by the strongest possible

scientific evidence, to strengthen the political arguments and to highlight new issues from a Southern perspective. In effect, the negotiating positions of Global South countries would be greatly enhanced if knowledge produced by think tanks were to directly inform the political positions of those countries. It is therefore very important for decision makers in the Global South to call for targeted research projects to be undertaken, and for the results of this work to be directly linked to the negotiations. For example, the contributions of Global South think tanks on the issues of debt relief and climate issues such as loss and damage have already brought new perspectives to global negotiations.

In this context, to ensure maximum impact, there is a need to establish a more robust and formal link between the work of think tanks and political processes, and to improve and consolidate communication channels with negotiators from the South. Think tank networks are in a position to offer negotiating groups specific and time-sensitive advice on the many open negotiations including, inter alia, climate, financing, international security reform, and new technologies. For that purpose, groups such as the G77 or the BRICS might establish new funding mechanisms to provide direct contributions for negotiators. In addition, existing funding mechanisms such as the Perez Guerrero Fund,[2] which is managed by the G77 in New York, or the UN Trust Fund for South-South Cooperation[3] can be repurposed for this objective. These funding mechanisms should respect the intellectual independence of the think tanks, and conditions for funding should focus on the quality, relevance, and timeliness of the research projects. In addition, funders should coordinate with negotiating teams to ensure that the input provided is appropriate and directly aligned with the issues under consideration.

In addition, as external, autonomous actors, think tanks would be able to explore and propose more radical or 'outside the box' positions, to change the parameters of debates. These proposals might include, inter alia: responses to issues of emerging Northern protectionism to the non-fulfilment of financial commitments, including ODA volumes and debt restructuring and relief, and including debt forgiveness or jubilees. In addition, responses from Southern countries to a lack of progress on these negotiations could be articulated by think tanks. In such a context, think tanks could go as far as proposing the specific negotiating language and suggesting negotiating strategies.

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2. https://www.g77.org/pgtf/
3. https://unsouthsouth.org/un-fund-for-ssc/

The infrastructure of such coordination already exists. Think tanks from the South have established several networks, among them NeST,[4] DAKSHIN, CIKD,[5] the BRICS Academic Forum,[6] and Southern Voice itself. Such efforts should also complement the work of intergovernmental institutions such as the South Centre.[7] The transaction costs of joint research initiatives among several institutions have been greatly reduced through information technology and the potential utilisation of artificial intelligence tools. Moreover, there is a degree of convergence in research topics across these networks, and the promotion of the interests and priorities of the Global South in the framework of that agenda.

There is a need to establish a more robust and formal link between the work of think tanks and political processes, and to improve and consolidate communication channels with negotiators from the Global South.

It should be noted that in practice developing countries have also demonstrated their capacity to innovate and to implement global agenda goals in ways that are adapted to their realities, breaking the traditional paradigm of emulating and transplanting practices from developed countries, for example as evidenced in areas including conditional cash transfer programs, tropical agriculture production, school meals utilising local production, community health initiatives, land tenure, gender empowerment, and temporary employment programs.

At a more practical level, there are several repositories of good practices for developing countries, including for example South-South Galaxy, established by UNOSSC and open to all interested partners, and which as of December

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4. Established in 2014, the Network of Southern Think Tanks (NeST) aims to collaboratively generate, systematise, consolidate, and share knowledge on South-South Cooperation (see https://southernthinktanks.org/en).

5. The Center for International Knowledge on Development (CIKD) was established in China following an announcement by President Xi Jinping at the UN Sustainable Development Summit in September 2015, with the aim of coordinating domestic and international development research resources, to study theories and practices of development, and organise events for knowledge exchange on international development topics.

6. The BRICS Academic Forum is a major platform for interaction between experts and scholars from BRICS countries. The forum aims to encourage academic exchanges, strengthen dialogue between experts and scholars, as well as provide policy advice.

7. The Centre was established in 1995 as the "intergovernmental think tank of the Global South". The South Centre could become another important convening and coordinating centre for the work of Southern think tanks (see https://www.southcentre.int/about-the-south-centre/)

2024 included over 950 examples.[8] These practices can also serve as objects of study for think tanks, both in terms of their impact, and in terms of the mechanics of the collaboration. To enhance the impact of this fledgling network, it would be useful to institutionalise the links between Galaxy and Global South think tank networks, so the practices are adequately reviewed and evaluated, and their potential for replication is properly identified. In addition, more efficient updating of the database will increase its value as a reference repository.

In sum, more direct and systematic engagement of think tanks from the Global South in political negotiations would make a valuable contribution to shaping the global agenda. These institutions—in close coordination with political actors—can bring fresh perspectives to global processes, prioritising the interests of different groups from the Global South. The challenges outlined in the *Pact for the Future* provide an excellent opportunity to formalise this engagement.

Southern Voice, as demonstrated by the high quality and relevance of the contributions of this publication, is uniquely positioned to be a strong leader in this process. The strong track record of the organisation and its commitment to support the implementation of the SDGs make it an essential partner for this type of engagement. In effect, the organisation can leverage the contribution of its 71 member institutions from across the Global South, and in that context take advantage of its membership in the Scientific Advisory Board of the Secretary General of the United Nations to contribute high quality inputs to support global development efforts from a Southern perspective. The articles and reflective pieces that Southern Voice generates are therefore essential inputs for a more representative engagement with the Global South and its people.

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8. https://southsouth-galaxy.org/. Other examples include the World Bank Open Knowledge Repository (https://openknowledge.worldbank.org/home), the Ibero American Secretariat database of South-South initiatives which documents over 900 exchange initiatives per year among the 22 member countries (https://www.segib.org/cooperacion-iberoamericana/cooperacion-sur-sur/), and the Technology Bank for Least Developed Countries, established in Turkey as a direct outcome of the 2030 agenda (target 17.8) (https://www.un.org/technologybank/)

GLOBAL SOUTH PERSPECTIVES

Issue No. 1 | May 2025

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