« Promoting the building of a people-centred, development-oriented and inclusive information society, with a view to enhancing digital opportunities for all people »

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Internet in Higher Education, Research and Technology Development in Subsahara-Africa

Study commissioned by the German Parliament for a project of the Office for Technology Assessment

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The information and valorations given in this presentation have not yet been approved by the TAB

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Guiding research questions

- To what extent and in which ways does Internet communication strengthen the system of higher education, research and technology development in Subsahara-Africa?
- Which conclusions can be drawn for development cooperation?
Methodologies

- Evaluation of internationally available literature, data and indicators (UNCTAD, ITU, World Bank)
- ~50 Interviews conducted in Ethiopia in the context of the E-Learning Africa Conference (May 2006)
- Online Discussion with 285 participants (75 active) mainly from Africa
Connectivity of Africa’s universities

- Main problems: High costs, low bandwidth...
- However:
  - Overall setting highly dynamic
  - Huge differences between countries and universities

<table>
<thead>
<tr>
<th>Makerere University Uganda</th>
<th>University Yaoundé Cameroon</th>
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<tbody>
<tr>
<td><strong>Leased Line, WiFi</strong></td>
<td><strong>VSAT</strong></td>
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<tr>
<td>2600 Internet Computers</td>
<td>40 Internet Computers</td>
</tr>
<tr>
<td><strong>Uplink: 1,256 Mbps</strong></td>
<td><strong>Uplink: 128 Kbps</strong></td>
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<tr>
<td><strong>Downlink: 2,5 MBps</strong></td>
<td><strong>Downlink: 256 Kbps</strong></td>
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<tr>
<td><strong>Downtime/month: 1 h</strong></td>
<td><strong>Downtime/month: 400 h</strong></td>
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Main challenges for Africa's system of higher education

- Student numbers exceed significantly the calculated capacities of universities (physical space, personnel).
- Number of students is constantly increasing.
- Enrolment ratios have to rise to provide a basis for Africa's participation in the global knowledge society (ratios are very low in international comparison).
- Enrolment ratios have to rise to guarantee gender equality (enrolment ratios of women far below that of men).

higher outreach and higher quality
Potential contribution of the Internet: E-Learning

• Distance learning is common practice in Africa, mainly based on printed material, CD-Rom etc.
• Internet based E-Learning complementary to traditional methods of distance learning
• Limited connectivity: no significant increase in overall outreach of higher education
• Internet cannot substitute for teaching staff if quality education shall be provided
• High potential in internet-based collaborative development of open educational resources
Main challenges for Research

- Limited resources (low public R&D spending)
- Staff underpaid and overloaded with teaching
- Missing laboratories
- Outdated libraries
- Low visibility of Africa’s research
Potential contribution of the Internet: Research

- Internet is an important channel to access up-to-date data and scientific literature
  - free e-resources (conference papers, CGIAR publications etc.)
  - Differential Pricing Initiatives (Health, Agriculture etc.)
  - Online Fora, E-Mail-newsletters
- Alternative solutions
  - CD-ROM and local servers (e.g. „The Essential Electronic Agricultural Library“ TEEAL)
  - Cooperation partners with quality internet access provide access to resources (e.g. International Livestock Research Institute)
Potential contribution of the Internet: Technology

- In Subsahara-Africa innovation systems are very weak or incipient (exception RSA)
- Technology development mainly in the area of software development and applications, FOSS
- Joint development projects, consortia
  - AVOIR (African Virtual Open Initiatives and Resources), network of 15 Universities in 9 African countries
Final considerations

- Internet will by itself not resolve the structural problems in Africa's system of higher education, research and technology development.
- Whereever the necessary investments and reforms are undertaken, the potentials of internet (libraries, consortia) have to be considered.
- Africa is approaching a serious lack of highly qualified experts to manage the integration of internet in its knowledge system.
Thank you for your attention!