Report on the AFUR Workshop: "The Use of Artificial Intelligence in Regulatory Agencies"

Hosted by NERSA | 22nd–23rd November 2023 | Pretoria, South Africa (Hybrid)

Executive Summary

The African Forum for Utility Regulators (AFUR), in collaboration with the National Energy Regulator of South Africa (NERSA), successfully convened a two-day workshop on *The Use of Artificial Intelligence in Regulatory Agencies*. The workshop brought together regulators, policymakers, and industry experts to explore AI's transformative potential in regulatory frameworks, addressing both opportunities and challenges. Key themes included:

- **AI Fundamentals & Applications** – How AI can enhance compliance monitoring, tariff setting, and grid optimization.
- **Data Governance & Accuracy** – Balancing real-time and historical data for decision-making.
- **Regulatory Readiness** – Strategies for adopting AI in public-sector oversight.
- **Ethics, Security & Risk** – Addressing privacy, bias, and transparency in AI deployment.

The interactive Q&A sessions underscored AI's relevance to African regulators, emphasizing the need for capacity-building, ethical frameworks, and cross-sector collaboration.

Workshop Overview

1. Objectives

- Introduce AI principles and use cases for regulatory efficiency.
- Examine risks (security, ethics, social impact).
- Equip regulators with tools to integrate AI into compliance, tariff setting, and technical monitoring.

2. Participants

- **Primary Audience**: Leaders and managers from African regulatory agencies (energy, water, finance).
- **Speakers**:
  - **Prof. Jules-Raymond Tapamo** (Expert in AI, computer vision, and machine learning).
  - **Mr. Jim Green** (CTO, Seenovate; cybersecurity and digital transformation specialist).
- **Format**: Hybrid (in-person at NERSA Auditorium + virtual participation).

Key Sessions & Insights

Day 1: AI Foundations and Regulatory Applications

Session 2: AI Principles (Prof. Tapamo)

- **Definition**: AI as a tool for pattern recognition, predictive analytics, and automation.
- **Regulatory Use Cases**:
  - **Anomaly Detection**: AI algorithms to identify non-compliance in utility pricing or safety standards.
  - **Dynamic Tariffs**: Machine learning to tailor pricing based on consumer behavior.

Session 3: AI Challenges (Prof. Tapamo)

- **Data Limitations**: Reliance on historical data risks outdated assumptions (e.g., grid performance trends).
- **Real-Time vs. Static Data**:
  - *Example*: Weather predictions require real-time sensor inputs, while tariff setting uses historical CPI data.
  - *Solution*: Hybrid models combining both data types for agile decision-making.

Q&A Highlights

Question: *"How do we ensure data accuracy when integrating diverse data types (statistical, consumer-generated)?"*
Response (Prof. Tapamo):

- **Step 1**: Define the problem (e.g., fraud detection vs. demand forecasting).
- **Step 2**: Normalize data formats ("data cleaning") for AI readiness.
- **Step 3**: Use unsupervised learning to uncover hidden patterns.
- **Key Takeaway**: Treat data as a strategic asset ("internomics").

Day 2: Governance, Risks, and African Context

Session 6: AI Risks (Mr. Green)

- **Security Threats**: Data breaches, adversarial attacks on AI models.
- **Ethical Risks**: Bias in algorithms (e.g., discriminatory tariff setting).
- **Regulatory Gaps**: Many African nations lack AI-specific laws but can adapt existing sectoral frameworks (e.g., aviation safety rules for AI-driven systems).

Session 8: Panel Discussion – African Scenarios

- **Uganda’s ERA Representative**: *"How can regulators transition to AI-enabled decision-making?"*

- **Response (Mr. Green)**:
    - **Capacity Building**: Start small (hire data scientists/AI engineers for assessments).
    - **Sector-Specific Risks**: Monitor AI adoption in utilities to preempt risks (e.g., grid manipulation).

Q&A Highlights

Question: *"Is AI regulation sector-specific or universal?"*
Response:

- **Sector-First**: Energy/health regulators should tailor guidelines (e.g., Nigeria's draft AI policy).
- **Global Alignment**: Learn from EU's AI Act but prioritize local needs.

Speaker Profiles

Prof. Jules-Raymond Tapamo

- **Expertise**: AI, computer vision, machine learning (PhD, University of Rouen).
- **Relevance**: Demonstrated AI's role in regulatory monitoring (e.g., fraud detection in utilities).

Mr. Jim Green

- **Expertise**: Cybersecurity, digital transformation (MSc Cybersecurity, University of Central Lancashire).
- **Relevance**: Outlined AI security risks and compliance strategies (GDPR/POPIA alignment).

Workshop Outcomes & Recommendations

1. **For Regulators**:
    - Establish AI task forces to assess sector-specific risks/opportunities.
    - Invest in data infrastructure (e.g., interoperable datasets for predictive analytics).
2. **For AFUR**:
    - Develop an AI adoption toolkit for African regulators.
    - Advocate for harmonized AI ethics guidelines across sectors.
3. **For Sponsors**:
    - Fund pilot projects (e.g., AI-driven tariff models in 3 member states).
    - Support cross-border knowledge sharing (e.g., an AI regulatory sandbox).

Conclusion

The workshop underscored AI's potential to revolutionize regulatory efficiency in Africa while highlighting urgent needs:

- **Education**: Ongoing training for regulators on AI/ML.
- **Collaboration**: Public-private partnerships for scalable solutions.
- **Adaptation**: Flexible policies to keep pace with AI advancements.

Next Steps: AFUR will compile a whitepaper distilling workshop insights and circulate actionable frameworks to members.