

## **Planetary Health Design Lab (PHDL): A systems innovation platform to address climate-sensitive zoonoses in Nigeria**

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### **Introduction**

Lassa fever, a climate-sensitive zoonotic disease endemic to West Africa, continues to challenge Nigeria's health system due to environmental disruption, inadequate early warning mechanisms, and fragmented multi-sectoral governance. Between 2019 and 2024, Nigeria recorded over 5,000 confirmed cases, with case fatality ratios ranging from 15% to 20% in high-burden areas.

### **Methods**

This concept proposes the Planetary Health Design Lab (PHDL) as a systems innovation platform for integrating ecological and health data to address climate-sensitive zoonoses. The framework is designed to incorporate scenario modeling, spatial prioritization, and participatory systems mapping to co-create context-specific interventions. The proposed approach seeks to adapt decision-support systems for planetary health governance in LMICs. The conceptual model will be piloted using Nigeria as a case study, focusing on Lassa fever, with potential for international adaptation through future collaborations.

### **Results**

Early application of the PHDL in Nigeria demonstrates its potential to: (1) strengthen health and environment collaboration, (2) guide

anticipatory interventions in Lassa fever hotspots, and (3) connect planetary health research with global technical partners. Cross-country partnerships in Japan and Canada offer complementary decision-support frameworks, including forest sector modeling and cumulative effects tools, adaptable to LMIC contexts.

### **Conclusion**

The PHDL offers a transdisciplinary, locally embedded, and globally networked innovation ecosystem for addressing Lassa fever and similar health risks at the human–nature interface. By institutionalizing systems thinking and nature-based governance, the lab supports sustainable epidemic preparedness and planetary health equity.