

Genomic sequencing for pathogen surveillance: a regional technical brief

HEPRR Technical Working Group | Regional (multi-country) | 2025-07

Executive summary

Genomic sequencing for pathogen surveillance — this technical note synthesises regional evidence on next-generation sequencing and bioinformatics, identifies barriers and enablers, and sets out practical actions for member states. Intended for policymakers, programme managers and technical staff across the HEPRR MPA programme in Eastern and Southern Africa.

AT A GLANCE

- Pillar: Technical Knowledge Repository
- Document type: Technical Note
- Geographic focus: Regional (multi-country)
- Access: Open (CC BY 4.0)

1. Introduction

This technical note examines next-generation sequencing and bioinformatics within the HEPRR MPA programme in Eastern and Southern Africa, framed for technical teams. It situates the work within the goal of strengthening multisectoral preparedness, response and resilience to health emergencies.

2. Regional context

Health systems across the region face converging pressures — recurrent outbreaks, fragile supply chains, workforce gaps and climate-driven shocks. Evidence from country reporting and regional review shows wide variation in capacity on next-generation sequencing and bioinformatics, and clear opportunities for shared standards, pooled resources and mutual learning.

3. Approach and methods

The analysis combines a situational review, stakeholder consultation and appraisal of existing regional instruments. Data were triangulated from national reporting, facility assessments and expert input convened by ECSA-HC and IGAD, and mapped to indicators in the HEPRR results framework (JEE/SPAR axes, 7-1-7 performance).

4. Key findings

Coordinated regional action on next-generation sequencing and bioinformatics accelerates progress more efficiently than isolated national efforts. Early investors report stronger detection, faster response and greater community trust. Persistent barriers include financing continuity, data interoperability and workforce retention.

5. Recommendations and next steps

Recommendations: (1) institutionalise this work within national preparedness plans and budgets; (2) strengthen regional mechanisms for shared standards, data and procurement; (3) invest in the workforce and quality systems that sustain it; and (4) embed monitoring, evaluation and learning. ECSA-HC and IGAD will support member states through technical guidance, peer exchange and this open knowledge hub.