ARTIFICIAL INTELLIGENCE 4 Climate Resilience

ARIN AFRICA RESEARCH & IMPACT NETWORK

Leveraging Artificial Intelligence for Climate Resilience Solutions in Africa Project

AI FELLOWSHIP GUIDEBOOK

UNIVERSITY OF NAIROBI

IDRC · CRDI

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1. Introduction to the Project

The "Leveraging Artificial Intelligence for Climate Resilience Solutions in Africa" project, spearheaded by the Africa Research and Impact Network (ARIN) in partnership with the University of Nairobi and funded by the International Development Research Centre (IDRC), aims to build critical capacities in Artificial Intelligence (AI) to enhance climate resilience. The project explores and scales AI's potential to address climate risks, support planning, and strengthen resilience across Africa.

Recognizing the continent's unique climate vulnerabilities and the growing importance of data-driven decision-making, the project harnesses machine learning, geospatial analysis, and digital innovation to enhance climate action at local and national levels. It targets early-career researchers and policymakers, emphasizing inclusive, interdisciplinary, and action-oriented capacity building.

Specific Objectives:

1. **Enhance the capacity of early-career researchers to apply AI in climate action:** Provide training and mentorship in AI, climate modelling, and data science, equipping researchers with tools to leverage AI for climate resilience.
2. **Institutionalize AI within climate action frameworks:** Integrate AI into national institutions, universities, and research centres to embed technical expertise in climate adaptation and resilience strategies.
3. **Develop a network of AI specialists and champions for climate resilience:** The initiative will cultivate a cohort of AI professionals skilled in applying AI to climate science, supporting innovation, and evidence-based policymaking.

2. Introduction to the Fellowship Program

The ***AI for Climate Resilience Fellowship*** is a flagship capacity-building and mentorship initiative designed to nurture a new generation of African climate leaders at the intersection of artificial intelligence (AI), policy, and sustainability. It aligns with the broad goal of leveraging frontier technologies for climate adaptation, mitigation, and systems transformation.

The fellowship seeks to equip early-career professionals, researchers, innovators, and policy practitioners with the skills, resources, and networks necessary to catalyze impactful, inclusive, and ethical AI solutions for climate resilience across Africa.

Fellows are competitively selected through a rigorous merit-based process prioritizing regional representation, gender inclusion, and commitment to equity, innovation, and locally-led climate action.

The 12-month blended learning program includes technical training in AI and data science, leadership development, and context-specific applications across climate-vulnerable environments.

Participants engage with a dynamic curriculum featuring:

- Mentorship from leading African and global AI experts
- Interactive workshops and thematic webinars
- Collaborative problem-solving sessions
- Access to real-world case studies and innovation labs

Fellows co-design and prototype community-rooted AI innovations that support locally relevant climate resilience pathways.

Beyond individual skill-building, the program adopts systems thinking, ethical foresight, and policy fluency, empowering fellows to bridge data, technology, communities, and governance. The fellowship seeds a pan-African community of practice committed to sustained leadership and innovation in AI for climate resilience.

The fellowship offers:

I.) A structured 12-month learning and mentorship journey
II.) Monthly thematic sessions (2 hours each)
III.) Ongoing capstone project development
IV.) Personalized mentorship and peer-to-peer learning
V.) Public engagement opportunities through blogs and networking platforms

3. Fellowship Mentorship Program (Monthly Plan)

Each month includes a 2-hour thematic mentorship session that builds knowledge, practical skills, and professional capacities related to AI for climate resilience. Sessions are led by experts, practitioners, and include peer learning.

Month	Theme	Description	Key Focus Areas
1	Fellowship Onboarding & Goal Setting	Introduction to fellowship structure, core values, and learning pathways. Fellows set SMART goals and meet mentors.	• Orientation to ARIN AI fellowship • Goal setting • Capstone and blog overview • Mentorship and peer dynamics
2	Understanding Climate Resilience & Policy Pathways	Exploration of AI's role within Africa's climate governance (NDCs, NAPs, LLA, GGA).	• Climate governance frameworks • Data tools in adaptation • AI policy intervention case studies
3	Fundamentals of Artificial Intelligence & Machine Learning	Introduction to AI/ML concepts, model training, and climate applications.	• AI/ML terminology and algorithms • Model building basics • Python/R demos
4	Gender, Equity & Ethics in AI for Climate Action	Reflect on ethics, bias, and inclusive AI design with gender and indigenous knowledge focus.	• Gender -responsive AI • Algorithmic bias mitigation • Rights-based design
5	Climate Data Access, Modelling, and Analysis	Hands-on experience with key datasets and climate model interpretation.	• Data sourcing and preprocessing • Downscaling and projections • Spatial & temporal analysis
6	Science Communication and Data Storytelling	Communication skills for translating evidence into policy action.	• Compelling narratives • Writing for diverse audiences • Visualizing data insights

Month	Theme	Description	Key Focus Areas
7	Community Engagement and Participatory Design	Co-creation of AI tools with communities, using human-centered and participatory methods.	• Human-centered design • Participatory engagement • Integrating local knowledge
8	Climate Risk and Vulnerability Mapping	GIS and AI to map climate risks and vulnerabilities using remote sensing and community data.	• GIS and open tools • Spatial justice overlays • Hazard and vulnerability mapping
9	Proposal Writing and Grant Readiness	Skills for crafting fundable proposals with budgeting and impact narratives.	• Proposal structure and logic • Funder requirements • Narrative & budget
10	Ethics of Emerging Tech in Africa	Discussion of AI governance, data sovereignty, and digital rights from African perspectives.	• Governance frameworks • Privacy and consent • African voices in AI governance
11	Career Development and Ecosystem Building	Navigating AI-related career paths; building personal brand and networks.	• African AI platforms • Research-to-impact pathways • CV & leadership mentorship
12	Capstone Review and Leadership Futures	Presentations, reflections, feedback, and transition into alumni leadership.	• Capstone presentations • Fellowship reflections • Launch ARIN Fellows Alumni Network

4. Mentorship Structure:

Each fellow benefits from a structured mentorship model featuring:

- Primary mentor: AI, climate, or policy expert assigned by thematic interest.
- Peer buddy system: Pairs of fellows for collaboration, peer review, and accountability.
- Quarterly one-on-one check-ins: Progress tracking, troubleshooting, and goal refinement.
- Monthly group mentorship sessions: Deep dives into key thematic areas.

5. Roles and Expectations

Mentorship combines technical input, leadership coaching, and support for ethical decision-making in projects.

Fellows are expected to:

- Participate actively in monthly mentorship sessions
- Submit monthly learning reflections
- Develop and present a capstone project
- Write at least one thematic blog post
- Maintain ethical, inclusive engagement throughout

Mentors are expected to:

- Guide fellows based on thematic interests
- Conduct quarterly one-on-one check-ins
- Provide feedback on capstone projects and blogs
- Support inclusive, African-led, responsible AI practice

6. Resources Provided

To support the fellows' learning and impact, the following resources will be provided:

I.) Access to training materials, toolkits, and datasets on AI and climate change.
II.) Dedicated online workspace (Slack or WhatsApp) for continuous engagement.
III.) Invitations to ARIN webinars, publications, and events.
IV.) Templates for blogs, policy briefs, and technical reports.
V.) Certificates of participation.
VI.) Access to the ARIN Fellows alumni network.
VII.) Potential mini-grants for project scaling.

7. Monitoring, Evaluation, and Expected Outcomes

Fellows will be supported to track their learning journey and contribution to the program through:

1) Monthly reflection logs via Google Form or shared drive
2) Peer reviews during capstone progress check-ins
3) Mentor feedback during quarterly check-ins
4) Final project presentation and review

Expected outcomes include:

a.) Improved skills applying AI to climate resilience
b.) A pan-African community of ethical, inclusive AI practitioners
c.) An open-access blog anthology authored by fellows
d.) Completion of impactful climate adaptation projects or case studies

8. Blog Contributions and Anthology Output

To enhance public engagement, communication skills, and thought leadership, fellows will write at least one blog post during the fellowship to enhance communication skills and public engagement. Blogs will be reviewed, edited, and compiled into ***AI for Climate Resilience: A Fellows' Blog Anthology,*** published by ARIN PRESS and shared via ARIN platforms and partners.