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## Database of African Research Institutes

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## Introduction

The present document is a report of the EuroAfrica-P8 project, funded by the European Commission's Directorate-General Information Society and Media (DG INFSO), under its 7th EU Framework Programme for Research and Technological Development (FP7).

The EuroAfrica-P8 project is divided into Work Packages (WP), each of them being sub-divided into Tasks (T). One of the project tasks (Task 3.3: Database of African Research Centres) has the objective to support collaborative ICT research between Europe and Africa, within the framework of the international strategy of the EU, through the mapping of ICT Research Centres in Africa. The advantages of this activity are: (1) Facilitation of the joint identification of topics for collaboration under the FP7/ICT programme by enabling European research organisations to find African partners; (2) Strengthening joint ICT research capacity; and (3) Providing a solid base to address global challenges through joint efforts in nurturing human capacity for sustainable development.

This objective is namely reached by (1) a peer review of the existing database, validating and expanding the database based on a mapping of relevant ICT research categories; (2) Identifying official "Contact Points" in each centre for invitation to Africa-EU Partnership 8 Implementation Group (ICT) meetings; (3) Adding functionality to the database to support partners searches; and (4) Preparing an e-Booklet "Spotlight on African ICT Research Centres".

The present document (Database of African Research Institutes), prepared by CSIR (WP Leader) and CERT (Project Task Leader), is the 1<sup>st</sup> report related to this activity.

## 1 - Review and Update of the Online Database

A review of the online database (<http://euroafrica-ict.org/ict-research-priorities/database-research-institutes/>) resulted in the following main conclusions:

- Only 107 institutions from 30 out of the 47 African countries have been included so far.
- Information is not complete for all institutions, and some of the information is outdated.
- An inadequate spectrum of types of institutions are included, i.e. 80 universities, 5 institutions, 2 distance education institutions, 3 higher schools, 5 public organisations and 2 private companies.
- The database structure (see example below) and functionality is inadequate for the sophisticated partner searches that are required for research collaboration.
- The list of "Research Areas" is incomplete.

<p><b>Botswana Institute for Development Policy Analysis</b> <b>Laboratory:</b> Public Sector Unit <b>Contact person:</b> Molefe Phirinyane <b>Job:</b> Research Fellow <b>Email:</b> <a href="mailto:molefep[at]bidpa.bw">molefep[at]bidpa.bw</a> <b>Url:</b> <a href="http://www.bidpa.bw">www.bidpa.bw</a> <b>City:</b> Gaborone <b>Country:</b> Botswana <b>Research areas:</b></p> <ul style="list-style-type: none"><li>• e-Governance (Secure Services to Citizens &amp; Business / Including ICT policies and regulation)</li><li>• e-Inclusion &amp; e-Accessibility (ICT for independent living)</li><li>• e-Libraries / Digital Library Services &amp; Digital Content Infrastructures</li></ul>
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The Research Institutes are currently classified on the basis of the following topic list:

1. e-Learning (ICT for Education) / e-Skills (Technology Enhanced Learning)
2. e-Health (ICT for Health; Advanced Technology to Improve Health)
3. e-Governance (Secure Services to Citizens & Business / Including ICT policies and regulation)
4. e-Infrastructures (From networks to usages. From research networking to global virtual research collaboration. Infrastructures & Access)
5. e-Libraries (Digital Library Services & Digital Content Infrastructures)
6. e-Inclusion & e-Accessibility (ICT for independent living)
7. e-Agriculture, ICT for Environmental Sustainability and Energy Efficiency (Enabling Environment, Climate Change Effects, Disaster Management, etc.)
8. Evolution and convergence of networks, infrastructures, equipment and services towards Future Network solutions
9. Social inclusion (Youth/Women/Elderly and the Information Society)
10. Software and services
11. Trustworthy ICT, Information/Cyber Security, Privacy
12. Mobile technologies devices, networks and applications
13. Network sensing, monitoring and control, Internet-of-Things, smart grids/cities

Suggestions for improvement:

- Extending the scope of the data – a wider spectrum of institutions, including more complete contact details for both the Research Institutions and its different Research Units/Labs.
- Improving the ICT categories to be more inclusive while still manageable, including both ICT themes + ICT technologies.
- Periodic evaluation and updates through appointed Contact Persons
- Wide promotion to increase usage.
- Using My SQL (Open Source Software) as a database management tool that enables search services based on both keywords and a combination of keywords.

## 2 - Progress with Improvements

The objectives of the African ICT Research Centre database are:

- To promote European – African collaboration on ICT research for socio-economic growth.
- To enhance collaborative research between European and African institutions and researchers by providing a reference source for sophisticated partner searches.
- To raise awareness of the extent of ICT research capacity in Africa.
- To strengthen Euro-Africa ICT research capacity by linking institutions with similar and/or complementary interests and capabilities.
- To share knowledge about African research capacity and interest as an input to bilateral (Africa-EU Partnership 8) meetings with stakeholders from both continents.

A new list of ICT Research Categories for Research Centre classification was developed in order to be more inclusive and to include both ICT Thematic Areas and ICT Technology Areas. Note that ICT technologies are deliberately listed in four main categories (14 -17) rather than drilling down to individual technologies that could form a much longer list. ICT research themes, on the other hand, are much more descriptive of ICT research for socio-economic development.

Each organisation can be associated with as many of these categories as relevant:

1. ICT for Health, Ageing and Well-being;
2. ICT for Environment & Energy - Sustainability, efficiency and managing climate change effects, water, air pollution and disasters, geo-spatial applications, mining applications, astronomy;
3. ICT for Learning, Skills Development and Education;
4. ICT for Agriculture - irrigation, farming, weather information and alerts, planning, etc
5. ICT for Governance, Government Services to Citizens (including ICT policies and regulations);
6. ICT Infrastructures - Networks (fixed, wireless, mobile, satellite), National Research Networks, Access to Infrastructure, network usage;

7. ICT Libraries - Digital Library Services, Digital Content, Indigenous Knowledge Systems, etc.;
8. ICT for Inclusion - Adoption, accessibility, independent living, disabilities and social inclusion of youth, women and the elderly in the Information Society;
9. Future Internet - the evolution of networks, infrastructures, equipment and services towards broadband systems, high capacity, novel architectures, satellite integration etc.;
10. ICT for Development - Innovation, Entrepreneurship, Rural Development, Living Labs, Incubators;
11. ICT for Business - Financial Systems, e-Commerce, trade, manufacturing, industry applications, service economy, supply chain, asset management;
12. ICT for Transport - Intelligent transportation systems;
13. Trustworthy ICT - Information security, privacy, cybercrime;
14. ICT Technology - Software: engineering, computing, cloud, High Performance, Artificial Intelligence;
15. ICT Technology - Hardware: Computers, devices, sensors, embedded, processors, satellite systems;
16. ICT Technology - Connectivity: Network management, sensor networks, control systems, integration, monitoring, diagnosis, smart grids, smart systems, architectures, Internet of Things, web; and
17. ICT Technology - Processing: Mobile and Computer Services and Applications, middleware, platforms, large databases, robotics, multi-media, gaming, earth observation, human language technologies, Living Labs, Content creation.

Wide scanning and data collection yielded an updated and improved Excel database of African ICT Research Centres, already including:

- 36 of the 47 African countries, namely:
  - Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central Africa Republic, Chad, Democratic Republic of Congo, Egypt, Ethiopia, Ghana, Ivory Coast, Kenya, Lesotho, Liberia, Libya, Malawi, Mali, Morocco, Mauritania, Mauritius, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia,
- 319 research organisations.

### **3 - Next Steps**

The following activities will be undertaken in 2013:

- Find and implement a better online tool for data population (eg upload of a database file) and a more sophisticated search facility.
- Implementing a massive drive to extend the data – aiming to include all African countries and represent a balanced portfolio of research institutes, educational institutions, public bodies related to ICT research and industrial research centres.
- Validation of the data through “official EuroAfrica-ICT Contact Points” per institution / research unit or laboratory.
- Promote the use of the tool through emails and all the EuroAfrica-P8 project events (Awareness Workshops, Thematic Working Group Meetings and Forums).
- Produce the “Spotlight on African ICT Research Centres” e-Booklet.

### **Conclusions**

The aim of this Task is to become a visible facilitator of ICT research partnership building between Europe and Africa.

The current database already provides relevant information but needs to be significantly improved with validated information and improvements to the database management and search options.

Future activities include a massive drive to add to, and validate, the online data and to promote the visibility and use of a new version of the online tool.