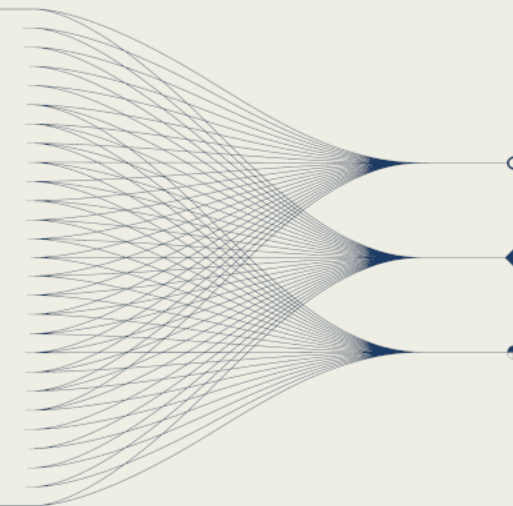


Bridging Worlds, Building Futures: The Evolving Role of National Data Centres

Magdalene Wangui Wanyaga

Freelance consultant, CYG & YPN

Presentation Date: 11 September 2025



The Heart of NDCS

Technology

Advanced monitoring systems and data analysis capabilities



People

Scientists, analysts, and verification experts working together

Policy

International agreements and verification frameworks

National Data Centres transcend traditional infrastructure boundaries.

They represent human-centered institutions operating at the critical intersection of **technology**, **people**, and **policy**.

These platforms foster inclusion, mentorship, and meaningful participation in global verification science.



My Story Begins

It started with undergraduate curiosity, sparked by inspiring mentors at the University of Nairobi.

An internship at the Kenyan NDC became a pioneering opportunity for youth engagement.

My first exposure to IMS stations, NDC-in-a-box technology, and seismic data analysis opened an entire world of possibilities.



IMS: First Encounters with Data

Field visits to IMS seismic stations across Kenya revealed how local monitoring systems connect seamlessly to the global International Monitoring System network.

These experiences built my technical foundation in applied seismology, demonstrating the power of real-time global collaboration in verification science.

Station Operations

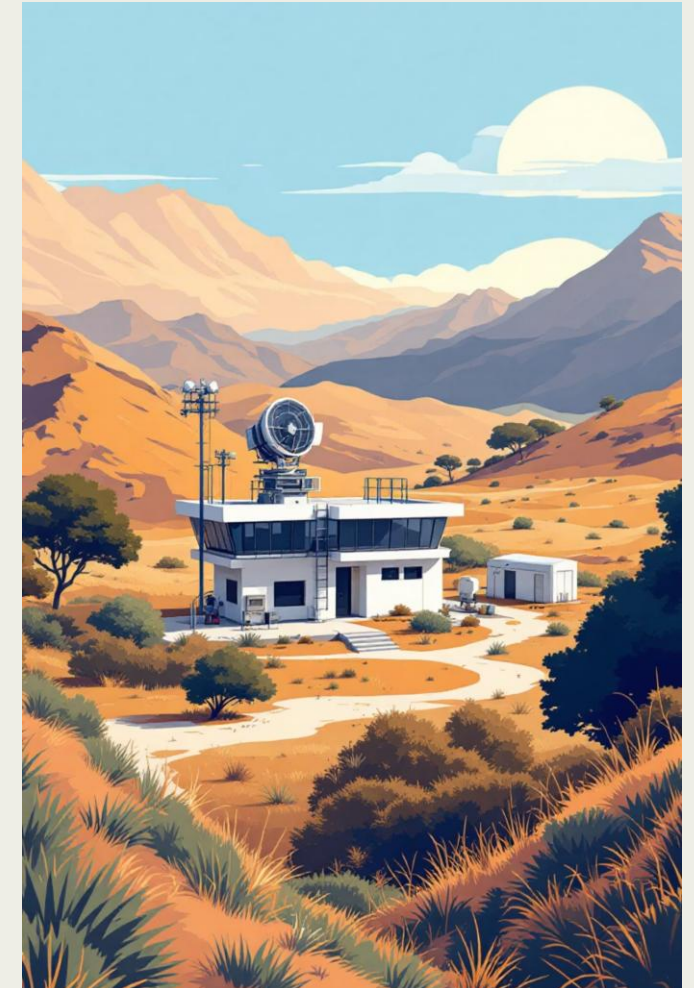
Understanding continuous seismic data collection and transmission protocols

Global Networks

Learning how local stations contribute to worldwide monitoring capabilities

Technical Skills

Developing expertise in seismological instrumentation and data quality assessment





IDC: Learning to Analyse

Training at the Kenyan NDC transformed raw seismic data into actionable intelligence.

Using IDC tools and NDC-in-a-box software, I mastered waveform analysis techniques.

Professional growth accelerated through structured IDC courses and the comprehensive Knowledge Portal, building expertise in verification methodologies.



Data Processing

NDC-in-a-box software training



Waveform Analysis

Advanced IDC analytical tools



Knowledge Building

IDC courses and portal resources

Magdalene Wangui Wanyaga

Ke06



OSI: A Turning Point

A Life-Changing Experience

Participating in On-Site Inspection (LTP) training marked a pivotal transformation. The experience emphasized **teamwork**, **professionalism**, and the power of global scientific networks.

This training shifted my trajectory from pure science into the dynamic intersection of leadership and diplomacy, opening new pathways for international collaboration.



The Nexus of Verification

NDCs serve as the central hub where all verification pillars converge, creating a comprehensive monitoring and analysis ecosystem.



IMS

Global monitoring stations
provide continuous data
streams



IDC

Advanced analysis tools
transform data into
knowledge



OSI

Field verification
science validates
monitoring results

The Kenyan NDC connected me to all three verification pillars, demonstrating the integrated nature of the CTBT verification regime.

NDCs as Preparation Centres

As the CTBT approaches its 30th anniversary, NDCs have evolved into vital preparation centres for the next generation of verification scientists.

Today

Experienced scientists and founding expertise

Together

Empowered next-generation leaders

1

2

3

Tomorrow

Active mentorship and knowledge transfer

Through structured mentorship programs, NDCs support **equity** by empowering scientists from the with world-class training opportunities.



Science + Diplomacy

The CTBT represents the intersection where rigorous science meets international diplomacy. This unique environment taught me the critical importance of science communication for meaningful policy impact.

NDCs nurture future scientists, policymakers, and diplomats who understand both technical excellence and diplomatic collaboration.

Scientific Excellence

Rigorous data analysis
and verification
methodologies

Policy Communication

Translating technical findings
into policy-relevant insights

Diplomatic Collaboration

Building international
partnerships for global
security

Call to Action

Invest in Human-Centered NDCs

Support institutions that prioritize people alongside technology

Build Tomorrow's Community

Create a verification network that reflects the world we protect

Ensure Global Representation

Empower gender-inclusive participation from all regions

Promote Knowledge Transfer

Enable intergenerational mentorship and skill development

All this started with a young, curious woman at the Kenyan NDC. Our collective journey: protecting tomorrow through human-centered verification science

