

JOURNAL OF ENVIRONMENTAL SCIENCES AND BUILT ENVIRONMENT RESEARCH (JESBER)

2026, Vol. 1, No. 1, pp. 26-39

Published by Faculty of Environmental Sciences, University of Calabar, Nigeria

Print ISSN: 3141-5547 | OPEN ACCESS

DOI: <https://doi.org/10.83109/jesber.vol1no1.8>



Research article

GENDERED LIVELIHOOD OUTCOMES OF PROTECTED-AREA ESTABLISHMENT IN NIGERIA: EVIDENCE FROM WOMEN IN CROSS RIVER NATIONAL PARK SUPPORT-ZONE COMMUNITIES, AKAMKPA

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ABSTRACT

This study examined the gendered livelihood outcomes of Cross River National Park in four Akamkpa support-zone communities, with particular attention to women's access to compensatory mechanisms, forest-based activities and income security. A mixed-method field design combined questionnaire data from 360 returned instruments with participatory rural appraisal, interviews and community observation. Descriptive statistics were complemented with Fisher's exact test and chi-square tests to correct sparse-cell and categorical comparisons. Access to park compensation was extremely limited: only 1.11% of respondents reported any benefit, and no female respondent accessed credit, training, crop-loss compensation or employment. Women's activities were mainly constrained rather than transformed, while average female monthly income declined from ₦34,100 to ₦24,583.00. Male income fell more sharply following restrictions on timber, hunting and related activities. Conservation governance must move beyond protection-centred exclusion towards gender-responsive livelihood restoration, accountable compensation and community forest rights.

KEYWORDS

Cross River National Park; gendered livelihoods; protected areas; compensatory benefits; non-timber forest products; women; support-zone communities; sustainable park management

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Introduction

Protected areas remain one of the most widely used instruments for biodiversity conservation, habitat protection and tourism-based environmental management. National parks are expected to conserve ecological, geomorphological and aesthetic resources while also contributing to the socio-economic well-being of host communities (Raymond et al., 1973; Calcedecotte, 1996; Butler, 2006; World Conservation Union & United Nations Environment Programme, 1992, 2005; Miller et al., 2000; World Bank et al., 2004; World Bank, 2004). In practice, however, the establishment of protected areas may create a difficult trade-off between ecological protection and the livelihood systems of people living in or near the protected landscape. This trade-off is particularly serious in forest communities where households rely on farming, fuelwood, medicinal plants, wild foods, non-timber forest products (NTFPs), hunting, fishing and local forest enterprises for survival. When restrictions are introduced without adequate compensation, participation or alternative income support, conservation can unintentionally redistribute poverty risks to already vulnerable groups (Cernea, 1997a, 1997b, 2000; Cernea & Soltau, 2006; Chatty & Colchester, 2002).

Women are central to the rural forest economy. Across many forest-adjacent communities, women collect, process and market forest products, maintain household food systems and sustain small-scale enterprise

activities that supplement household income (Carr-Harris, 1991; FAO, 1988, 1989; Hasalkar, 1994; Hasalkar & Jadhav, 2004; Malhotra et al., 1992). The gendered character of forest use means that park establishment cannot be assessed only by counting displaced activities; it must also be assessed by examining who loses access, who receives compensation, who attends decision-making meetings and who has the social power to negotiate livelihood restoration. Gender relations influence access to land, credit, education, employment and public decision-making. Consequently, park benefits that appear neutral on paper may become male-dominated in practice, while women's unpaid and low-visibility work becomes further constrained (Moser, 1994; Mishra, 2001; Bridge, 2009).

The Cross River National Park (CRNP) is located in south-eastern Nigeria and was established in 1991 to protect one of the country's most important remaining tropical moist forest landscapes (Federal Republic of Nigeria, 1991; Ite, 1996). Its Oban Division is surrounded by support-zone communities whose livelihoods historically depended on farming, NTFP collection, timber-related activities, hunting and cross-border forest trade. The original conservation-development logic recognised that the long-term survival of the park would depend on the support of surrounding communities and therefore introduced compensatory measures such as credit/loan facilities, crop-loss compensation, workshops/skill training and employment opportunities (Ite, 2000; Ite & Adams, 2000). Yet earlier evidence from the region suggested that these measures did not yield sufficient returns to compensate altered livelihoods, and that many host communities perceived the park as restricting access without delivering equitable benefits (Ite & Adams, 2000; Obot et al., 2006; Bisong, 2009).

This study focuses on the gendered livelihood effects of CRNP in four Akamkpa support-zone communities: Ifumkpa, Old Netim, Oban and Aking. The central argument is that women's adverse outcomes cannot be understood solely as individual female exclusion from park benefits. In the forest livelihood system, women's welfare is also affected by the displacement of male income streams such as timber, hunting and other forest-based activities, because household consumption and child welfare depend on the interaction of male and female income. The study therefore adopts a gender-and-development lens to examine access to compensation, participation in park-related meetings, livelihood activity change, income adequacy and community suggestions for livelihood restoration.

The study is guided by three research questions. First, to what extent do women and men in the support-zone communities' access CRNP compensatory measures? Second, how did the establishment of the park affect forest-based activities, especially farming and NTFP collection? Third, how adequate is household income after activity restrictions associated with the park? The study contributes to the protected-area literature by showing that gender-responsive conservation must address both direct women's access to benefits and the indirect effects of wider household livelihood displacement. This contribution is important for tourism, hospitality and environmental management because protected areas are not merely ecological spaces; they are also destinations, livelihood spaces and governance arenas where community support can determine conservation sustainability (Eneyo, 2025a, 2025b, 2025e, 2025f; Eneyo & Eneyo, 2025).

Literature review

Protected areas, livelihood displacement and benefit sharing

The literature on national parks and protected areas shows two related but often competing narratives. The first presents national parks as instruments for preserving biodiversity, supporting tourism, enhancing cultural heritage and generating regional economic benefits (Raymond et al., 1973; Butler, 2006; Eagles et al., 2002). Examples from Wales and Rwanda indicate that national parks can contribute to employment, gross domestic product and conservation finance when tourism revenue is effectively managed and reinvested in local development. The second narrative emphasises the poverty risks created when protection restricts community access to land, forests and livelihood resources without fair compensation or participatory governance (West & Brechin, 1991; Brechin et al., 1991; Lewis, 1993; Kempf, 1993). These two narratives are not mutually

exclusive: a park may generate national or regional benefits while simultaneously displacing local costs to communities living closest to the protected resource.

Conservation-induced displacement has been widely examined through the risks and reconstruction framework, which identifies risks such as landlessness, joblessness, marginalisation, food insecurity and social disarticulation (Cernea, 1997a, 1997b, 2000; Cernea et al., 1996; Colchester, 1997; Geisler & De Sousa, 2001). In protected-area contexts, these risks may occur even without physical relocation, because exclusion from forests and farmlands can produce economic displacement. Studies of development-induced displacement further show that affected people require assistance that improves or at least restores their livelihood and standard of living (World Bank, 2001; World Commission on Dams, 2001; Courtland Robinson, 2003; Mahapatra, 1999; Oliver-Smith, 2005). The key issue is not only whether conservation is justified, but whether its costs and benefits are distributed fairly. This concern is echoed by global conservation debates on governance, participation, equity and benefit sharing (The Post, 1999; COMIFAC, 2002; Convention on Biological Diversity, 2004; World Conservation Congress, 2004; WPC, 2003; GEF-ME, 2005).

Women, forest use and forest-based enterprise

For women, forest resources are simultaneously economic, nutritional and social resources. Forest-based small-scale enterprises provide supplemental income where other income opportunities are limited (Campbell, 1991a, 1991b; Falconer, 1990). Forest foods contribute to dietary diversity, vitamins, minerals and food buffers during seasonal scarcity or crop failure (FAO, 1989; Brinkman & Willemine, 1989). Fuelwood and fodder are also essential to household energy and livestock maintenance, and in many settings women and children are responsible for gathering these materials (Hasalkar & Jadhav, 2004; Okpiliya, 2004). NTFPs such as bush mango, afang, mushrooms, snails, medicinal plants, spices and leaves have direct market value and often form the basis of women's small-scale trade (Malhotra et al., 1992; Obot et al., 2006).

Women's role in forest management extends beyond extraction. Literature from Nepal, India, Bangladesh, Pakistan and Nigeria shows that women participate in seedling care, forest-product pricing, harvesting rules, environmental education and community-based conservation enterprises (Siddiqi, 1989a, 1989b, 1990; Skutsch, 1986; Williams, 1992; Clark, 1994; Khan, 2000; Bingeman, 2003). Bisong (1998, 2001) reported that women's groups in Cross River State historically played regulatory roles in forest-product markets and community access rules. In Anape, women instituted reforms to manage secondary forest and fallows in response to resource degradation. Similarly, the women of Gazi in Kenya developed a mangrove boardwalk enterprise in which tourism revenue supported community education, water, health and school infrastructure (Gazi Women Ecotourism Project, 2009). In Dadia Forest Reserve, women's participation as tour guides and environmental educators created income and skills while supporting conservation (Valaoras et al., 1999).

Gender, participation and the Cross River National Park context

Despite these positive examples, women's participation in forestry projects is often constrained by patriarchal tenure systems, household responsibilities, educational disadvantage, weak access to credit and male-dominated institutional structures (Alden, 2001; Gurung & Lama, 2002; Kelkar & Nathan, 2003; Nigeria Bureau of Statistics, 2008). Gender-sensitive Forest management therefore requires more than sex-disaggregated data. It requires attention to decision-making power, ownership rights, resource access, benefit distribution and the institutional rules through which people participate (Mishra, 2001; Hemmati, 2002; United Nations Environment and Development, 2002; United Nations Environment and Development UK Committee, 2005). The broader gender literature reminds researchers that women's subordination is not biological but socially produced through roles, norms and institutions (Oakley, 1972; Rubin, 1975; Whitehead, 1979; Moser, 1994).

The Cross River context reflects these global concerns. The CRNP was established to conserve tropical moist forest, but the Oban support-zone communities depend on forest resources for farming, NTFPs, trading and household survival (Ite, 1996, 1998; Ite & Adams, 2000; Obot et al., 2006; Eneyo, 2025c). Forest degradation in Cross River State has been linked to logging, agricultural expansion, resource extraction and

governance challenges (Bisong et al., 2007; Bisong, 2009). At the same time, forest-adjacent communities hold indigenous knowledge that can support conservation if local rights and incentives are respected. The challenge is therefore to design conservation governance that protects biodiversity while restoring and diversifying livelihoods.

Conceptual framework: Gender and Development

This study is conceptually anchored in the Gender and Development (GAD) approach. GAD shifts attention from women as an isolated category to the social relations that produce unequal access to resources, benefits and authority. In this framework, the impact of CRNP is evaluated by examining women's access to park administration, compensation, livelihood activities and income relative to men, while also recognising household interdependence. The study therefore uses gender-disaggregated indicators and qualitative interpretation to identify hidden livelihood effects that would be missed by aggregate conservation assessments (UNDP, 2007; UNICEF, 2007). This lens is appropriate because the park affects a socio-economic system in which women and men perform different but connected livelihood roles.

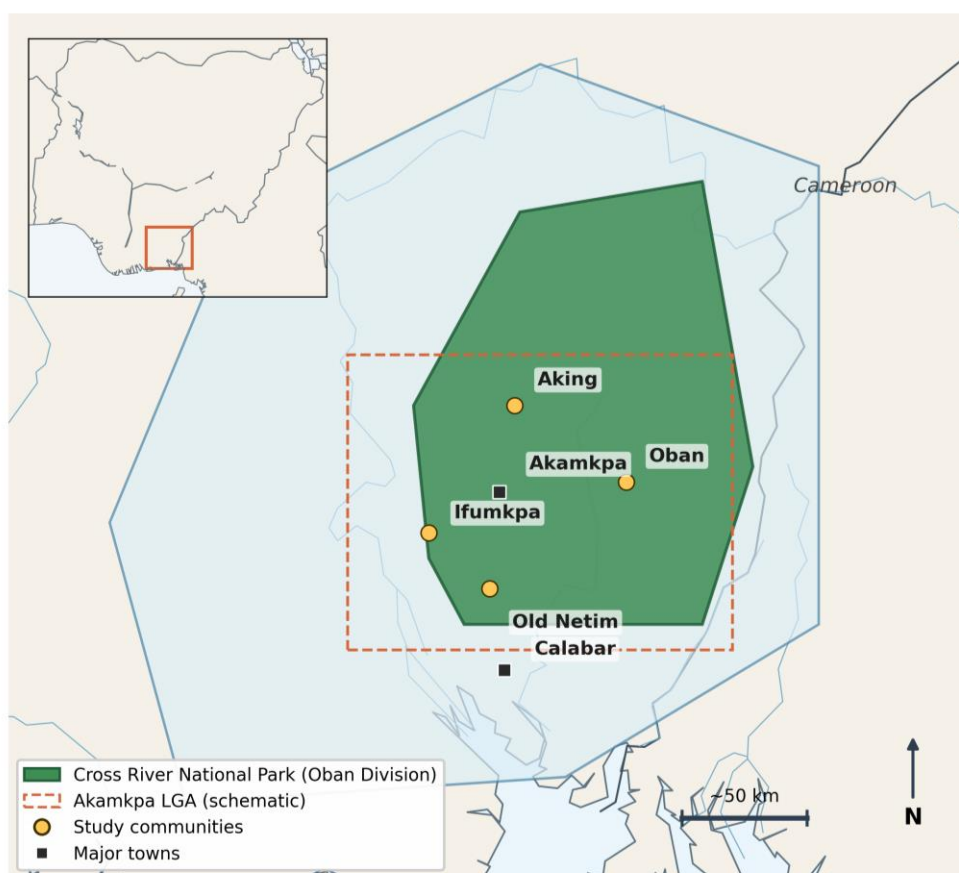


Figure 1. Cross River National Park, Akamkpa LGA and the sampled support-zone communities. Source: fieldwork (2026).

Methodology

The study adopted a mixed-method field design that combined quantitative questionnaire data with participatory rural appraisal, reconnaissance survey and interviews. This design was appropriate because the research questions required measurable evidence on access, activities and income, as well as contextual explanation of how park establishment was experienced by households. Primary data were collected from male and female respondents in four purposively selected support-zone communities: Ifumkpa, Old Netim, Oban and Aking.

These communities were selected from the eastern and western cells of the Oban Division because of their proximity to the park and dependence on forest resources. Secondary data included the population figures and documentary information on park establishment, protected-area policy and forest management.

The study area lies in south-eastern Nigeria within the Cross River ecological zone. The CRNP lies approximately between latitude 5°10' and 6°15'N and longitude 8°10' and 8°45'E, occupying about 4,424 km². The Park is divided into the Oban and Okwangwo divisions, with the Oban Division linked ecologically to Korup National Park in Cameroon. The communities studied are part of a landscape where agriculture, NTFP collection, trading and forest-based activities form the main livelihood base. The area also has significant biodiversity and exportable forest resources, including bush mango, bush onion, okpasi, medicinal plants, mushrooms, spices and vegetables.

The population was projected from the 1991 National Population Census using an annual growth rate of 3.20%, because locality-level summaries from the 2006 census were not available. The projected population of the four sampled communities in 2026 was 13,697 persons, comprising 7,054 males and 6,643 females. Table 1 presents the projected distribution. A sample size of 391 respondents was determined using the Yamane sample-size logic at a 5.00% tolerable error. In practice, 360 questionnaires were returned, representing a 92.07% return rate. The returned instruments form the basis of the quantitative analysis. Questionnaires were distributed using a stratified procedure that considered gender and community. Indigenous research assistants supported household identification and data collection in the selected villages. The questionnaire captured demographic characteristics, meeting attendance, access to compensatory benefits, forest-based activities before and after park establishment, household income sources and perceptions of income adequacy. Participatory rural appraisal techniques were used to obtain qualitative insights from clan heads, spouses and selected male and female respondents. Reconnaissance visits helped to understand settlement patterns, livelihood locations and the relationship between the communities and the park.

Descriptive statistics were used to summarise frequencies, percentages, average monthly income and community-level response patterns (Animashaun & Eze, 2006; Odu & Ihejiamaizu, 2001; Yamane, 1967). Percentages and monetary variables were rounded to two decimal places to improve clarity and journal presentation. Because the original benefit-access data contained sparse cells and zero female beneficiaries, Fisher's exact test was used for the gender-by-benefit comparison rather than relying on an unstable two-way ANOVA with zero error cells. Chi-square tests were used for categorical comparisons of activity effect and income adequacy.

Table 1. Projected population distribution of the study communities (2026)

Community	Male	Female	Total
Ifumkpa	1,777.00	1,796.00	3,573.00
Old Netim	3,138.00	2,731.00	5,869.00
Oban	1,429.00	1,358.00	2,787.00
Aking	710.00	758.00	1,468.00
Total	7,054.00	6,643.00	13,697.00

Source: Authors' analysis (2026).

Table 2. Sample distribution and questionnaire return by community

Community	Villages	Questionnaires administered	Returned questionnaires	Location cell
Ifumkpa	14.00	102.00	83.00	Western cell
Old Netim	18.00	169.00	145.00	Western cell
Oban	21.00	80.00	96.00	Eastern cell

Aking	1.00	40.00	36.00	Eastern cell
Total	54.00	391.00	360.00	-

Source: Authors' analysis (2026).

Results and discussion

Women's participation in park-related meetings and access to compensatory measures

This section presents the findings in relation to the objectives of the study. The analysis begins with participation in park-related meetings because meeting attendance is an important gateway to information, negotiation and benefit access. It then examines compensatory measures, livelihood activities, income loss and income adequacy. Each table is introduced and interpreted in order to connect the numerical results to the broader conservation-livelihood debate. Table 3 shows that meeting attendance was strongly gendered. No male respondent reported never attending a park or forest management meeting, while 30 female respondents fell into this category. Male respondents were concentrated in the “three to four times” category, while female respondents were less represented in the highest attendance category. In percentage terms, 82.22% of male respondents attended meetings three to four times, compared with 50.56% of female respondents. Only 16.67% of males and 11.11% of females attended meetings five or more times. This pattern suggests that women were not completely absent from forest governance spaces, but their depth of participation and influence were weaker than those of men.

The data point to structural and cultural barriers that shape who can participate consistently in meetings, who receives information early and who can influence benefit distribution. This aligns with the literature on male-dominated forest institutions and the tendency for development agencies to treat women as dependants rather than autonomous livelihood actors (Khan, 2000; Mishra, 2001; Bingeman, 2003).

Table 3. Attendance at park and forest management meetings by gender

Attendance category	Male (n)	Male (%)	Female (n)	Female (%)	Total (n)
Never attended	0.00	0.00	30.00	16.67	30.00
Attended once or twice	2.00	1.11	39.00	21.67	41.00
Attended three to four times	148.00	82.22	91.00	50.56	239
Attended five times and above	30.00	16.67	20.00	11.11	50
Total	180	100	180.00	100	360

Source: Authors' analysis (2026).

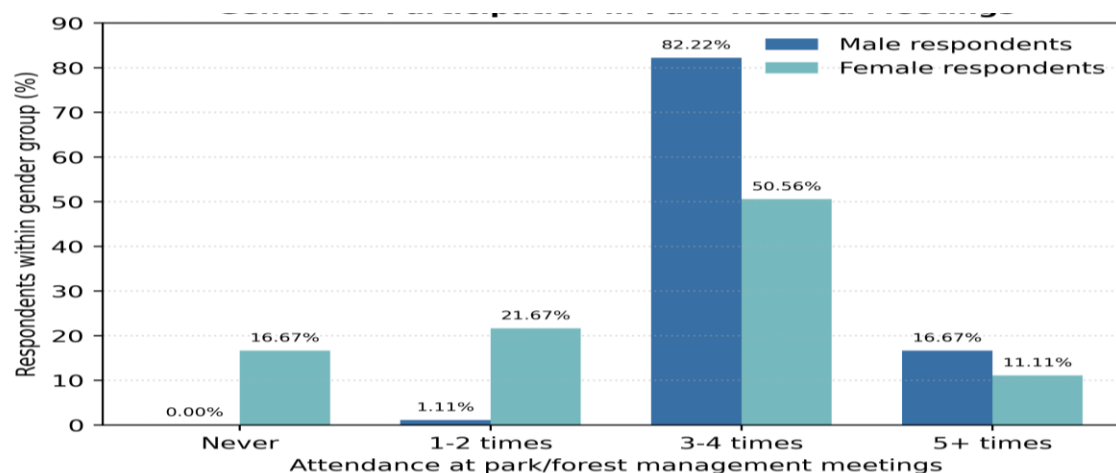


Figure 2. Gendered participation in park-related meetings.

Source: Authors analysis (2026).

Access to compensatory benefits was extremely limited. The data show that only four respondents accessed any benefit, and all four were male respondents who gained employment as park rangers. No respondent reported access to credit/loans, crop-loss compensation or seminar/workshop support. No female respondent received any of the listed compensatory benefits. In total, only 1.11% of the 360 respondents benefited from any compensation-related opportunity, while 98.89% did not. This finding is important because the park's compensatory strategy was supposed to link conservation with local socio-economic development, yet the evidence shows that the mechanism barely reached the support-zone population and did not reach women at all. A Fisher's exact test was used because the benefit-access table contains sparse cells. The gender difference in formal benefit access was not statistically significant at the 0.05 level ($p = 0.12$), largely because the number of beneficiaries was extremely small. However, the substantive interpretation remains strong: the benefit system was functionally absent for almost all respondents and completely absent for women. This is a case where statistical non-significance should not be misread as social adequacy. The most important result is the institutional failure to deliver compensation at a scale capable of restoring livelihoods.

Table 4. Access to compensatory benefits by gender

Benefit category	Male beneficiaries	Female beneficiaries	Total beneficiaries	Interpretation
Credit/loans	0.00	0.00	0.00	No access recorded
Crop-loss compensation	0.00	0.00	0.00	No access recorded
Seminar/workshop	0.00	0.00	0.00	No access recorded
Employment	4.00	0.00	4.00	Employment only; male beneficiaries
Total access	4.00	0.00	4.00	1.11% of all respondents

Source: Authors' analysis (2026).

Livelihood activities before and after park establishment

The second objective examined livelihood activities before and after the establishment of the CRNP. Before park establishment, respondents were engaged in farming, NTFP collection, timber-related activities and other forest-based activities. Women were concentrated in farming and NTFP collection, while men dominated timber-related activities. totals from the community rows show 143 female farming responses and 38 female NTFP responses, compared with 27 male farming responses, 13 male NTFP responses, 126 timber responses and 13 other male responses. This confirms the gendered division of forest labour: women's livelihood base was

more closely tied to farming and NTFP collection, while men's income was strongly tied to timber and activities that became more restricted after park establishment. After the park was established, no respondent reported that a livelihood activity improved. The dominant response was limitation. Among female respondents, 181.00 (100%) reported that their activity had been limited, while none reported that an activity had stopped. Among male respondents, 53.00 (29.61%) reported limitation and 126.00 (70.39%) reported stoppage. The gendered pattern is therefore complex. Women continued to perform activities such as farming and NTFP collection, but under constraint. Men experienced more complete stoppage of activities linked to timber and hunting. Because household welfare depends on both male and female income, the displacement of male income streams also affected women's household burden.

The chi-square test confirms a statistically significant association between gender and reported livelihood effect after park establishment, $\chi^2(1, N = 360) = 196.01, p < 0.001$. The finding supports the argument that park establishment changed the livelihood opportunity structure in the support-zone communities. For women, the effect was not necessarily a change into a different activity; it was the narrowing of the space, volume and returns of activities they already performed. For men, restrictions produced a more visible stoppage of activities. Both outcomes matter for conservation policy because a park that limits women's activity and removes men's income without adequate alternatives can weaken community support for conservation.

Table 5. Livelihood effects after park establishment

Gender	Improved (n, %)	Limited (n, %)	Stopped (n, %)	Total
Male	0.00 (0.00%)	53.00 (29.61%)	126.00 (70.39%)	179.00 (100%)
Female	0.00 (0.00%)	181.00 (100%)	0.00 (0.00%)	181.00 (100%)
Total	0.00 (0.00%)	234.00 (65.00%)	126.00 (35.00%)	360.00 (100%)

Source: Authors' analysis (2026).

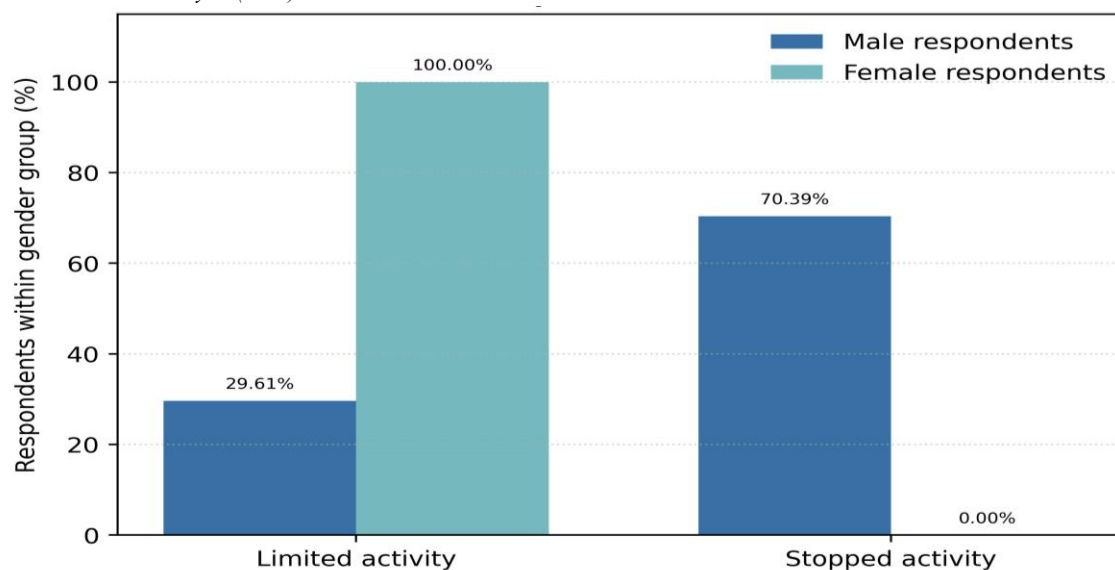


Figure 3. Livelihood effects reported after park establishment by gender.

Source: authors analysis (2026).

Income outcomes and adequacy of present livelihood activities

Income evidence further clarifies the household impact of park establishment. The study estimated individual household daily and monthly income from forest-related enterprises before and after park establishment. These income estimates show a decline for both men and women, although the composition of loss differed by gender. Men's average monthly income decreased from ₦54,400.00 before park establishment to ₦11,500.00 after park establishment, a decline of ₦42,900.00 or 78.86%. Women's average monthly income

decreased from ₦34,100 to ₦24,583.00, a decline of ₦9,517.00 or 27.91%. The sharper male decline reflects the loss of timber, hunting and related income streams, while the female decline reflects reduced returns from farming and NTFP activities. The income result should not be interpreted to mean that women were less affected. Women's income was lower before the park and remained low after the park, while household care responsibilities continued. In addition, the reduction in male income increased the pressure on women's farming, trading and NTFP activities to sustain household consumption. This is why the study argues for a household livelihood systems perspective. In such a system, women's vulnerability can intensify even when their own measured income falls by a smaller percentage than men's. Respondents' assessment of income adequacy reinforces this interpretation. Using row totals from the data, no female respondent described income as adequate, while 159.00 female respondents considered income inadequate and 22.00 were undecided. Among male respondents, 18.00 considered income adequate, 139.00 considered it inadequate and 22.00 were undecided. Overall, 82.78% of respondents considered present income inadequate. The chi-square test shows a significant gendered difference in income adequacy categories, $\chi^2(2, N = 360) = 19.33, p < 0.001$. When adequate income is compared against all other responses, Fisher's exact test remains significant ($p < 0.001$), showing that women were especially excluded from income adequacy.

Table 6. Average individual household monthly income before and after park establishment

Gender	Before park establishment	After park establishment	Absolute decline	Percentage decline
Male	₦54,400.00	₦11,500.00	₦42,900.00	78.86%
Female	₦34,100	₦24,583.00	₦9,517.00	27.91%

Source: Authors' analysis (2026).

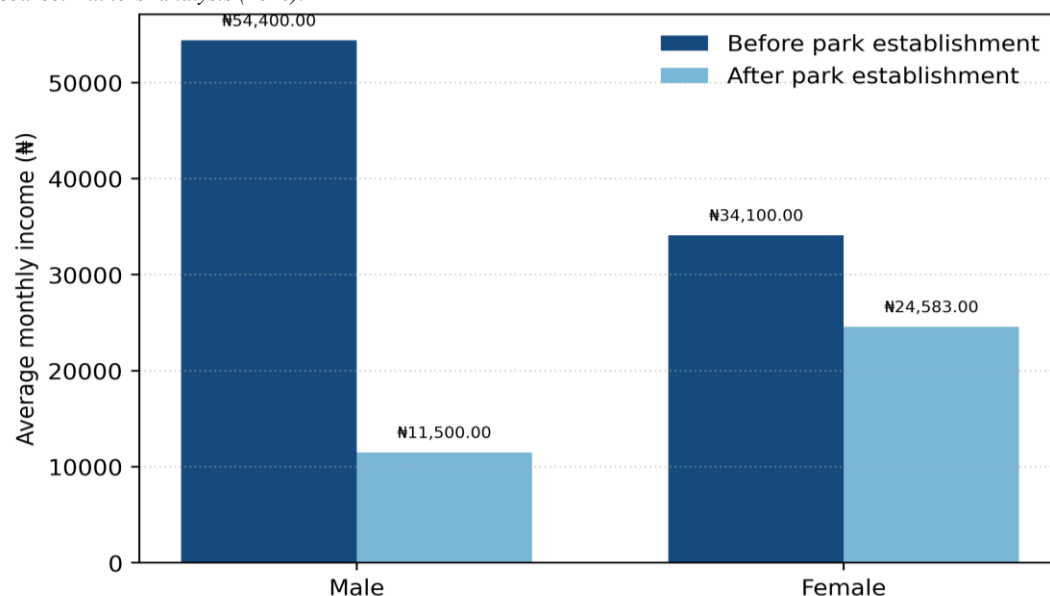


Figure 4. Average individual household monthly income before and after park establishment.

Source: authors' analysis (2026).

Table 7. Adequacy of income from present livelihood activities by gender

Gender	Adequate	Inadequate	Undecided	Total
Male	18.0	139.00	22.00	179.00
Female	0.00	159.00	22.00	181.00
Total	18.00	298.00	44.00	360.00

Source: Authors' analysis (2026).

Statistical tests and interpretation

Table 8 summarises the statistical tests. The study relied mainly on ANOVA, but several variables are categorical and some cells contain zeros. For this reason, Fisher's exact and chi-square tests provide a more appropriate presentation. The benefit-access comparison shows that very few people accessed compensation and no woman benefited. The activity-effect and income-adequacy tests show statistically significant gendered differences. Together, the tests confirm that the park's impacts were not evenly distributed across the support-zone population. The findings partly agree with Ite and Adams (2000), who found that CRNP compensatory measures had not yielded the expected returns for host communities. They also support broader evidence that protected areas can create poverty risks when local people are excluded from resources without adequate livelihood reconstruction (Cernea & Soltau, 2006; Brockington & Igoe, 2005; Geisler, 2003). However, the findings extend that literature by showing that women's impact is mediated by both direct exclusion and household-level male displacement. Women did not receive compensation, were less strongly positioned in meetings and reported inadequate income. At the same time, the sharp loss of male forest income reduced the wider household income pool on which women and children depend.

Community suggestions for improvement in the study also point to livelihood restoration. Respondents prioritised lifting the ban on timber, water provision, access to forest resources, access to markets, fertiliser, storage facilities, tourism development and health facilities. These suggestions should be read as demands for a more balanced conservation-development framework. While unrestricted timber exploitation would threaten conservation objectives, the call reflects the absence of alternatives. A more sustainable response would include community forest rights, regulated access, agroforestry, NTFP value-chain support, non-forest enterprises, ecotourism employment, women's cooperative credit schemes and transparent benefit-sharing. FAO (2011) similarly emphasised that reforming forest tenure and securing community ownership rights can improve forest livelihoods when properly governed.

The findings also have implications for hospitality and tourism management. Protected areas attract tourists, researchers and conservation investment, but tourism development cannot be sustainable when support-zone communities experience exclusion (Eneyo, 2025d; Eneyo & Ekong, 2019; Eneyo & Ekpenyong, 2018a, 2018b; Eneyo & Itu, 2024; Eneyo et al., 2017, 2018, 2021, 2022a, 2022b; Eneyo & Essien, 2023). Women can contribute to eco-guiding, craft production, local food services, environmental education, homestay development, cultural interpretation and NTFP-based value chains if training, finance and market access are gender-responsive. Rather than treating host communities as threats to biodiversity, park managers should treat them as conservation partners whose knowledge and livelihood security are essential to park legitimacy.

Table 8. Hypothesis-test summary

Hypothesis focus	Test used	Test statistic	p-value	Decision/interpretation
Gender and access to any compensatory benefit	Fisher's exact test	Odds ratio = ∞	0.12	Not significant statistically, but access was substantively negligible and no woman benefited.
Gender and livelihood effect after park establishment	Chi-square test	$\chi^2(1) = 196.01$	< 0.001	Significant gendered pattern: men reported stoppage; women reported limitation.
Gender and adequacy of present income	Chi-square test	$\chi^2(2) = 19.33$	< 0.001	Significant gendered difference; no female respondent reported adequate income.

Source: Authors' statistical analysis (2026).

Implications and conclusion

The study has five major implications. First, compensation must be treated as a right-based livelihood restoration mechanism rather than an occasional benefit. A programme in which only 1.11% of respondents accessed any benefit cannot reasonably compensate altered livelihood. Compensation should include transparent eligibility

criteria, community monitoring and gender-disaggregated reporting. Second, women's access to benefit systems must be designed deliberately. Training schedules, meeting venues, credit conditions and cooperative structures should recognise women's domestic responsibilities, educational constraints and limited collateral. Third, conservation governance should diversify livelihood opportunities beyond forest extraction. Potential alternatives include agro-processing, sustainable NTFP harvesting, snailery, beekeeping, eco-guiding, local catering for visitors, craft production, tree-crop nurseries and community tourism enterprises.

Fourth, community forest rights require reform. The evidence suggests that exclusion without livelihood restoration creates resentment and may threaten park integrity. Regulated community access, co-management arrangements and benefit-sharing can create incentives for conservation while reducing poverty risks. Fifth, tourism planning in the park should be linked to women's enterprise development. Women's groups can provide visitor services, environmental education, local food experiences and cultural interpretation if they receive training, finance and access to markets. The Gazi women's mangrove boardwalk, Capirona programme and Dadia Forest Reserve examples demonstrate that women's participation in conservation-related tourism can create both livelihood and conservation benefits (Colvin, 1996; Centre for Women's Resources, 2005; Valaoras et al., 1999; Gazi Women Ecotourism Project, 2009).

The study also has limitations. The data are based on field evidence from 2026 and therefore represent the livelihood situation captured in the. Nevertheless, the results remain analytically useful because they document the gendered consequences of park establishment and provide a baseline for evaluating whether later interventions have earlier gaps. Future research should update the survey in the same communities, collect longitudinal household-income data, include park-management records on compensation, and examine the viability of specific gender-responsive tourism and NTFP enterprises. Spatial analysis using updated land-cover data would also strengthen understanding of how forest restrictions, community access and ecological change interact.

In conclusion, Cross River National Park remains an important conservation asset, but its sustainability depends on equitable relationships with support-zone communities. The evidence shows that women were directly excluded from compensatory benefits, experienced constrained livelihood activities and reported inadequate income. Men experienced sharper income decline through the stoppage of timber and other forest activities, which indirectly increased household pressure on women. A gender-responsive conservation strategy must therefore address women's direct access, household livelihood restoration and community rights together. The Park service should be adequately funded to provide compensatory support, introduce viable non-forest enterprises, reform forest governance and secure community participation in ways that protect biodiversity while improving local well-being.

Declarations

Funding: No specific external funding was declared

Conflict of interest: The authors declare no conflict of interest.

Data availability: The data used for the article are drawn from the questionnaire, participatory rural appraisal and fieldwork materials.

Author contributions: Esienita Doris Ekpe and Demitrus Okim Oba contributed to the revision, conceptual strengthening, presentation and interpretation of the manuscript.

Ethical consideration: The article is based on community field data. Future resurvey work should obtain institutional ethical clearance and informed consent consistent with contemporary research ethics requirements.

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