



PALM-TREES

**A Pan African and Transdisciplinary Lens on the Margins:
Tackling the Risks of Extreme Events (PALM-TREES)**

PROTECTING CLIMATE-SENSITIVE LIVELIHOODS AND FOOD SECURITY IN LAGOS

POLICY BRIEF

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EXECUTIVE SUMMARY

Lagos's exposure to flooding and extreme heat is creating growing risks for households whose livelihoods depend on outdoor work, informal employment, agriculture, fisheries and other climate-sensitive activities. The PALM-TREES project shows that livelihood vulnerability is intensified by limited income diversification and unstable household incomes. Informal or casual employment was the leading reported livelihood category, accounting for at least 33.4% of respondents, followed by wage or salaried employment at 21%. Importantly, 75.5% of respondents worked outdoors, exposing a large proportion of the population to heat stress and other weather-related risks. At household level, 91.3% had only one source of income, while 49.4% reported relatively unstable or unreliable income and a further 40.4% reported very unstable or unreliable income. The heat-stress evidence reinforces this vulnerability. The PALM-TREES analysis found generally high heat stress across Lagos, with no study location recording heat stress below 35°C. March had the highest average Humidex, while the annual cycle was estimated at a minimum of 360 days of some discomfort, 120 days of great discomfort, and six days of dangerous heat stress. Approximately 95% of weather-diary participants reported feeling hot during February and early March. Flooding creates another major livelihood shock. The PALM-TREES study identifies displacement, property loss, livelihood loss, and health risks among the multidimensional consequences of flooding. The implications are particularly significant for households with limited financial buffers. The study found that 63.7% of households spend all or more than half of their income on household needs. A flood, heat episode, or disruption to an outdoor livelihood can therefore have immediate consequences for food consumption and household welfare. The PALM-TREES project identifies three particularly relevant adaptation pathways: support for urban agriculture and home gardens; support for women in fishing communities; and training/capacity building for alternative livelihoods and improved nutrition for vulnerable women and men. The policy priority should therefore be to move from short-term coping to livelihood resilience, combining income diversification, climate-smart agriculture, support for fishing communities, protection of outdoor workers, improved access to climate information, and stronger food-security measures.

Key Recommendations

1. Lagos State Ministry of Agriculture and Food Systems should scale up climate-resilient urban and peri-urban agriculture and home gardens in vulnerable communities.
2. The Ministry of Agriculture and Food Systems, working with the Ministry of Women Affairs and Poverty Alleviation, should establish targeted livelihood support for women in fishing communities, including access to finance, storage, processing facilities, markets and climate information.
3. The Ministry of Women Affairs and Poverty Alleviation, Ministry of Youth and Social Development, and Ministry of Wealth Creation and Employment should expand market-linked alternative livelihood programmes for households with unstable or single-source incomes.
4. The Lagos State Resilience Office (LASRO), Ministry of Health and relevant MDAs should integrate protection of outdoor workers into climate adaptation measures, particularly during periods of extreme heat.
5. The Ministry of Agriculture and Food Systems and Ministry of Health should link livelihood programmes with food and nutrition security, particularly for households repeatedly affected by floods and heat.
6. The Ministry of Economic Planning and Budget and LASRO should incorporate livelihood-resilience indicators into climate adaptation planning and monitoring, with specific



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attention to women, persons with disabilities and other vulnerable groups.

7. Ministry of Physical Planning and Urban Development should

integrate urban food agriculture into the existing State Green Infrastructure Policy with specific attention to home gardens (vegetables, fruits and cereals) for developers before

development permits are obtained, public green spaces can also be used for food production.

1. METHODOLOGY

This policy brief draws primarily on the PALM-TREES project, A Pan-African and Transdisciplinary Lens on the Margins: Tackling the Risks of Extreme Events – Dimensions of Risks and Vulnerability Associated with Flooding and Heat Stress among the Margins in Lagos, Nigeria. The project used a mixed-methods and transdisciplinary approach combining physical and social science methods. Physical analysis included GIS-based flood vulnerability assessment and the Weather Research and Forecasting (WRF) model for heat vulnerability analysis. Social research included iButton installations, weather diaries, stakeholder engagement, quantitative surveys, key informant interviews, focus group discussions and community needs assessments. The quantitative survey covered 918 communities and 377 wards across the 20 LGAs of Lagos, generating 1,166 data points. Focus group discussions were conducted in Apapa, Ajegunle, Mile 12 and Agboyi-Ketu, while community needs assessments covered eight locations. The brief focuses specifically on evidence concerning the relationship between extreme events, livelihoods, household income, food and nutrition, gender, coping capacity and adaptation.

2. POLICY CONTEXT

Lagos combines high population density, rapid urbanisation, extensive informal economic activity and significant exposure to climate hazards. The PALM-TREES findings demonstrate that these characteristics interact to produce livelihood vulnerability. The problem is not simply exposure to extreme weather. It is the limited capacity of many households to absorb and recover from



Flooded Farmland and informal settlements at Ijede, Ikorodu, Lagos, October 2025

analysis identifies prolonged periods of significant heat stress. Evidence from Lagos supports the PALM-TREES findings. Lawanson, Orelaja and Simire's study of the Igbe farming community found that erratic weather patterns and rapid urban growth were major challenges facing peri-urban farmers. Nearly half of the farmers surveyed engaged in informal enterprises to cushion livelihood pressures, leading the authors to recommend stronger institutional support and farming cooperatives.

Research on artisanal fisheries has also found that changes in temperature and rainfall patterns are affecting fisheries and have implications for the livelihoods and food security of fishing communities in Lagos. More recent evidence highlights the particular vulnerability of coastal fisherwomen. Research in Oworonshoki and Shomolu found that flooding disrupted fishing, processing and trading activities and generated income losses; women responded through livelihood adjustments, informal support networks and borrowing. This evidence reinforces PALM-TREES' emphasis on gender-responsive, community-based livelihood adaptation.

3. EXISTING LAGOS POLICY FRAMEWORK

Lagos Climate Adaptation and Resilience Plan

The Lagos Climate Adaptation and Resilience Plan identifies extreme rainfall, extreme heat and sea-level rise as major climate-impact drivers. It explicitly recognizes threats to livelihoods, assets and infrastructure, particularly among less affluent and vulnerable populations. This provides a strong policy entry point for making livelihood resilience an explicit component of climate adaptation.

Lagos Resilience Strategy

The Lagos Resilience Strategy provides an important foundation for urban agriculture and food-system resilience. It recognizes the pressures created by population growth, urbanization, and limited land and promotes the regeneration of farm centers and exploration of urban



repeated shocks. With 91.3% of households relying on a single income source and substantial proportions reporting unstable income, livelihood disruption can quickly translate into food and welfare insecurity. Heat exposure compounds the problem. Approximately three-quarters of respondents work outdoors, while the PALM-TREES heat

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agriculture opportunities. This is directly consistent with the PALM-TREES recommendation to support urban agriculture and home gardens.

Agricultural and fisheries livelihood support

Existing agricultural interventions in Lagos also provide potential channels for delivering climate-resilient livelihood support. Rather than establishing entirely new programmes, the State can use existing agricultural, cooperative, women-focused and enterprise-development mechanisms to target households and communities identified as highly vulnerable to extreme events. Evidence from Lagos's fishing communities further suggests that support should extend beyond fishing itself to processing, marketing, storage, finance, and alternative livelihoods.

4. KEY FINDINGS FROM PALM-TREES

4.1 Livelihoods are highly exposed to climate stress

Informal or casual employment is the largest reported livelihood category, while 75.5% of respondents work outdoors. This creates a direct link between climate hazards and household income: heat can reduce work capacity and comfort, while flooding can prevent access to workplaces, markets and productive assets.

4.2 Household income diversification is limited

The most significant livelihood vulnerability is the dependence on a single income source. 91.3% of households have only one income source. In addition, 49.4% reported less stable or reliable income and 40.4% reported very unstable or unreliable income. This makes livelihood diversification a central adaptation strategy.

4.3 Extreme heat is an economic as well as health risk

The heat analysis indicates persistent heat stress, with March recording the highest average Humidex and an estimated annual minimum of 120 days of great discomfort and six days of dangerous heat stress. The fact that 75.5% of respondents work outdoors makes this particularly relevant to livelihood resilience.

4.4 Flooding produces direct livelihood losses

The PALM-TREES findings identify livelihood loss alongside displacement, property loss, and health risks as major consequences of flooding. Communities respond through relocation, embankment construction, drainage renovation, moving valuables, and community erosion control. These strategies demonstrate community resilience but also indicate the costs households bear when formal risk-reduction measures are insufficient.

4.5 Urban agriculture and home gardens provide an adaptation pathway

The PALM-TREES project specifically identifies support for urban agriculture and home gardens as a transformative/adaptation solution. Such interventions can contribute to income diversification and household food security, particularly when linked to appropriate technical support, land access, and markets. Evidence from Lagos's peri-urban farming communities also supports the importance of institutional support and cooperative arrangements.

4.6 Women in fishing communities require targeted support

The PALM-TREES project specifically identifies support for women in fishing communities to cope with climate

change as an adaptation priority. This is supported by recent evidence from Lagos, which shows that flooding disrupts women's fishing, processing and trading activities and forces them to adopt alternative coping strategies.

4.7 Alternative livelihoods should be linked to nutrition

The project identifies training and capacity building for alternative livelihoods and improved nutrition for vulnerable women and men. This is important because climate shocks can simultaneously reduce income and increase household food insecurity. Livelihood and food-security interventions should therefore be designed together rather than implemented as separate programmes.

5. POLICY IMPLICATIONS

Move from coping to livelihood resilience: The evidence indicates that households are already coping with extreme events, but coping should not become the main adaptation strategy.

Treat heat exposure as a livelihood issue: Heat adaptation should not be confined to health campaigns. The high proportion of outdoor workers means that heat protection is also an employment and productivity issue.

Prioritize diversification for single-income households:

Where one income source supports a household, any disruption can have immediate consequences. Alternative livelihood opportunities should therefore form part of climate adaptation.

Build on existing institutions: The evidence does not justify creating a completely new livelihood architecture. Existing agricultural, women-development, employment, cooperative and climate-resilience institutions should be used more strategically.

Make livelihood adaptation gender-responsive: Women in fishing communities and other climate-sensitive livelihood groups should be involved in programme design and should receive targeted access to finance, information, skills, infrastructure and markets.

6. PRIORITY POLICY RECOMMENDATIONS

Recommendation 1: Scale up climate-resilient urban agriculture and home gardens

Responsible institutions:

Lagos State Ministry of Agriculture and Food Systems; Lagos State Resilience Office (LASRO); Local Government Councils.

Actions:

- Identify suitable locations for community and household gardens.
- Prioritize climate-vulnerable and low-income communities.
- Provide technical training and appropriate inputs.
- Promote climate-resilient production practices.
- Link producers with local markets and nutrition programmes.

Recommendation 2: Establish targeted livelihood support for women in fishing communities

Responsible institutions:

Lagos State Ministry of Agriculture and Food Systems; Ministry of Women Affairs and Poverty Alleviation; Local Government Councils.

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Actions:

- Provide women with access to climate information.
- Improve access to finance and cooperative arrangements.
- Support fish processing, storage and marketing.
- Improve landing-site and related livelihood infrastructure.
- Develop complementary livelihood opportunities for households experiencing repeated disruption.

Recommendation 3: Expand market-linked alternative livelihood programmes

Responsible institutions:

Ministry of Women Affairs and Poverty Alleviation; Ministry of Youth and Social Development; Ministry of Wealth Creation and Employment; Local Government Councils.

Actions:

- Identify households with unstable or single-source incomes.
- Provide demand-driven skills training.
- Link beneficiaries to markets and enterprise opportunities.
- Facilitate access to appropriate finance and productive assets.
- Prioritize women, youth, persons with disabilities and other vulnerable groups.

Recommendation 4: Protect outdoor workers from extreme heat

Responsible institutions:

Lagos State Ministry of Health; Ministry of Wealth Creation and Employment; LASRO; Local Government Councils.

Actions:

- Develop heat-health and occupational safety guidance for outdoor workers.
- Promote access to drinking water and shaded rest areas.
- Use heat forecasts to advise workers about periods of dangerous heat.
- Encourage flexible working/rest arrangements during peak heat periods.
- Integrate heat-risk information into worker and community outreach.

Recommendation 5: Integrate livelihood support with food and nutrition security

Responsible institutions:

Ministry of Agriculture and Food Systems; Lagos State Ministry of Health; Ministry of Women Affairs and Poverty Alleviation; Local Government Councils.

Actions:

- Link urban agriculture and home gardens with community nutrition programmes.
- Target households experiencing repeated flood or heat-related livelihood losses.
- Include nutrition objectives in livelihood-support programmes.
- Promote household-level food production where appropriate.
- Monitor changes in food access following extreme events.

Recommendation 6: Mainstream livelihood resilience into Lagos climate planning

Responsible institutions:

Lagos State Resilience Office; Ministry of Economic Planning and Budget; Ministry of Environment and Water Resources; Ministry of Agriculture and Food Systems.

Actions:

- Include livelihood resilience indicators in climate adaptation plans.
- Track household income and livelihood disruption following extreme events.
- Map climate-sensitive livelihood groups.
- Use PALM-TREES evidence to target adaptation investments.
- Report adaptation outcomes by sex, disability and other relevant vulnerability characteristics.

Recommendation 7

7. CONCLUSION

The PALM-TREES evidence demonstrates that climate vulnerability in Lagos is also a livelihood vulnerability. A large proportion of respondents work outdoors, most households depend on a single income source, and many report unstable household incomes. At the same time, Lagos experiences substantial heat stress and recurrent flooding, both of which can disrupt livelihoods and household welfare. The response should not be limited to post-disaster assistance. Lagos needs a livelihood-centered climate adaptation approach that reduces dependence on a single income source, protects people working outdoors, strengthens climate-sensitive agricultural and fishing livelihoods, improves household food security, and gives vulnerable groups greater access to information, finance, skills, and markets. Importantly, the PALM-TREES project has already identified practical entry points: urban agriculture and home gardens; support to women in fishing communities; and alternative livelihood and nutrition training. Lagos State's task is therefore to connect these community-level solutions with existing state climate, agricultural, employment, social-development, and planning systems.

REFERENCES

- Areola, F. O., Akintola, S. L., Fakoya, K., Oyediji, B., & Osanyinlusi, O. I. (2025). Vulnerability of small-scale fisherwomen to flooding in Oworonshoki and Shomolu fishing communities in Lagos State, Nigeria. *Nigerian Journal of Fisheries*, 22(1), 3156–3164.
- Lawanson, T., Orelaja, O., & Simire, M. (2014). Effects of climate change on a peri-urban farming community in Lagos, Nigeria. *African Journal of Science, Technology, Innovation and Development*, 6(6), 511–517. <https://doi.org/10.1080/20421338.2014.976990>.



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