

Beyond Time-Poverty: Evidence on Gendered Negotiations of Unpaid Work, Self-Care and Leisure in Rural India

Nishibrata Hazarika*

Research Scholar, Department of Economics, Gauhati University, Guwahati, Assam, India

Assistant Professor, Department of Economics, Lalit Chandra Bharali College, Guwahati, Assam, India

Nivedita Goswami

Professor, Department of Economics, Gauhati University, Guwahati, Assam, India

*Corresponding Author Email: nishibrata@gmail.com

Abstract: *Worldwide gender gaps in time-use are central to debates on unpaid work and well-being, yet most studies rely on additive comparisons that obscure how households negotiate trade-offs across time-use domains. Using state-level rural data from India's Time Use Survey 2024, this paper examines how gender disparities in unpaid work, self-care, and male employment jointly shape leisure inequality and conceptualises leisure as a high-stakes outcome of gendered bargaining over constrained time. A quasi-Poisson regression on 29 rural state-level observations reveals a substantial baseline male leisure advantage of approximately 2.6 hours per day. Results show that increases in women's unpaid work or in men's employment narrow the leisure gap primarily by reducing men's leisure rather than increasing women's, indicating a non-linear time-poverty trap. The interaction between unpaid work and self-care gaps is positive and statistically significant: when men hold a self-care advantage exceeding 15.7 minutes, greater female unpaid burdens widen rather than narrow the leisure gap. Illustrative simulation highlights self-care protection as a critical policy lever. The findings underscore the need to shift policy evaluation from gap convergence to absolute gains in women's time and well-being, consistent with SDG 5.4.*

Keywords: Gender Equality, Leisure Inequality, Rural India, Self-care, Time poverty, SGD 5.4

INTRODUCTION

In rural India, women spend far more time on unpaid domestic and care work than men, while men enjoy substantially more leisure, as documented in India's Time Use Survey 2024 (MoSPI, 2024). This persistent gender gap reflects structural inequality in household time allocation with direct implications for Sustainable Development Goal 5 (Gender Equality), SDG 1 (No Poverty), and SDG 10 (Reduced Inequalities), despite decades of policy attention paid to women's empowerment. The problem is not simply that women work more; it is that the mechanisms through which time burdens translate into deprivation across leisure, self-care, and overall well-being remain poorly understood and largely invisible to conventional gap-based welfare metrics.

Although time-poverty is well documented across the development literature, a key empirical question remains: when women bear heavier unpaid burdens, how are trade-offs negotiated across self-care, employment, and leisure simultaneously? Most existing time-use studies report average gender gaps in isolated activities but do not examine the conditional relationships that shape how time pressure in one domain ripples across others. This study moves beyond simple time-poverty measures to analyse how unpaid work gaps, self-care gaps, and male employment jointly shape leisure inequality in rural households, treating leisure not as a residual category but as a high-stakes outcome of gendered bargaining over constrained time.

Conceptually, this study bridges the unitary and collective household models. While daily time is fixed for every individual, observed allocations may result from negotiated outcomes shaped by gender norms, bargaining power, entitlements, and the relative flexibility of different time-use domains (Agarwal, 1997; Kabeer, 1999). The empirical puzzle is that unpaid work does not affect all time categories uniformly — men's leisure advantage is shaped not only by women's unpaid labour but also by gender gaps in self-care, pointing to simultaneous and interdependent negotiations across multiple time-use domains.

Using quasi-Poisson regression on India's 2024 Time Use Survey, this study makes three original contributions. First, it models conditional trade-offs rather than simple gaps, showing that unpaid work disparities reduce men's leisure advantage, mainly when self-care gaps remain small. Second, it demonstrates that male employment reduces the leisure gap not by freeing women's time, but by crowding out men's leisure through employment fatigue. Third, self-

care protection is identified as a specific, actionable policy lever to translate unpaid work equity into leisure equality. Together, these findings challenge linear accounts of time-poverty and offer a more precise analytical entry point for gender-responsive time policy in rural India.

REVIEW OF LITERATURE

Time Poverty and Unpaid Work

Time-poverty — the inability to meet personal care and leisure needs due to excessive work demands — represents a distinct axis of gender inequality that operates independently of income poverty. Globally, women perform approximately twice as much unpaid care work as men, with no country yet achieving parity (UN Women 2023). In India, the Time Use Survey 2024 confirms that rural women's unpaid work burden far exceeds that of rural men, a pattern that has persisted across successive surveys and reflects deeply entrenched structural inequalities (MoSPI 2024). Women's time-poverty often manifests as a double burden of paid and unpaid labour, correlating with reduced self-care capacity and constrained well-being. Crucially, the temporal dimension of poverty is analytically distinct from its monetary counterpart: individuals may be time-poor without being income-poor, making time-use data an indispensable complement to income-based welfare measures, particularly when assessing progress in SDG 5.4.

Gendered Time Allocation Models

Classical unitary household models assume a single household utility function and efficient specialisation — men in market work and women in home production (Becker, 1965; Gronau, 1977). These models predict that market wages, productivity, and comparative advantage drive time allocation, abstracting from intra-household power dynamics and gender norms. Collective and bargaining models offer an alternative: they treat household allocations as outcomes of negotiation shaped by each member's fallback position — welfare achievable outside the relationship. Evidence shows that enhancements in women's bargaining power through income, education, or asset ownership increase male participation in unpaid work (Agarwal, 1997). However, in rural patrilocal settings, women's fallback positions remain systematically weak due to restricted land inheritance and limited social mobility, thereby skewing bargaining outcomes consistently against women (Kabeer, 1999). These institutional constraints mean that even when women's market participation increases, gains in the redistribution of unpaid work remain limited and fragile.

Time-Use Interactions and Self-Care

Most quantitative studies treat time-use activities additively, assuming that more unpaid work reduces leisure proportionally, without examining whether this relationship varies across household and institutional contexts. This approach overlooks important conditional and non-linear effects. Research documents that women typically compress negotiable time — notably self-care — rather than reducing childcare or paid work when time pressure intensifies. Male employment can exacerbate this interaction if women are required to absorb household labour that was formerly shared (Iversen & Rosenbluth, 2010). The result is a pattern in which leisure gaps may narrow not because women gain

time but because men lose leisure, an outcome that can conceal persistent and deepening female deprivation across multiple domains.

Self-care-encompassing hygiene, rest, sleep, and personal health maintenance— remains marginal in time-use policy, which tends to prioritise childcare and the reduction of unpaid work (Razavi, 2007). From a capability perspective, constraints on self-care violate bodily integrity, personal health, and agency, even where leisure-gap indicators appear favourable (Sen, 1999; Nussbaum, 2000). Robeyns (2005) argues that capability deprivation must be assessed multidimensionally, and that partial improvements in one domain may mask total welfare losses. Therefore, self-care is a distinct and policy-relevant welfare dimension and not a proxy for leisure.

Research Gap

Existing literature establishes gendered time-poverty via unpaid work, documents bargaining limits in patrilocal rural settings, and acknowledges the neglected self-care dimension. What is missing is a unified empirical analysis of conditional effects: how unpaid work impacts leisure depending simultaneously on self-care gaps and male employment levels, using nationally representative rural data from India. This study addresses this gap directly using India's TUS 2024, providing — for the first time — state-level evidence on the threshold conditions under which female unpaid burdens widen rather than narrow leisure inequality and identifying self-care as the mediating policy lever.

METHODOLOGY

Conceptual Framework

This study adopts a feminist economic perspective on household time allocation, building on the time-budget identity proposed by Gronau (1977). Total available time (T) for an individual is fixed and allocated across four mutually exclusive domains: paid work (E), unpaid care and domestic work (U), self-care (S), and leisure (L).

$$T = E + U + S + L \quad \dots(1)$$

This identity serves as an accounting constraint and does not imply unitary preferences or joint utility maximisation within households. Observed time allocations reflect gendered norms, power relations, and institutional constraints (Razavi 2007). Gender inequalities are analysed through differences in time allocation between men and women. The gender gap in leisure is defined as $\Delta L = L_M - L_F$ and is conceptualised as a function of the gender gap in unpaid work (ΔU_{FM}), the gender gap in self-care (ΔS_{MF}), and male employment time (E_M):

$$\Delta L = f(\Delta U_{FM}, \Delta S_{MF}, E_M) \quad \dots(2)$$

The central innovation of this framework lies in examining whether the marginal effect of women's unpaid work burden on leisure inequality varies with men's relative self-care time.

$$\partial(\Delta L) / \partial(\Delta U_{FM}) = g(\Delta S_{MF}) \quad \dots(3)$$

This conditional relationship captures intra-household bargaining over discretionary time. Unpaid work is largely non-negotiable for women, self-care represents a relatively flexible domain through which households absorb

time pressures, and leisure is a high-stakes outcome shaped by social norms and perceived entitlement. By incorporating interaction effects, the framework bridges unitary time-budget models with collective household approaches that emphasise bargaining and power (Agarwal, 1997; Kabeer, 1999) without requiring explicit estimation of Pareto weights. This design is particularly relevant in rural India, where patrilocal norms reinforce men's claims to leisure, while employment pressures and unpaid care burdens impose countervailing constraints on both genders, though in highly asymmetric ways.

Data

This study uses data from the Time Use Survey (TUS) 2024 conducted by the Ministry of Statistics and Programme Implementation (MoSPI), Government of India (MoSPI, 2024). The nationally representative survey records daily time allocation across activities, reported in minutes per day for individuals aged six years and above. The present analysis used data for 29 states and union territories at the state level, with each observation representing a population-weighted state average. State-level aggregation is analytically appropriate because variations in gender norms, labour markets, care infrastructure, and employment regimes across Indian states systematically influence household time allocation and allow the model to capture structural, policy-relevant variation.

This study focuses exclusively on the rural sample, where gender disparities in unpaid work and leisure are the most pronounced. Time-use data were grouped into four domains — paid work (E), unpaid domestic and care work (U), self-care (S), and leisure (L) — expressed in minutes per day to ensure comparability and policy relevance. The dependent variable is the male–female leisure gap; the key explanatory variables are the female–male unpaid work gap, male–female self-care gap, and rural male employment time. The study relied exclusively on publicly available, anonymised secondary data and did not require ethical clearance.

Empirical Strategy

A generalised linear model (GLM) framework is employed to examine the joint relationship between unpaid work, self-care, employment, and leisure inequality. Time-use gaps exhibit positive skewness and overdispersion; therefore, a quasi-Poisson specification is adopted to relax the equi-dispersion assumption of the standard Poisson model. An identity link function is used in preference to the log link, preserving the additive, minute-for-minute interpretation of gender gaps in minutes, thereby improving policy relevance. The baseline empirical specification is

$$\Delta L = \beta_0 + \beta_1 \Delta U_{FM} + \beta_2 \Delta S_{MF} + \beta_3 E_M + \beta_4 (\Delta U_{FM} \times \Delta S_{MF}) + \varepsilon \quad \dots(4)$$

where ΔL denotes the male–female leisure gap in minutes, ΔU_{FM} is the female–male unpaid work gap, ΔS_{MF} is the male–female self-care gap, and E_M is the rural male employment minutes per day. The interaction term $(\Delta U_{FM} \times \Delta S_{MF})$ constitutes the empirical test of the conceptual framework and captures whether the effect of women's unpaid work burden on leisure inequality depends on prevailing self-care disparities, consistent with conditional and negotiated time allocation within households. Bootstrap

bias-corrected and accelerated (BCa) confidence intervals ($R = 999$) were employed for robust inference without relying on asymptotic normality assumptions, which is particularly important given the moderate sample size of $n = 29$ states. All statistical analyses are conducted in R.

RESULTS

Model Fit and Specification

The quasi-Poisson model exhibited a strong overall fit. Null deviance (150.64 on 28 degrees of freedom) declines substantially to a residual deviance of 85.98 on 24 degrees of freedom, yielding a deviance ratio of 0.43, indicating that the four predictors together explain 43% of the variation in the rural leisure gender gap. The joint deviance ratio test confirmed statistical significance ($\chi^2(4) = 64.66, p < 0.001$). Overdispersion is moderate ($\phi = 3.49$), consistent with time-use data exhibiting positive skew and inter-state clustering. The identity-link specification is preferred to the log-link specification, because its coefficients are interpreted directly as minute-for-minute changes in the leisure gap, thereby maintaining policy relevance. Residual diagnostics (Refer Fig.1a-d) including residuals vs. Fitted, Q-Q, Scale-Location, and Cook's distance plots — confirm no major specification violations and no influential outliers. Bootstrap BCa confidence intervals ($R = 999$) confirmed the robustness across all estimated coefficients.

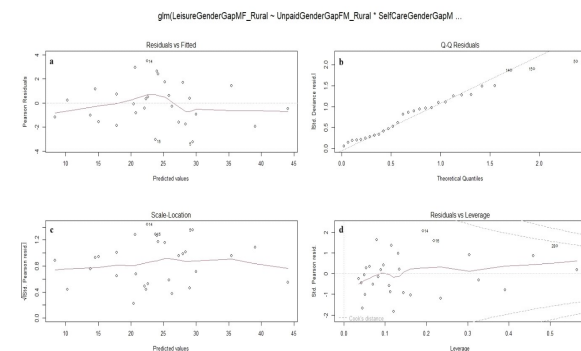


Fig.1a-d Residual diagnostics for quasi-Poisson model. Four diagnostic plots in the panels validate the model specification: **a:** Residuals vs Fitted; **b:** Q-Q plot; **c:** Scale-Location, and **d:** Residuals vs Leverage.

Main Effects

Table 1: Quasi-Poisson Model Output — Rural Leisure Gender Gap (Leisure Gap MF)

Coefficient	Estimate	Std. Error	95% BCa CI	t-value	p-value
Intercept	154.88	36.47	[73.56, 245.58]	4.247	0.0003***
Unpaid Gap FM	-0.277	0.072	[-0.450, -0.064]	-3.851	0.0008***
SelfCareGapMF	-2.845	0.929	[-5.969, -0.513]	-3.061	0.0054**
RMEmployment	-0.184	0.055	[-0.311, -0.063]	-3.338	0.0027**
Unpaid × SelfCare	0.0177	0.0049	[0.0054, 0.0330]	3.617	0.0014**

Note: $n = 29$ rural observations. All CIs were BCa ($R = 999$ bootstrap replications). *** $p < 0.01$, ** $p < 0.01$. Dispersion parameter $\phi = 3.49$.

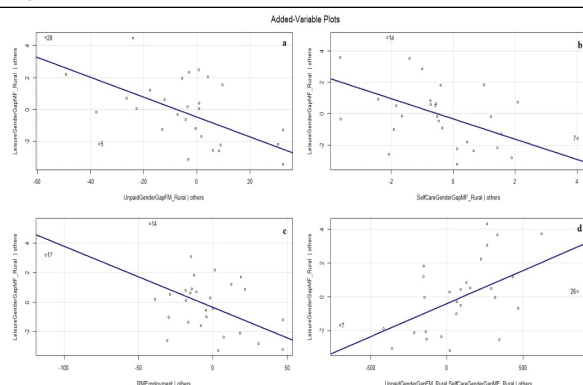


Fig. 2a-d Added-variable (partial regression) plots for quasi-Poisson model predictors. **a:** UnpaidGapFM_Rural (negative slope); **b:** SelfCareGapMF_Rural (negative slope); **c:** RMEmployment (negative slope); and **d:** Interaction term UnpaidGapFM $\times$ SelfCareGapMF (positive slope).

The intercept (154.88 minutes; 95% BCa CI: [73.56, 245.58]) in Table 1 represents the expected male–female leisure gap when all gender gaps and male employment are held at their grand means (zero). This baseline reveals that rural men have approximately 2.6 more hours of daily leisure than rural women, even after controlling for all predictors — a figure that reflects structural patrilocal norms and institutionalised male leisure entitlements in rural India.

The unpaid work gap coefficient ($\beta_1 = -0.277$) (Refer Table 1, Fig 2a) shows that each additional minute of female–male unpaid work disparity reduces the male leisure gap by 0.277 minutes, holding the self-care gap and employment constant. Critically, this does not indicate an improvement in the welfare of women. Gap narrowing arises marginally from men losing leisure and not from women gaining time. A 60-minute increase in female unpaid disadvantage predicts only a 16.6-minute reduction in male leisure advantage, confirming that female unpaid labour diffuses time poverty across household members rather than eliminating it.

The self-care gap coefficient ($\beta_2 = -2.845$) (Refer Table 1, Fig 2b) is nearly ten times as large in magnitude as the unpaid work effect, indicating that self-care is the dominant negotiation domain in rural households. When men prioritise personal maintenance over leisure, the leisure gap narrows, but only because men are compressing their own leisure, not because women are gaining time. Male employment ($\beta_3 = -0.184$) (Refer Table 1, Fig 2c) reduces men's leisure advantage through employment fatigue and opportunity costs. A 60-minute increase in male employment predicts only an 11-minute reduction in male leisure advantage.

Interaction Effect and Conditional Dynamics

The positive and statistically significant interaction coefficient ($\beta_4 = 0.0177$; 95% BCa CI: [0.0054, 0.0330]) (Refer Table 1, Fig 2d) is the core finding of this study. The marginal effect of the unpaid gap on the leisure gap, conditional on the self-care gap, is

$$\partial(\Delta L)/\partial(\Delta U_{FM}) = -0.277 + 0.0177 \times \Delta S_{MF} \dots (5)$$

At the mean self-care gap (12.4 min), this marginal effect equals -0.057 (small and negative). However, at a high

male self-care advantage of 25 minutes, the effect reverses to +0.166, meaning that a greater female unpaid burden now widens rather than narrows the leisure gap. The reversal threshold occurs at approximately $\Delta S_{MF} = 15.7$ minutes — a “time-poverty trap”. Above this threshold, households are time-poor in all domains except for male self-care, which is treated as a protected, non-negotiable category.

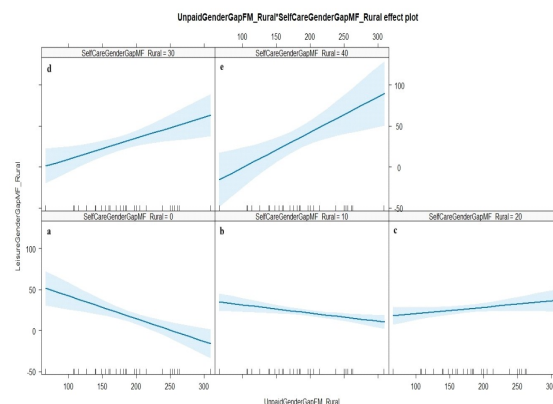


Fig. 3a-e Results from Bootstrapping: Conditional effect of unpaid work gap on leisure gap across different self-care gap levels. **a:** SelfCareGenderGapMF_Rural=0 min (negative slope); **b:** SelfCareGenderGapMF_Rural=10 min (negative slope); **c:** SelfCareGenderGapMF_Rural=20 min (positive slope); **d:** SelfCareGenderGapMF_Rural=30 min (positive slope); **e:** SelfCareGenderGapMF_Rural=40 min (positive slope).

An illustrative policy simulation confirms that narrowing self-care gaps substantially flattens the trajectory of leisure inequality even when unpaid work remains high, demonstrating self-care protection as a critical and underutilised policy lever.

DISCUSSION

Three interconnected mechanisms explain gendered-time negotiations in rural India. First, time-poverty is non-linear and conditional. Standard analyses assume that unpaid work linearly reduces leisure time, but the interaction results demonstrate that this relationship depends critically on disparities in self-care. Gap convergence in leisure does not imply women's welfare improvement; reductions in the male–female leisure gap frequently arise from losses in men's leisure rather than gains for women. This finding strongly cautions against using relative gap-based indicators as proxies for progress in gender equality in time-use and is consistent with SDG 5.4's emphasis on recognising, reducing, and redistributing unpaid care work as preconditions for women's equality.

Second, male self-care functions as a mechanism of structural inequality rather than merely a neutral time-use category. The large self-care gap coefficient (-2.845), combined with the strong positive interaction term, reveals that men treat self-care as non-negotiable and sacrifice leisure rather than unpaid contributions when household time demands rise, effectively forcing women to absorb all additional time pressure through self-deprivation. Women's lost sleep, irregular hygiene, and delayed health care visits are markers of internalised time-poverty that remain invisible to leisure-gap indicators. From a capability

perspective (Sen, 1999; Nussbaum, 2000), these constitute genuine welfare losses in bodily integrity and personal health. Self-care functions as a gender status marker: men defend it fiercely, compressing their leisure rather than their unpaid contributions, while women internalise self-deprivation as an expression of domestic duty rather than a structural constraint (Razavi, 2007).

Third, male employment is an incomplete and potentially misleading lever for gender equality. Higher male employment narrows the leisure gap through men's own leisure loss, not through improvements in women's absolute time. The coefficient suggests that when men work more, women do not gain leisure; instead, they reallocate any freed time toward additional unpaid work or continued self-care sacrifice, consistent with incomplete intra-household reallocation of care in patrilocal rural settings (Iversen & Rosenbluth, 2010; Kabeer, 1999). This qualifies optimistic accounts of employment-led gender equality and argues that female labour force participation alone cannot guarantee leisure or well-being gains without simultaneous redistribution of unpaid work and explicit protection of women's self-care time.

From a policy perspective, the three linked margins must be addressed simultaneously. Reducing women's unpaid care burden through public provision — expanding community childcare under schemes like Palna, investing in piped water (Jal Jeevan Mission), clean cooking fuel (PM Ujjwala Yojana), and improved sanitation — remains the foundational lever. Protecting self-care time through rural employment design — through mandated rest provisions, on-site hygiene facilities, and health outreach under the National Health Mission — can prevent the deepening of time-poverty. Employment policies must also be designed to avoid shifting time costs onto women through predictable MGNREGA schedules, nearby worksites, and incentives for male participation in household care giving activities. Monitoring frameworks should embed absolute indicators of women's leisure and self-care minutes alongside relative gap measures, consistent with SDG Target 5.4, and the MoSPI TUS 2024 evidence base.

CONCLUSION

Three key conclusions emerged from this study. First, narrowing the gender gap in leisure does not necessarily reflect improvements in women's wellbeing. Convergence often stems from reductions in men's leisure rather than gains for women, underscoring the fundamental inadequacy of gap-based welfare indicators in capturing women's absolute time-poverty.

Second, self-care is a critical yet persistently under-recognised dimension of gender inequality. Women absorb unpaid work burdens by reducing self-care, which explains why higher unpaid work sometimes widens leisure inequality rather than triggers household reallocation. The interaction effect identifies a time-poverty trap: when men hold a self-care advantage beyond approximately 15.7 minutes, greater female unpaid burdens widen rather than narrow the leisure gap.

Third, male employment is an incomplete lever. While it reduces men's leisure advantage, it leaves women's time constraints largely intact, even as unpaid work and

self-care disparities persist. Effective policy must therefore address three linked margins simultaneously: reducing women's unpaid work through public care infrastructure; protecting women's self-care time through employment program design and health outreach; and ensuring employment policies do not externalise time costs onto women. Monitoring frameworks should include absolute indicators — women's minutes in leisure and self-care — alongside relative gap measures, consistent with SDG Target 5.4. Future research combining panel data or qualitative methods could illuminate the norms and bargaining dynamics that produce these conditional patterns. Gendered time inequality is structurally embedded and non-linear; recognising self-care as an economic and policy-relevant dimension is essential for achieving real, rather than merely symbolic, progress in women's well-being.

ACKNOWLEDGEMENT

The authors are grateful to the Ministry of Statistics and Programme Implementation (MoSPI), Government of India, for making the Time Use Survey 2024 data publicly available for academic research.

REFERENCES

1. Agarwal, B. (1997). "Bargaining" and gender relations: Within and beyond the household. *Feminist Economics*, 3(1), 1–51. <https://doi.org/10.1080/135457097338799>
2. Becker, G. S. (1965). A theory of the allocation of time. *Economic Journal*, 75(299), 493–517. <https://doi.org/10.2307/2228949>
3. Gronau, R. (1977). Leisure, home production, and work — the theory of the allocation of time revisited. *Journal of Political Economy*, 85(6), 1099–1123. <https://doi.org/10.1086/260629>
4. Iversen, T., & Rosenbluth, F. (2010). *Women, work, and politics: The political economy of gender inequality*. Yale University Press.
5. Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and Change*, 30(3), 435–464. <https://doi.org/10.1111/1467-7660.00125>
6. Ministry of Statistics and Programme Implementation (MoSPI). (2024). India Time Use Survey 2024. Government of India. <https://www.mospi.gov.in/>
7. Nussbaum, M. C. (2000). *Women and human development: The capabilities approach*. Cambridge University Press.
8. Razavi, S. (2007). The political and social economy of care in a development context: Conceptual issues, research questions and policy options (UNRISD Programme Paper on Gender and Development, No. 3). United Nations Research Institute for Social Development. <https://digitallibrary.un.org/record/603418>
9. Robeyns, I. (2005). The capability approach: A theoretical survey. *Journal of Human Development*, 6(1), 93–117. <https://doi.org/10.1080/146498805200034266>
10. Sen, A. (1999). *Development as freedom*. Oxford University Press.
11. United Nations Women. (2023). Progress on the Sustainable Development Goals: The gender snapshot 2023. UN Women. <https://unstats.un.org/sdgs/gender-snapshot/2023/>