



National Research and Education Networks and their central role in national ICT in Education Policy

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Agenda

- **NREN as a tool for attaining the regional strategy for education**
- **How NRENs contribute to educational policy goals**
- **Progress in NREN development in Africa**
- **Opportunities and challenges**
- **Role of decision makers**
- **Conclusion – AAU as a partner for NREN development**

Higher education provides a conducive environment for the development of STI and a suitable exploitation of the full potential of science, technology and innovation to support sustainable growth and socio-economic development. It also improves competitiveness with regards to the global process of research, innovation and entrepreneurship requiring increasingly quality knowledge production from universities in African countries.
(CESA 16-25)



Advanced networks or National Research and Education Networks, NREN, and their user communities constitute a favourable environment for scientific and technological research and innovation processes.



**CONTINENTAL
EDUCATION STRATEGY
FOR AFRICA**
2016 – 2025

CESA 16-25

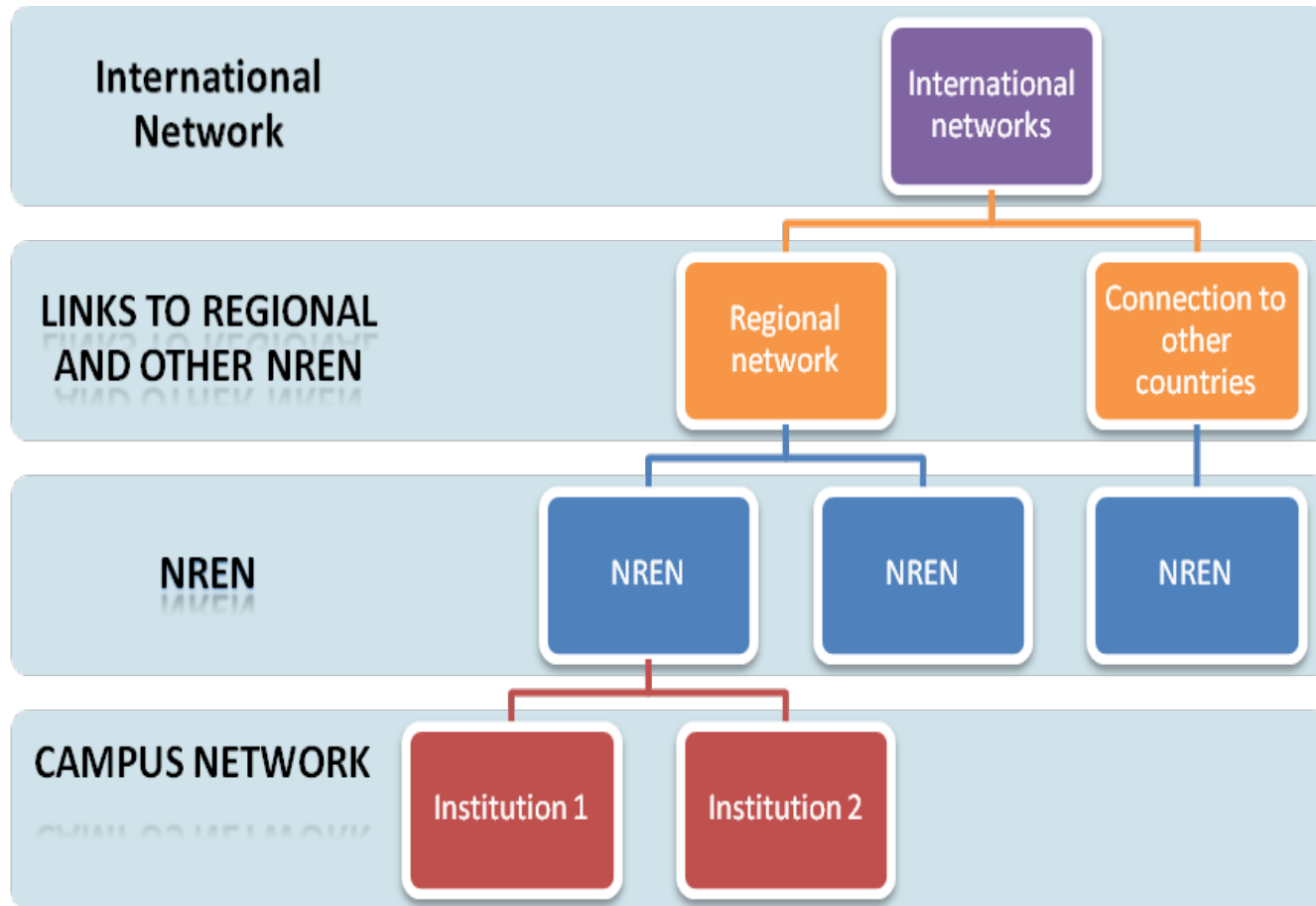


What are NRENs?



- Research and education networks are dedicated networks connecting the Universities, Schools, Research Centers, Hospitals, Museums and any other institution that may have research and education activities.
- National Research and Education Networks (NRENs) are established to provide connectivity and communications services for the research and education communities at the national level
- The Word NREN represents both the network connecting universities, schools and others engaged in learning, teaching and research and the central coordinating office that delivers these services.
- NRENs interconnect local academic institutions with their counterparts in other countries, regions and around the globe to facilitate communication, scientific collaboration, access to resources such as advanced labs, instruments, data sets, libraries and other resources

Organization of NRENs





National Education Policy

- **A national education policy sets the major objectives and orientations and government's priorities and strategies to achieve goals in the areas of:**
 - **Access and equity – improving access to education for girls and boys, adult and life long learning opportunities**
 - **Relevance and quality – with focus on labour market and knowledge economy**
 - **Financing education – ensuring access to funding and disparity between financing**
 - **Education systems strengthening – system for planning, monitoring, evaluation, policy formulation and resource allocation**

Roles of NRENs in educational policies

| Policy areas | NREN Roles |
|---|---|
| Access and equity – improving access to education for girls and boys, adult and life long learning opportunities | NREN increase access to education resources and promote equal access to distance learning, and alternative learning tools like video conferencing Provide high-speed, high performance and low cost broadband network for schools, universities, |
| Relevance and quality – with focus on labour market and knowledge economy | Promote regional and international academic and research collaboration Allow for the running of data-intensive applications (e.g. bio-modelling) and sharing of high end computing assets for research |
| Financing education – ensuring access to funding and disparity between financing | Create economies of scale for building and sharing high speed networks and access to expensive research equipment and laboratories |
| Education systems strengthening – system for planning, monitoring, evaluation, policy formulation | Provide centralized training, capacity building and advisory services |

Key requirements for NREN



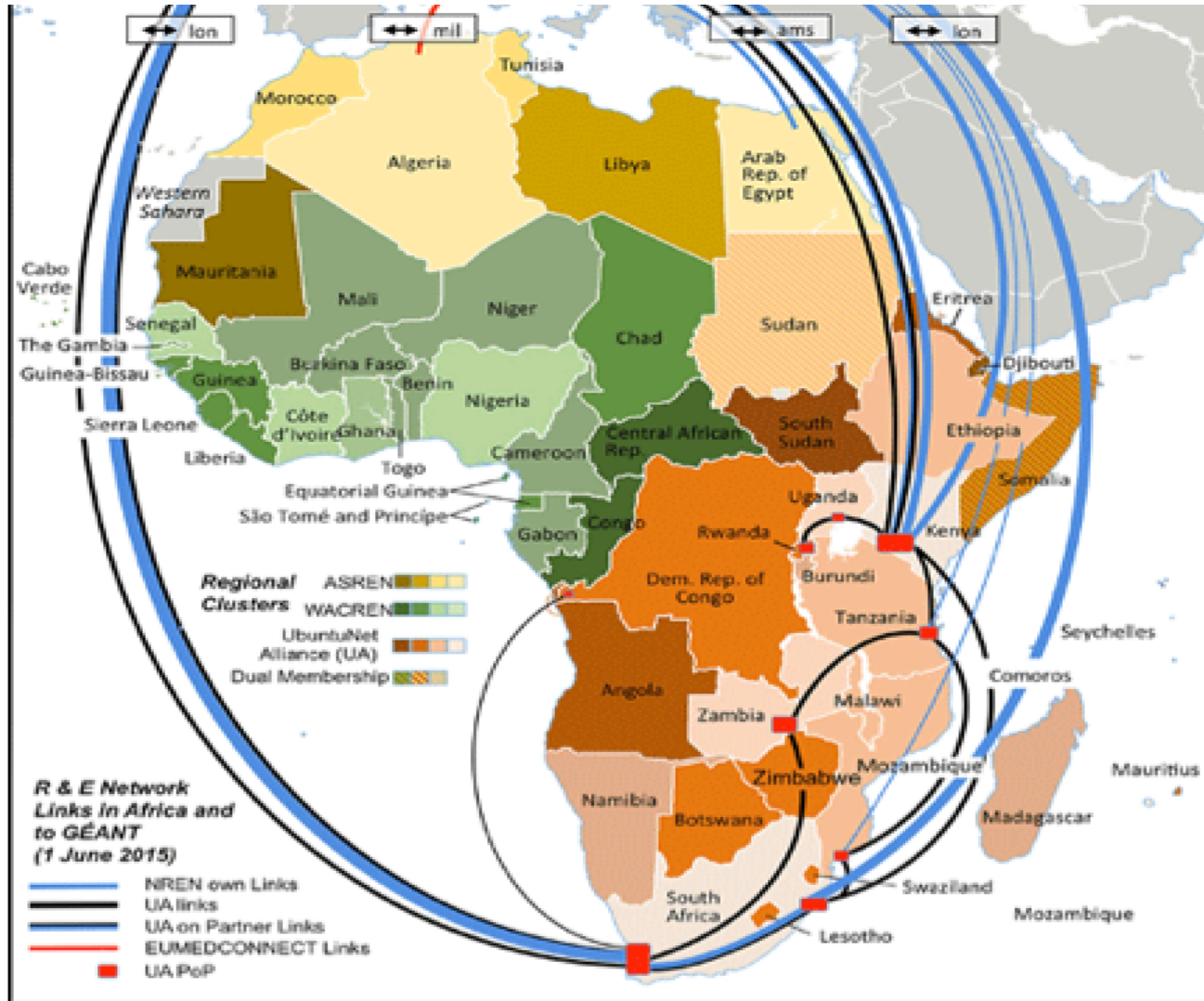
- **A dedicated physical network for interconnecting universities, schools and research institutions,**
- **NREN secretariat and staff**
- **Dedicated Staff, engineers to manage and maintain the networking infrastructure,**
- **Availability of financial resources for continued operation either from members, development partners or the government,**
- **Active support from the telecom regulators for funding and addressing regulatory and policy matters that affect them,**
- **Active support from the infrastructure providers, telecoms, electricity providers to leverage their right of way and infrastructure, where possible.**
- **Cooperation with other NRENs and regional RENs like the UbuntuNet Alliance, WACREN or ASREN**
- **Training and skills development for technical staff of member institutions**

Current NREN status in Africa



- **Advanced NRENs- Algeria, Egypt, Kenya, Morocco, Senegal, Tunisia, South Africa, Uganda and Zambia.**
- **Operational NRENs - Cote d'Ivoire, Ethiopia, Ghana, Madagascar, Mozambique, Nigeria, Rwanda, Sudan, Tanzania and Togo**
- **Countries with activities, but no strong NRENs - Benin, Botswana, Burkina Faso, Burundi, Cameroon, Democratic Republic of Congo, Gabon, Lesotho, Malawi, Mali, Mauritius, Namibia, Niger, Sierra Leone, Swaziland, Somalia and Zimbabwe**
- **No NRENs- Angola, Cape Verde, Central African Republic, Chad, Comoros, Republic of Congo, Djibouti, Equatorial Guinea, Eritrea, Gambia, Guinea, Guinea-Bissau, Liberia, Libya, Mauritania, Sao Tome and Principe, Seychelles, and South Sudan.**

Regional connectivity



Opportunities for developing NRENs

- **Strong Regional Research and Education Networks for coordinating regional activities**
 - WACREN
 - UbuntuNet Alliance and
 - ASREN
- **Funding for interconnecting and capacity building**
 - AfricaConnect
 - Donor programmes (e.g. World Bank)
- **Active support from global REN community**
 - E.g. NSRC (Capacity building)
 - Red CLARA (exchange of experience)
 - Potential for twining arrangement between African and European/Asian/Latin American NRENs



Steps for building NRENs

- **Availability of adequate bandwidth at an affordable price**
- **Commercial condition to access to long term lease (e.g. Indefeasible Right of Use)**
- **Regulatory support on pricing, licensing and access to universal access fund**
- **Upgrading campus networks**
- **Delivery of services to users**
- **Finances especially at early stages**





Role for the Ministers

- **Integrate NREN development in national education policies**
- **Support the development of the underlying broadband infrastructure,**
- **Ensuring that the budget for National Research and Education Networks is allocated at central government level, and**
- **Supporting NREN champions in mobilization of resources from domestic sources such as the Universal Access Fund**

AAU - your partner for NREN development

- **Mobilization of resources to address NREN challenges at national and regional levels**
- **Promotion of access to ICTs as a main component of national education policies and university strategies**
- **Raising awareness of decision makers and university leaders**
- **Mobilizing resources for establishment and strengthening of research communities that develop solutions for regional problems**
- **Support the flow of regional knowledge (e.g. DATAD)**
- **Promoting regional policy and regulatory harmonization in order to support uniform network pricing and interconnection across countries**



Thank you