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Training Regulators in Africa

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Training regulators in Africa

Executive summary

The need for training amongst African policy makers, parliamentarians, regulators and judges is clear and accepted. However, it is less clear that the systems are in place to identify the true scale of demand and to ensure that those participating in training are not subsequently lost to industry or to the brain drain to developed countries. The challenge is to find mechanisms that are appropriate, cost-effective, scalable and anchored in Africa.

The use of consultants as trainers is neither cost-effective nor scalable and not anchored in Africa. Much of the commercial training available today is located outside Africa and unrelated to African markets or to the policies and practices developed within the continent. Some of it may even be counter-productive. Moreover, it is often part of a business model involving the subsequent sale of consultancy services.

While there are many academics in Europe, North America and East Asia who might teach short or long courses, they have little or no experience of Africa. Their models, case studies and examples are unrelated to and untested on the continent. Within Africa, academic research in telecommunications policy and regulation is extremely limited and could take years to develop the research necessary to underpin teaching capacity at the high level of professionalism required.

Training needs cannot be met at a continental level. Travel is too expensive and too difficult. National circumstances vary greatly, requiring different courses addressing different issues and in different languages. Moreover, there are few examples of pan-African networks that might be used or copied.

It is better to embed training within the regional associations of regulators, though even these cover large areas and countries with very different policy and regulatory histories. The associations can identify needs, publicize events and review their success.

For the most part technology training appears now to be sustainable at the continental level. However, individuals in many countries with smaller or less well developed markets may have to travel elsewhere in Africa for training.

The pieces that might be put in place to build capacity begin with the teaching materials (e.g., case studies). These would document the experiences, good as well as bad, of the last decade of African policy reforms and regulation. A significant number of influential ministers and regulators have now retired so that they and their experiences can be used in training the next generation.

With that it would be possible to look to commercial trainers and university teachers to deliver courses at different levels and of different durations. For example, it would be possible to embed policy and regulatory modules into existing degree courses at bachelor's and master's levels. It would also be possible to deliver short courses for continuing professional development for officials in ministries and regulatory authorities. A very small number of existing teaching programmes within Africa could be replicated at other locations. This would be neither simple, nor fast, for lack of good "host" institutions.

The creation of a small number of *infoDev* professors of telecommunications policy at universities could greatly enhance capacity for teaching, training and research.

There is also a requirement for a mechanism to provide regular briefings and discussions amongst leaders concerning new challenges. Examples from Africa and, more often elsewhere, are often presented as "global best practice". Leaders need to understand these issues and the factors affecting the appropriateness and applicability for their national markets.

1. Current level of training provision in Africa

1.1 Introduction

The need for improved and expanded training for telecommunication regulators has been demonstrated by the national authorities in developing and least developed countries, especially in Africa. The existing provision is considered to be patchy and insufficiently tailored to the economic and legal circumstances of individual countries. It is also considered to be too expensive to be more widely used, both in direct charges and the associated travel costs, plus the opportunity costs of being away from work – accentuated by a shortage of qualified staff to cover for those absent for training.

The need is not limited to National Regulatory Authorities (NRAs), it is also the staff and senior officials in ministries, members of parliament and judges who require capacity building. A national strategy for Information and Communications Technologies (ICTs) extends far beyond the scope of a regulator, as does the need for training in the drafting of the legislation which the regulator will later apply, and also the monitoring of the effectiveness of the regulator. Thus the demand for capacity building is not limited to regulators, even where it is substantially about regulation.

Unfortunately, we do not have a comprehensive analysis of the policy and regulatory systems for African countries, so that we cannot be certain which bodies are responsible for granting spectrum, for dispute resolution, for managing the universal service fund, for managing the national Internet domain name and for cybersecurity. The functions are generally spread over a number of institutions, all of which have training needs.

There is considerable diversity amongst the countries in terms of their experience with liberalization. The paths followed by individual countries have been very different and this is reflected in their training needs.

There is an overlap with the training needs of other regulatory agencies (e.g., energy and water), with competition authorities and, more broadly, with public administration. Developments in those areas can inform the initiatives in telecommunications and any successes in one area might also be applied in others. Vehicles for the delivery of training can be shared by the different sectors. The substance of telecommunications is different in that it is subject to a rapid pace of technological advance, making the training needs closer to those of the industry in having to adapt to technological and market changes.

There are parallel training needs in industry, which the larger operators are more than able to meet. For example, Celtel (Zain Group) has its own Master of Business Administration (MBA) programme at the University of the Witwatersrand. Staff from many African countries are brought to Johannesburg to be given a broad training in marketing, economics, finance, strategy and human resources management. The larger operators are also able to recruit international experts in regulation and to train their own staff.

By aggregating the spending power of the national regulatory agencies and ministries across groups of countries it ought to be possible to obtain better value for money in training. It should also be possible to have courses more closely tailored to regional and national circumstances, including covering some of the sunk costs of preparing appropriate teaching material. In this way, training can move away from generic training materials developed on other continents which may not be appropriate.

By sharing information about training successes and failures, regulatory authorities can help each other in finding the most appropriate courses, whether full-time, part-time, distance learning or short duration.

It is essential to relate the supply of training to demand and to ensure that regulators and ministries have current strategies for human resources management, revised in line with their current needs. Indeed, this may require some capacity building on human resources management to ensure that processes are in place to keep these up to date. Ministries and NRAs will also need to make reasoned cases for individuals attending specific courses, rather than relying on mere seniority. It is important also to address the issue of gender equality. In some cases potential students may not meet entrance requirements in terms of academic background or language skills, requiring elements of basic training.

It is important not to waste expensive training, requiring policies in place and in operation to ensure that staff are retained after they complete training. In many countries there is a practice amongst the operators to recruit the better trained and more competent individuals from the ministry and regulator, thus depriving the institutions of key staff. Any training relies to a significant extent on teaching materials. For Africa there is a very obvious shortage of high quality and current case studies and other materials.

A number of ministers and senior officials with excellent reputations have now left office and should be available to teach and to discuss their experiences. They can also

participate directly and, with support, write case studies and make other contributions to training subsequent generations.

1.2 *A few potential models*

There are a number of models that might be applied to meet the training needs of regulators in Africa. The following are examples from *other* parts of the world:

- Institution of Engineering and Technology (UK)¹ (formerly the IEE)
 - a. Accreditation of degree programmes in universities
 - b. Appraisal of individuals (including an interview) for membership
 - c. A code of conduct for members
 - d. An obligation to undertake continuing professional development
 - e. Training programmes and conferences
- Executive Master of Business Management Administration at IIMT Fribourg (Switzerland)²
 - a. MBA in ICT and utility management sponsored by industry
- Executive MPA from the Kennedy School of Government (USA)³
 - a. One-year full-time mid-career Master of Public Administration
- University of London External System (UK)⁴
 - a. Traditional distance learning
 - b. Master of Science (MSc) in Public Policy and Management, 2-5 years
 - c. Master of Laws (LLM), 1-5 years
- InterConnect Communications (UK)⁵
 - a. A range of training “master classes”
- Jean Monnet Chair (EU)s⁶
 - a. A network of individuals at professorial level with special expertise in European integration studies at universities across the EU and beyond
 - b. Co-funded up to 75 per cent
 - c. The teaching of modules co-funded for three of five years
- University of Wales validation (UK)⁷
 - a. Institutions in many countries offering degrees (e.g., MBA)
 - b. Degree schemes and institutions are evaluated and periodically re-assessed
 - c. A system of external examiners reviews the assessment of students
- IIC Telecommunications & Media Forum⁸

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¹ <http://www.theiet.org/>

² <https://www.iimt.ch/>

³ <http://www.hks.harvard.edu/degrees/masters>

⁴ <http://www.londonexternal.ac.uk/>

⁵ <http://www.icc-uk.com/training.php>

⁶ http://ec.europa.eu/education/programmes/ajm/supportteaching/ajm_chairs_en.html

⁷ <http://www.wales.ac.uk/defaultpage.asp?page=E7056>

⁸ <http://www.iicom.org/main.php?id=37>

- a. Rotating quarterly meetings in Asia, Europe and North America
- b. Industry sponsors
- c. Speakers from manufacturers, operators, ministries, regulators and universities
- Public Utility Research Centre (PURC), University of Florida (USA)⁹
 - a. internationally recognized academic center dedicated to both research and providing training in utility regulation and strategy
 - b. Twice-yearly, two-week training courses on regulation training offered jointly since 1997 with the World Bank.

1.3 Policy and regulatory systems

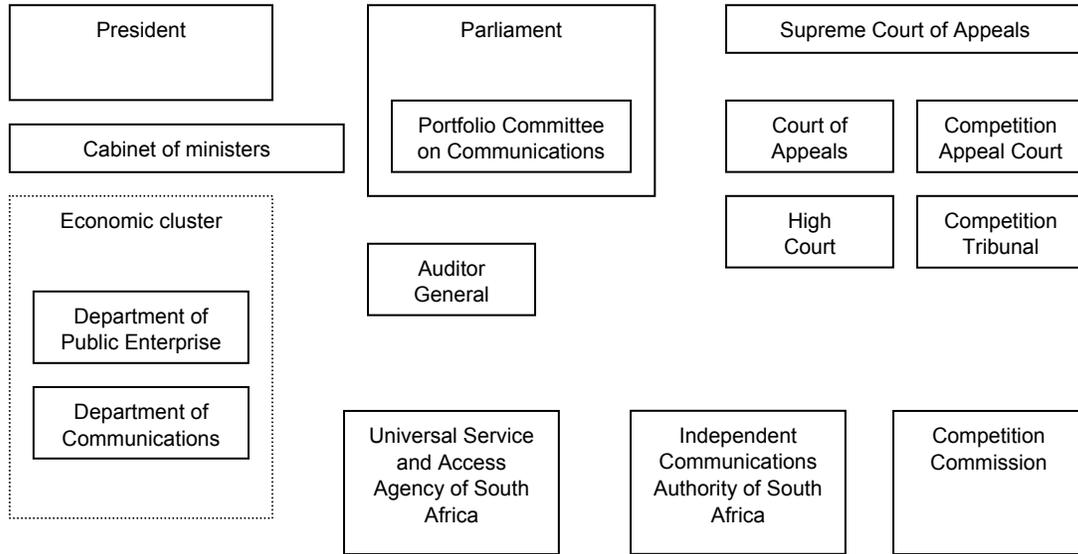
Countries have each devised their own systems for the development of telecommunications policy, its subsequent implementation and the monitoring of that implementation. Regulators play prominent but variable roles within those systems, sometimes alongside or overlapping with competition authorities and universal service agencies. Decisions by regulators and ministers are contestable before the courts (e.g., judicial review). Parliaments directly, through specialized committees, and aided by auditors general have a responsibility for oversight of the system and, ultimately, they are accountable to the electorate.

Figures 1 and 2 show the policy and regulatory systems of South Africa and Uganda. Both are Anglophone and both have adopted English Common Law, though South Africa has significant elements of continental European law, a legacy of the Dutch. Some years ago South Africa merged broadcasting and telecommunications regulation into a single body, while Uganda has separate bodies for telecommunications, broadcasting and the printed media.

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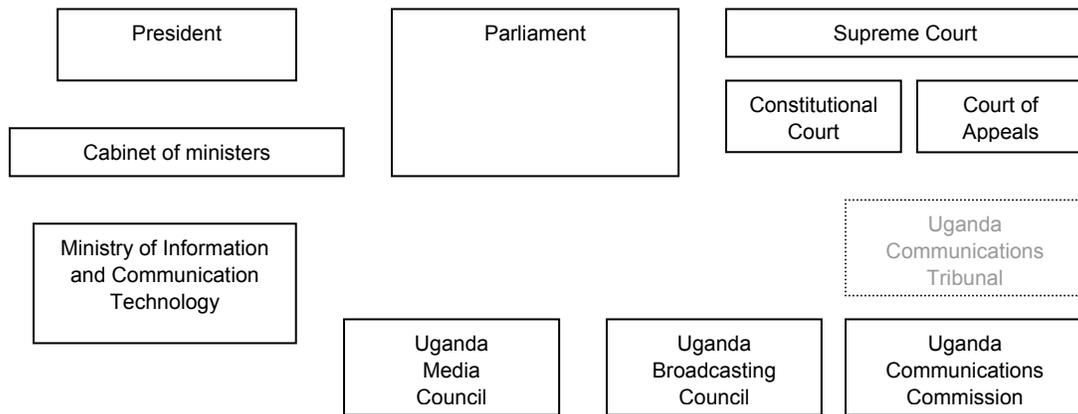
⁹ <http://www.cba.ufl.edu/purc/>

Figure 1 *The policy and regulatory system in the Republic of South Africa*



In South Africa, the decisions of the regulatory authority (ICASA) can be reviewed in the High Court, while in Uganda the Communications Appeal Tribunal has been created in law, but is not yet operational.

Figure 2 *The policy and regulatory system in Uganda*



In both countries, there are a significant number of organizations, each playing complex roles and interacting one with another.

The division of responsibilities between the ministry, the parliament and the regulator varies greatly between countries and changes over time. For the purposes of capacity building it is not possible, nor would it be wise to address only one model or one set of actors. Instead, it is necessary to consider the broader needs and the associated economies of scale, even while focusing on NRAs.

1.4 The scope of capacity building for regulators

Policy and regulatory work in telecommunications calls upon a range of academic disciplines, primarily in:

- economics
- engineering
- law
- political science and governance.

Individuals are typically recruited from university with a bachelor's degree in one of these disciplines, a few into formal graduate trainee schemes.¹⁰ Others have completed a post-graduate course, such as an MBA, MPA or LLM. These individuals are then given training and continuing professional development to broaden their knowledge and increase their skills.

Some of the senior staff and leaders have, necessarily, not come through such a route. Indeed, it may not have existed at the time they were students or they may have been appointed from another field, in order to bring their administrative, commercial, legal or political expertise to telecommunications regulation. They may require substantial training in specific areas to complement their existing experience and skills.

The current provision of post-graduate and post-experience courses contains generic elements that meet many of the demands of those engaged in regulation and in managing regulatory bodies:

- MBA: finance, human resources management, marketing and strategy
- MPA: economics, politics & advocacy, finance, strategy, law and ethics

These are available in a wide variety of formats, including executive and part-time courses, plus distance and on-line learning.

However, there remain substantial areas of specialization not covered by this mainstream provision. Schools of business and of government generally consider telecommunications issues too specialized. Some university teachers are allowed to offer a module in their particular area of research interest or to encourage students to write a dissertation at master's level or go on to complete a PhD.

Although the telecommunications policy and regulatory issues are addressed in a few schools outside Africa, little attention is paid to the specific circumstances of the continent. Equally, the centres outside Africa studying the continent do not pay much attention to telecommunications. There is consequently a significant divide.

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¹⁰ For example, the programme of the NRA in Botswana.

1.5 Existing academic teaching and research networks

There are a number of pan-African educational networks which might be drawn upon for support or which could be used as examples for training in telecommunications policy and regulation. These include:

- economic teaching and research
- business schools
- public administration
- telecommunications technology

These networks are all limited in a number of ways, in terms of their coverage of countries, in finding suitable and committed partners, in finding viable business models and in covering the full range of languages and economic circumstances.

The **Council for the Development of Social Science Research in Africa** (CODESRIA) was established in 1973.¹¹ It is an independent pan-African research organisation with a primary focus on the social sciences, covering a very wide range of activities across the continent.

The **African Technology Policy Studies** (ATPS) network is multi-disciplinary and spans universities, the private sector and policy-makers.¹² It promotes innovative science and technology policy making through research, dialogue and advocacy in twenty-three countries.¹³ It has had a programme for the Strengthening National ICT Policy in Africa: Governance, Equity and Institutional Issues, including a briefing on formulating a national policy.¹⁴

The **African Economic Research Consortium** (AERC) includes an impressive list of centres and universities.¹⁵ Yet, even after twenty years it does not reach all countries. It organizes:

- Collaborative MA Programme (CMAP)
 - Joint Facility for Electives (JFE)
- Collaborative PhD Programme (CPP)
- PhD fellowships
- PhD thesis research awards

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¹¹ <http://www.codesria.org/>

¹² <http://www.atpsnet.org/about/index.html>

¹³ The most recent annual report published on the ATPS web site is for 2005.

¹⁴ George Okado (2007) *Formulation of a national ICT policy*. Nairobi: African Technology Policy Studies Network.

¹⁵ <http://www.aercafrica.org/home/index.asp>

CMAF takes from 18 to 24 months to complete and is divided into three parts:

- core courses: 9-12 months
- elective courses: 3 months at the JFE in Nairobi¹⁶
- thesis research: 6-9 months.

The JFE in Nairobi admits around 125 students each year from the participating universities who have completed the core courses. Once they have completed the examinations for their selected joint modules they return to their institutions for their final year and then graduate from those institutions.

There has also been research conducted by AERC on ICTs and economic development.¹⁷ Affiliated with UNECA there is an independent **UN Institute for Economic Development and Planning (IDEP)** in Dakar which offers policy support and training. It provides short courses and an 18-month mid-career MA in Economic Policy and Management in Dakar.¹⁸ However, this lacks a module on regulatory economics. Its focus is on mainstream economics and on development.

While there are a great many business schools in Africa, they have significant institutional weaknesses (see Annex 4). This is very evident in the minimal showing in the league tables compiled by the *Financial Times* and *Business Week*. – UCT for general MBA and Lagos Business School for executive education. Very few business schools have accreditation with the three international bodies:

- AACSB: American University of Cairo
- EFMD-Equis: University of Cape Town and University of Stellenbosch
- AMBA: Wits Business School

The World Bank has supported the creation of the **Association of African Business Schools (AABS)** to reinforce the teaching of business.¹⁹ This comprises sixteen universities in six countries – it is Anglophone, apart from two institutions in Senegal. The AABS is linked to the Global Business School Network (GBSN), comprising business schools willing to assist the African institutions. A “hub” for GGSN was created in the independent Management Education and Research Consortium (MERC).²⁰ This identifies and implements institutional capacity-building projects in under-served markets.

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¹⁶ http://www.aercafrica.org/programmes/training_cppjfe.asp

¹⁷ http://www.aercafrica.org/publications/category_ICTproject_working_papers.asp

¹⁸ <http://www.unidep.org/Release3/Training/EnglishPages/MA.htm>

¹⁹ <http://www.aabschools.com/>

²⁰ <http://www.mercnetwork.org/>

There are very few case studies about African telecommunications for use with MBA programmes in the principal databases.²¹

In many countries there are training institutions for government, sometimes known as civil service colleges. Many of these participate in the **International Association of Schools and Institutes of Administration** (IASIA), with a forum for heads of training institutions.²²

The **International Development Research Centre** (IDRC), a Canadian government agency, funds a range of initiatives over relatively long periods in order to build up capacity. In Africa, its ICT projects are under the ACACIA programme.²³ There are two networks in Africa of particular interest:

- Research ICT Africa! (RIA) aims to fill a strategic gap in the development of a sustainable information society and knowledge economy by building ICT policy and regulatory research capacity which is essential to inform effective governance.²⁴ It has completed an impressive household survey in seventeen countries and has begun work on sector performance reviews of individual countries.
- Local Governance and ICTs Research Network for Africa (LOG-IN Africa) brings researchers together to examine e-government and e-governance in local government.²⁵ The countries participating are Egypt, Ethiopia, Kenya, Mauritius, Morocco, Mozambique, Senegal, South Africa and Uganda. It is coordinated through the African Training and Research Centre in Administration for Development (CAFRAD).²⁶ This is intended to ensure effective implementation, a pan-African outlook and high-level dissemination of the research results.

However, in both cases, there is a long journey ahead in developing capacity to a level that is self-sustaining and, more especially, comprehensive.

IDRC has also undertaken work on competition policy in developing countries including case studies about South Africa and Tanzania.²⁷ Since 1997 it has supported the Secretariat for Institutional Support for Economic Research in Africa (SISERA).²⁸ A review of IDRC by the Canadian Auditor-General found it to have good systems for ensuring that tax-payers' money was being spent effectively.²⁹

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²¹ There are three cases about Celtel from 2004: HBS Publishing Case No.: 9-805-061; 9-805-120; 9-805-121; Teaching Note No.: 9-806-095

²² <http://www.iasia.be/schools/aeacc.htm>

²³ http://www.idrc.ca/en/ev-5895-201-1-DO_TOPIC.html

²⁴ <http://www.researchictafrica.net/>

²⁵ <http://www.loginafrica.net/>

²⁶ <http://www.cafrad.org/>

²⁷ http://www.idrc.ca/en/ev-119682-201-1-DO_TOPIC.html

²⁸ http://www.idrc.ca/en/ev-115562-201-1-DO_TOPIC.html

²⁹ http://www.idrc.ca/en/ev-123426-201-1-DO_TOPIC.html

1.6 *Technological training*

Training concerning new technology is a highly developed global industry, supported by and supporting manufacturers. Considerable and generally high quality material is available on-line or franchised to local suppliers.

Perhaps the most extensive network of telecommunications training is that of the Cisco Network Academy, which has a large number of affiliated institutions in both Middle East and North Africa (MENA) and Sub-Saharan Africa (SSA), built up over a decade.³⁰ The **Cisco Network Academy** offers general certifications on three paths: associate, professional and expert in the following areas:

- routing and switching
- design
- network security
- service provider
- storage networking
- voice

It also offers specialist certification in:

- advanced routing and switching
- data centre
- foundation for channel partners
- IP communications
- VPN and security
- wireless LAN

This training has been taken up many thousands of people around the world, including large numbers in Africa.

The **Digital Bridge Institute** in Abuja offers a range of technology training courses for those intending a career in the growing ICT industries of Nigeria.³¹ These include short courses and graduate studies in telecommunications and, more broadly, in ICTs.

The **Nelson Mandela Institute** (NMI) is a private, nongovernmental organization launched at the AU summit in 2004 with support from the World Bank Institute.³² It has launched the first of several scientific teaching institutions, the African Institute of Science and Technology (AIST) in the Abuja Technology Village. It has an affiliated

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³⁰ <http://www.cisco.com/web/learning/netacad/index.html>

³¹ <http://www.dbieducation.org/index.htm>

³² <http://www.nmiscience.org/>

centre in Ouagadougou, the International Institute for Water and Environmental Engineering (2iE).³³

The **Egyptian National Telecommunications Institute** (ENTI) provided a three-week training course on spectrum and radio technologies in May 2008, open to participants from other African countries.³⁴ The AU and ATU gave supported and promoted the event.

Training in technological areas is available and appears to be sustainable within Africa, albeit with support from the manufacturers which are non-African. In some highly advanced or specialized areas it may still be necessary to travel to another continent. Yet, availability within Africa is far from even, with the larger and more advanced economies having much the greatest capacity for technological training.

1.7 Other trans-national networks

There are a few other networks which might provide precedents or which might be useful in providing inputs into regulatory training in Africa.

The **Global Public Policy Network** (GPPN) is a partnership between Columbia University, London School of Economics (LSE), the Lee Kuan Yew School of Public Policy at the National University of Singapore (NUS) and *Institut d'études politiques de Paris* (Sciences Po).³⁵ This prestigious network has, as yet, no African partner.

There are two extensive networks of **antitrust authorities**, both organizing annual global conferences in which some African competition authorities participate:

- OECD Global Forum on Competition³⁶
- International Competition Network³⁷ (ICN)

There are no associated networks or programmes for teaching and research. Instead, this is conducted by universities in their normal work and contributed to the various academic journals and conferences on economics and law.

The **International Organization of Supreme Audit Institutions** (INTOSAI) provides an umbrella for government audit.³⁸ For half a century it has provided a framework for the promotion and transfer of knowledge, the improvement of government audit and the enhancement of professional capacities. It undertakes capacity building in conjunction with the United Nations and has an Intosai Development Institute (IDI) responsible for professional seminars and courses.³⁹

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³³ <http://www.2ie-edu.org/?lang=en>

³⁴ <http://www.atu-uat.org/englishdocs/News/4thAfricanTrainingProgram-MCIT-Egypt.pdf>

³⁵ <http://www.lse.ac.uk/collections/GPPN/>

³⁶ http://www.oecd.org/document/60/0,3343,es_2649_37463_2732220_1_1_1_37463,00.html

³⁷ <http://www.internationalcompetitionnetwork.org/>

³⁸ <http://www.intosai.org/en/portal/>

³⁹ <http://www.idi.no/>

The **International Telecommunication Union (ITU)** runs a wide range of initiatives:

- The Global Telecommunications University (GTU) was first proposed in 1994 at WTDC in Buenos Aires, though was not launched until 2001, together with a Virtual Training Centre (VTC). The GTU is no longer an active project of the ITU, and its work has been taken up by the Human Capacity Building division of the ITU Development Sector, notably through its ITU e-learning platform⁴⁰.

Two degree programmes were launched in Coventry and the West Indies under the GTU umbrella, both initially supported by Cable & Wireless. The UWI programme was later given a much greater focus on business. The Coventry programme, a Master of Communications Management (MCM) is primarily business with some modules on policy and regulation.⁴¹ It continues today and, since 2007, is also being offered at the Kigali Institute of Science and Technology, where it is taught by lecturers from the UK. The web site states that the programme is validated by University College, London, though only University of Wales and the Open University undertake such validations and the UCL web site contains no mention of Kigali.⁴²

- The Centres of Excellence Programme, which has recognized centres of excellence (either physical or virtual) in each of the different developing regions. Within Africa, the Centres of Excellence project began in 1999 and terminated in 2007. The two recognized Centres of Excellence in Africa were:
 - Afralti in Nairobi⁴³
 - *L'Ecole Supérieure Multinationale des Télécommunications (ESMT)*⁴⁴ in Dakar

The East African CoE closed in February 2007 after five years of operations. The final report to the ITU argued that Afralti had achieved financial viability as well as credibility as a regional training provider. Afralti continues to offer technical courses accredited by Cisco, City & Guilds and CompTIA.

The ITU intends to create new nodes in Africa through the incorporation of training providers into a single “network of excellence”. Afralti is to play a leading role in supporting and nurturing the new nodes as they develop individual paths towards integration into the network.

- The work of the Regulatory and Market Environment unit which runs the annual Global Symposium for Regulators as well as periodic global and regional training courses for regulators, such as the Executive-Level Training Course for heads of regulatory agencies, 10-11 November 2008 and the Expert-level training for national regulatory authorities on cost model development, 10-21 November 2008, both in Geneva

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⁴⁰ <http://www.itu.int/ITU-D/hrd/elearning/index.asp>

⁴¹ This was based a degree programme of the same name developed some years before by the University of Strathclyde.

⁴² <http://www.kist.ac.rw/mcm.htm>

⁴³ <http://www.afralti.org/>

⁴⁴ <http://www.esmt.sn/>

- The European Union, via DG Development, has launched a project on the harmonization of ICT policies in African, Caribbean and Pacific (ACP) countries, and one of the beneficiaries is the ITU Development Sector.⁴⁵ There was an EU-African summit in 2007 which produced a joint programme on infrastructure development.⁴⁶

The **Global Development Learning Network (GDLN)** is a partnership of over 120 global institutions, collaborating in the design of customized learning solutions for people working in development.⁴⁷ Its affiliates deliver more than one thousand training events in a year, ranging from designing and organizing formal training courses to multi-country dialogues and virtual conferences.

1.8 Trans-African telecommunications operators

The recent appearance of and continuing consolidation of large mobile operators has created massive trans-continental networks:

- Etisalat
- France Telecom (trading as Orange)
- Millicom (trading as Tigo)
- MTN
- Orascom
- Vodafone (also trading as Safaricom and Vodacom)
- Zain (trading as Celtel)

These are not exclusively African, with their commercial imperatives being increased coverage and growth in developing and emerging markets. Further consolidation seems inevitable, for example, the acquisition of Orascom by another operator.

Such businesses present massive cross-cultural challenges for their managers and for their internal training.

Operators of this size are a very serious challenge to national institutions, in that their economies of scale in policy and regulatory activities allow them considerable levels of expertise. They can employ directly or engage as consultants and as counsel world class experts in order to defend their commercial interests.

1.9 Pan-African institutions

All countries are members of **the African Union (AU)**, the successor to the Organisation of African Unity.⁴⁸

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⁴⁵ <http://appablog.wordpress.com/2007/12/17/itu-and-european-commission-to-create-investment-environment-for-ict/>

⁴⁶ http://ec.europa.eu/development/services/events/eu-africa-summit-2007/index_en.cfm
<http://www.africa-union.org/root/au/Conferences/2007/october/IE/EU/iE/IE.htm>

⁴⁷ <http://www.gdln.org/>

⁴⁸ <http://www.africa-union.org/>

The AU Ministers responsible for ICTs met in Cairo in May 2008.⁴⁹ They discussed ways to achieve harmonization of postal and telecommunications policies and also the knowledge programme.

The African Regional Action Plan on the Knowledge Economy (ARAPKE) provides a framework for a range of activities. The ITU has eleven flagship projects under ARAPKE, one of which is the African Leadership ICT Program with a budget of US\$ 4,827,000.⁵⁰

The e-Africa Commission was created in 2001 and adopted as an ICT Task Team by NEPAD in 2002. It is responsible for developing policies, strategies and projects. The development of the ICT sector is identified as one of the priority areas of NEPAD aimed at new and aggressive efforts to accelerate Africa's economic development and growth. One of the primary projects has been the Special Purpose Vehicle (SPV) for undersea cables, also known as Uhurunet.⁵¹

The **African Telecommunication Union** (ATU) was originally founded in 1977 as a specialised agency of the OAU.⁵² It took its present name in 1999 when it became a partnership between public and private stakeholders for whom it provides a forum to formulate effective policies and strategies aimed at improving access to information infrastructure and services. The ATU currently has 46 Member States (i.e., seven states are not members) and sixteen Associate Members (fixed and mobile operators).

The ATU has been proposing for some years the creation of an assembly of NRAs as an autonomous body for all regulators, with various names including the African Telecommunication and ICT Regulators Assembly (AFTRA).⁵³ At the 8th meeting of African regulators organized by the ITU in June 2008 it was agreed to continue the discussion, with Senegal being allowed to take the lead in the formation of an **African Association of Telecommunications Regulators** (AATR). However, there is limited enthusiasm for the idea and some opposition, especially from those who prefer to work in regional associations.

The **African Communication Regulation Authorities Network** (ACRAN) was created in 1998 with eleven countries, but grew to over thirty.⁵⁴

The **African Forum for Utility Regulators** (AFUR) is supported by the World Bank.⁵⁵ In 2003, AFUR undertook a skills audit which found substantial gaps and demand for further training.⁵⁶ This pointed to delivery by traditional seminars and exchanges, rather

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⁴⁹ http://www.africa-union.org/root/au/Conferences/2008/may/ie/documents_cairo.htm

⁵⁰ <http://www.itu.int/ITU-D/connect/africa/2007/bgdmaterial/flagship-11.html>

⁵¹ <http://www.eafricacommission.org/whats-new/news/09/04/2008/first-meeting-prospective-shareholders-nepad-ict-network-spv-held>

⁵² <http://www.atu-uat.org/>

⁵³ <http://www.atu-uat.org/englishdocs/Proceedings/ICTRegulatorsAssemblyReport.pdf>

⁵⁴ <http://www.acran.org/>

⁵⁵ <http://www1.worldbank.org/afur/> or <http://www.afurnet.org/>

than distance learning or self-study. Part of those requirements is now being met by the Management programme in Infrastructure Reform and Regulation (MIR) at the University of Cape Town (UCT).⁵⁷

1.10 South-South learning and training

One of the issues raised in the gap analysis concerned the lack of south-south activities. Clearly there is merit in the transfer of knowledge amongst developing and least developed countries, perhaps especially between HIPC and SIDS, since the problems they face are generally similar, though they have often struck out on different paths, creating divergent conditions.

There are relatively few prospective partners in the “south”. For example, Beijing University of Posts and Telecommunications (BUPT) is a large and well resourced institution.⁵⁸ There are some individuals in universities, units or departments of enduring strength within the universities. Although Latin America and Asia have institutions of considerable academic strengths, few of these have expertise in telecommunications policy.

An obvious advantage, if suitable partners could be found, is that it would accelerate future capacity building in other regions. Ideally, they should be involved from the outset for this reason. There would be additional costs in travel and coordination.

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⁵⁶ <http://www.afurnet.org/publications/Skills%20Audit%20Report%20-%20African%20Forum%20for%20Utility%20Regulators.pdf>

⁵⁷ <http://www.gsb.uct.ac.za/gsbwebB/default.asp?intpagenr=289>

⁵⁸ <http://www.bupt.edu.cn/enver/>

2. Delivery of training

2.1 General admission to training

Before allowing individuals to enter a certified or accredited training programme it is usual to require evidence of ability in terms of:

- The language of instruction (e.g., IELTS score of at least 6.5)
- a first degree with “good grades” in an “appropriate” discipline from a “recognized” university, primarily in:
 - economics
 - engineering
 - law
 - political science
- experience in the sector (e.g., a minimum of three years)

Some courses would accept as an alternative to a degree, or require in addition, a good score in a test such GMAT (e.g., minimum score of 550 with an analytical writing score of 4.0 or above).⁵⁹

For those who have not studied at university for some years (or at all) an initial study skills course would be appropriate.

For specific modules or training courses some additional pre-requisites may be specified either other modules or specific skills.

2.2 Quality assurance and quality control

Given the reputations of *infoDev* and its funding partners, it is essential to ensure that training is of the highest quality. Development aid is scarce and has to be spent wisely, to demonstrate good governance.

Where certificates or diplomas are to be granted, then it is important for those receiving them and those who employ or promote the individuals to have confidence in the relevance and the quality of the skills and learning.

A straightforward way to ensure the relevance of courses and modules would be to create a review board comprising both current and recently retired regulators, with the teachers and trainers. These could be in conjunction with the regional associations of regulators.

Quality is process-based and has to ensure the highest level of performance from beginning to end. It must ensure appropriate subjects, with high quality of teaching and of materials, with effective feedback mechanism, including course evaluation forms. Any

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⁵⁹ <http://www.gmac.com/gmac/thegmat/>

testing of students must be secure and must measure performance in understanding and applying the materials taught.

2.3 Examining students

The testing and grading of students is fraught with difficulties, since the course may include those with little or no background mixed in with more experienced individuals. There are significant problems of language ability, cultural perspectives on critical thinking and approaches to plagiarism. The risks of plagiarism are seen as an increasing problem in teaching at all levels.⁶⁰

Testing presupposes qualification on entry, at least to some minimum standard. This would be both a general requirement (e.g., degree, experience and language) and any specific requirements (e.g., knowledge of administrative law or completion of another module).

While it would be possible to examine students in multiple languages, those who had been listening to simultaneous interpretation would be at a *significant* disadvantage and one which would depend on the quality of the interpreters on a particular day. Moreover, the background material would be likely to be available only or predominantly in English. It would also require the presence of examiners to assess the spoken or written answers in more than one language.

Linking passing the course to payment of a fee introduces an incentive for examiners to be unduly generous. It also risks a failed student not returning or being penalised. There would be a reticence to fail senior officials taking courses.

If the modules are to be given credits that allow a student to accumulate them into a certificate or degree, then it would be necessary to ensure that all necessary quality control procedures were enforced. This could include opportunities for students to appeal against decisions or to retake any assessment. Second marking and the use of an external examiner would be considered essential in many countries.

2.4 Structures

In an ideal world, there would be an African system of credit transfer and mutual recognition of qualifications. However, the only trans-national model is one being developed in Europe, a process that has already taken decades and will continue for many more years. In the absence of an alternative, it may be necessary to adopt the European models.

The Bologna process, named after the oldest university in Europe, is an inter-governmental initiative to create a European Higher Education Area (EHEA) by 2010.⁶¹

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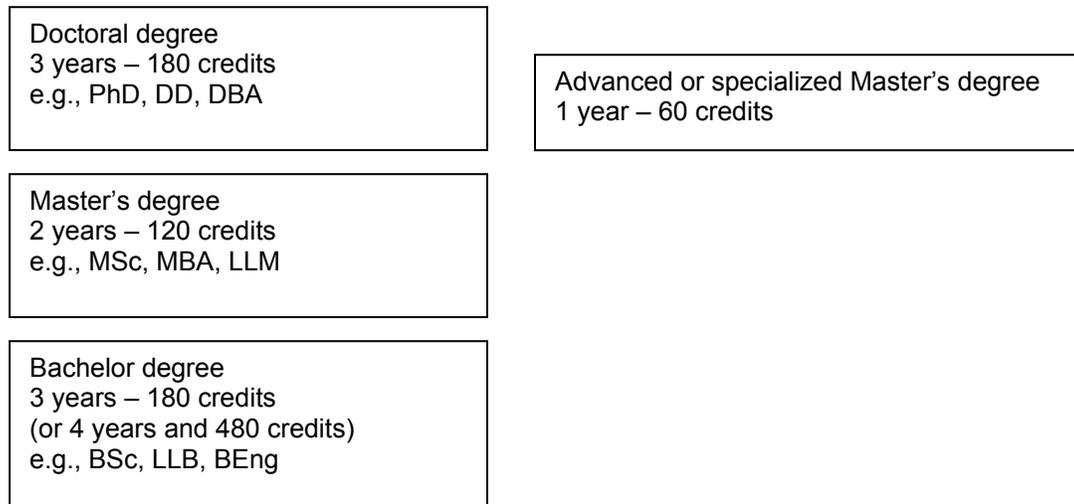
⁶⁰ For example, checking coursework with a web site such as <http://turnitin.com/static/index.html>

⁶¹ <http://www.ond.vlaanderen.be/hogeronderwijs/bologna/>
http://www.europeunit.ac.uk/bologna_process/index.cfm

It has 46 participating countries and it is conducted outside the formal decision-making framework of the European Union, based on the consent of all participating countries.

The basic model is 3-2-3, that is three consecutive “cycles” of three, two and three year’s duration, each leading to a different level of degree (see figure 3). In addition to doctoral degrees, the third cycle can include complementary or specialized master’s degrees of shorter duration.

Figure 3 *The Bologna Model*



The European Credit Transfer Scheme (ECTS) operates to support this, by allowing students to accumulate blocks of credits and to take them to another institution.

There is no corresponding framework for Continuing Professional Development (CPD) or Continuing Legal Education (CLE). While some may use ECTS, most are national arrangements and may even vary between professions in the same country. Annex 1 gives a few examples of professional bodies the obligations they impose for CPD.

The French *Bilan d'Aptitude Délivré par les Grandes Ecoles* (BADGE) is a specific model for accreditation CPD by a limited number of institutions and under unusual circumstances.⁶² It can, optionally, be used as credits for part of a specialized master’s degree, though there seems little evidence that this is used in practice. Courses must be taught and examined by staff from one of the *grandes ecoles*.⁶³

2.5 *Avoiding lobbying*

One significant danger of gathering regulatory staff and especially leaders together is that market players will seek to use the events for lobbying.

For the most part the market players are not trained as teachers and are unlikely to give balanced views.

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⁶² http://www.cge.asso.fr/cadre_badge.html

⁶³ At least half of the staff must be from the sponsoring *grande ecole*.

The problem of admitting industry lobbyists, say to a panel discussion, is the absence of any opposing views, notably from customers and those unable to afford becoming a customer. Achieving a balance would be very difficult.

2.6 *Parliamentarians*

Members of parliament need awareness of and training in issues concerning telecommunications policy, including knowledge of examples from other countries. It is clearly useful for them to meet MPs from other countries, e.g., through the Inter-Parliamentary Union (IPU).⁶⁴

Any teaching or discussions on telecommunications policy would need to be material created or rewritten with their specific needs in mind. This would cover examples of reviews of legislation and assessments of the performance of agencies and the achievement of national ICT plans in other countries.

National audit offices and auditors general require access to specific training and bilateral exchanges when they have to prepare for work in the field of telecommunications policy. They will also need to have access to suitable external experts, ideally national independent experts to help them complete their tasks.

2.7 *The judiciary*

In those countries where the decisions of regulators are subject to appeal to the courts there is generally a problem of the lack of training of judges in regulatory economics and technology.

It is therefore valuable to consider how to make materials (including judgements of other courts) available to judges and members of tribunals, together with appropriate training. It is highly unlikely that this would be conducted with regulators or market players present.

One of the most obvious gaps is a database with telecommunications related legislation, regulatory decisions and court judgements in Africa.⁶⁵ The existing “clearinghouse” is very limited in scope, often only one document for a country.⁶⁶ For example, for Botswana it provides three documents, for Morocco it lists thirteen and for South Africa only one. Approaches to broaden the scope of the database should be considered.

2.8 *Topicality*

The fairly rapid levels of change in technology and in business models require everyone involved in telecommunications to struggle to keep up to date. This has resulted in a substantial market in conferences, fora and summits, sometimes supported by training workshops (see Annex 6). These tend to be more on technical and marketing issues, rather than on policy and regulatory matters, though there are some events in Brussels

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⁶⁴ <http://www.ipu.org/>

⁶⁵ http://www.worldlii.org/cgi-bin/gen_region.pl?region=250

⁶⁶ <http://www.ictdec.org/>

and in Washington DC. A few of these are little more than lobbying dressed up as a conference or a workshop.⁶⁷

While there are some conferences and workshops in Africa these are too few in number and too patchy in coverage to meet the requirement of regulators. There are focused on a very few large countries.

One significant requirement is a mechanism to address “hot” new issues for top level regulators in a way that does not pre-determine the outcome and which is well-informed. This may require the participation of selected industry players. These could be linked to the existing programmes of regional meetings, though they might also be delivered by conference calls or webinars to ensure accessibility and timeliness.

Regulators could collectively, perhaps through a regional association, commission research by external consultants on a specific new topic.⁶⁸ This could then be used for meetings and subsequently in training.

2.9 Training the trainers

Within NRAs the training of trainers is a significant challenge, both in developing pedagogical skills and subject expertise. It has a particular importance for induction training and for graduate trainee schemes. Here NRAs may be able to share expertise, but they also need to invest in training courses for their more experienced staff.

Within universities there are few people who have taken an active role in research in telecommunications policy and regulation. However, there are precedents for conversion schemes that would allow individuals trained in a related discipline, with knowledge of policy, law or economics, to convert to work in telecommunications. It could, for example, be possible to fund these as *infoDev* fellowships for the conversion period, after which the individuals would be expected to be taken on a university teacher. It would be important to provide a mechanism to lock such individuals into the system for an appropriate period and to avoid them being recruited by operators.

2.10 Subject matter experts

Short courses, even a significant number of them, are not the same as a full-time post-graduate training of a subject expert. Nonetheless, they can raise awareness, improve engagement with external experts. Ultimately, individuals will have to return to university to take a qualification or combine some very significant number of short courses combined with secondment to work with existing subject experts.

Many of the more sophisticated economic models (e.g., FL-LRIC) or margin squeeze tests require substantial economic training at post-graduate level. The individuals are

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⁶⁷ e.g., ECTA and ETNO.

⁶⁸ The European Commission often engages consultants to prepare a report on an emerging topic. These are then used as the basis for public consultations with member states and operators.
http://ec.europa.eu/information_society/policy/ecomm/library/ext_studies/index_en.htm

likely to have to defend these models and tests in court, requiring a very high level of training and expertise.

For the drafting of legislation and regulatory decisions there is a need for specific legal training, which is not specific to telecommunications, though some subject knowledge is required. The ability to share training is limited by the differing national legal traditions.

2.11 Distance or e-learning?

The extent to which e-learning and traditional distance learning can be used is unclear. A wide range of options is open, but many educational institutions remain fixed in traditional modes of delivery.

If e-learning was to play a significant role, then it would be necessary to find an appropriate platform that could be used across Africa. It would take a considerable period of time to convert the necessary teaching material. It would seem reasonable to follow the lead of the GDLN in the choice of platform.

2.12 Qualifications

None of the three partners (infoDev, ITU or World Bank) has any specific power to grant certificates, diplomas or titles, though there are precedents and clearly this could be done. Were they to do so it would be necessary to create all the necessary quality assurance and quality control mechanisms to ensure the relevance of the qualifications and the professional attainments of those granted the certificates. This is compounded by the challenges of operating across geographically extensive networks.

An alternative would be to have an educational establishment with the power to grant certificate and diplomas to do so, benefitting from its own quality assurance systems. Equally, it would be possible to engage in co-branding, for example:

- *infoDev* and the George Washington University
- World Bank and WATRA

It need not be necessary to offer a full degree programme; rather it could be a single module that could be transferred into an MBA or MPA programmes.

3. Anchored in Africa

3.1 *One continent or several regions?*

The geography of Africa suggests that it might not be best treated as a single “region”, but could be better sub-divided. However, there are many different ways in which this could be done, for example, the World Bank often divides it into the Middle East and North Africa (MENA) and Sub-Saharan Africa (SSA).

There are clear linguistic divisions which arise from the colonial era:

- Arabic
- English
- French
- Portuguese

There are complications with the linguistic groups, since both the French and the Arabic groupings extend far beyond Africa.

In parallel with linguistic differences there are also administrative and legal traditions.

Differences in the educational systems could be less of a problem, since the European former colonial powers have all adopted ECTS and the Bologna declaration, changes which are slowly being reflected in Africa.

The North African states have relatively strong links to EU university programmes for student exchanges, training and research. The EU is also engaging with North African governments and regulators in its Mediterranean projects, notably in MEDA NAPT-II.⁶⁹ Separately, it is working on harmonization of ICT policies in SSA.

Transport geography makes travel to events expensive and problematic (e.g., in obtaining visas). Sometimes the logical hub may be outside Africa, located in the former colonial capitals: Brussels, London, Madrid and Paris.

The regulators are divided on their groupings (see table 1).

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⁶⁹ <http://www.natp2.org/>

Table 1 *Regional associations of regulators*

East & South:	ARICEA ⁷⁰	Burundi, Comoros, DR Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia and Zimbabwe
Central:	ARTAC ⁷¹	Cameroon, Central African Republic, Congo, Gabon, Chad, Burundi, Equatorial Guinea, Saõ Tomé & Príncipe, Rwanda and Angola
East:	EARTPO ⁷²	Burundi, Kenya, Rwanda, Tanzania and Uganda
Southern:	CRASA ⁷³	Angola, Botswana, Congo, Lesotho, Malawi, Mauritius, Mozambique, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe
West:	WATRA ⁷⁴	Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Ghana, The Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo

Many regulators are members of a one or more than one language-based regulatory association. The Anglophone Commonwealth Telecommunications Organisation (CTO) is now considerably wider in its scope and is largely operator-driven.

Table 2 *Language-based regulatory groups*

Arabic:	AREGNET ⁷⁵	Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti & Comoros (plus Near and Middle Eastern countries)
French:	FRATEL ⁷⁶	Algeria, Benin, Burkina Faso, Burundi, Cape Verde, Central African Republic, Chad, Comoros, Congo, Djibouti, DR Congo, Egypt, Equatorial Guinea, Gabon, Guinea, Guinea Bissau, Ivory Coast, Madagascar, Mali, Mauritania, Mauritius, Morocco, Niger, São Tomé, Senegal, Seychelles, Togo and Tunisia
English:	CTO ⁷⁷	Botswana, Cameroon, Gambia, Ghana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Nigeria, Seychelles, South Africa, Swaziland, Tanzania, Zimbabwe*, Zambia

* currently suspended from membership.

Until recently, there was no association for the Lusophone countries. Within Africa, these cover:

- Angola
- Cape Verde Islands

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⁷⁰ <http://www.ariceaonline.org/>

⁷¹ <http://www.artac.cm/>

⁷² <http://www.eac.int/> and http://www.cck.go.ke/earpto_issues/

⁷³ <http://www.crasa.org/>

⁷⁴ <http://www.watra.org/>

⁷⁵ <http://www.aregnet.net/>

⁷⁶ <http://www.fratel.org/>

⁷⁷ <http://www.cto.int/>

- Equatorial Guinea
- Guinea-Bissau
- Mozambique
- São Tomé & Príncipe

However, a recent initiative has led to the creation of the Communication and Telecommunications Regulator's Association for Lusophone countries (CTRA-CPLP).

A case can also be made for some specific training sessions for Small Island Developing States (SIDS) which have special needs. Otherwise, the African regional associations of regulators appear to represent the best first choice.

3.2 ICT Regulation Toolkit

The starting point for the GCBI is the ICT Regulation Toolkit⁷⁸, which has been developed over a number of years as a joint project between *infoDev*, the World Bank and ITU. The existing modules of the toolkit deal with:

- 1. Regulating the Telecommunications Sector: Overview
- 2. Competition and price regulation
- 3. Authorisation of telecommunication/ICT services
- 4. Universal access and services
- 5. Radio spectrum management
- 6. Legal and institutional framework
- 7. New technologies and their impact on regulation.

The different modules of the toolkit are each of a different vintage, but a continuous effort is being made to update and refresh them. Nevertheless, as they were not originally intended to provide teaching materials, some work will be required to adapt them to this purpose, as well as translation. There is also a need to add more material that is specifically and culturally relevant to Africa. It is expected that the work planned on the Global Capacity Building Initiative for ICT Regulators (GCBI) will assist in developing additional material that can augment the ICT Regulation Toolkit.

3.3 Other Teaching materials

A student requires a well-structured syllabus with a reasonable reading list. The availability of a wider range of source documents may be helpful, if appropriate tools are provided for navigation. For example, it would help to be able to identify materials from Africa or from LDCs or from English common law jurisdictions. Where there is a statute, then access to the case law is essential.⁷⁹

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⁷⁸ <http://www.ictregulationtoolkit.org/en/index.html>.

⁷⁹ e.g. A Guide to the case law of the European Court of Justice.

http://ec.europa.eu/information_society/policy/ecomm/doc/implementation_enforcement/infringements/gui-detocaselaw2007en.pdf

One of the most obvious problems is the lack of teaching materials that is specifically about African telecommunications. This reflects the lack of research on Africa (see Annex 6), in turn reflecting the lacking of supervision of doctoral students within the continent. Many of those who leave for doctoral studies do not return.

Case studies for use in either business or in policy are almost non-existent.

The statistics are sometimes unreliable, making analysis and teaching difficult. There is little that can be done to improve the quality of the data in the short term and it is outside the scope of this study. A separate case can be made for statistical capacity building for NRAs and for national statistical agencies.

A relatively straightforward exercise would be to identify a set of issues and a range of countries and to obtain from the World Bank or ITU staff, from consultants, from policy-makers, from regulators and others access to persons and papers in order to write the case studies and the supporting notes. These need not all be current, but need to cover key topics. With a sufficient stock of these, a smaller on-going effort would be required to top-up the materials.

3.4 *Language of instruction*

There will ultimately be a need to provide much of the training materials in each of the four major languages of the African continent. There are substantial costs associated with this, not least in maintenance on the stock of slides, case studies, lecture notes and the like.

Teaching in all four languages would be a heavy burden, requiring extensive training, whether of the teachers in the languages or of four sets of teachers.

Teaching through interpreters is expensive and inefficient. It requires the highest quality of interpreters, carefully prepared in the economic, legal and technical jargon that will be used. Indeed, creating a lexicon might be a cost effective measure. Even providing these, it limits and to some extent blocks teacher-student and student-student interaction. Teaching in multiple languages is clearly less than optimal.

One option is to provide teaching in a more limited number of languages with written and online supporting materials in a wider number. Another option is to look for specific sponsors that would support the development of materials in less widely spoken regulators (for instance, through the support of language groups that combine regulators in developed countries with those in Africa).

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http://ec.europa.eu/information_society/policy/ecomm/doc/implementation_enforcement/infringements/gui-detocaselow_update_2008_03.pdf

3.5 *Transfer to universities – individuals or institutions?*

If material or modules or a whole programme are to be transplanted into Africa, then it has to be decided whether it is to institutions or to individuals. It is then necessary to find candidates.

Universities bring brands and prestige, but also overheads and bureaucracy. Within them there may be individuals who have specific expertise or who could be persuaded to develop such expertise.

There may be obstacles to the transfer of material from the ICT Regulation Toolkit to local universities. It requires expertise in several disciplines – a form of coordination with which many universities struggle and most fail. Some of the material would require a lot of work to use it for teaching purposes. However, any teaching materials such as case studies could be used directly.

It could take a significant amount of time, probably measured in years, with extensive hand-holding to create modules and degree schemes to fit into national and institutional models.

One option would be to provide a grant to selected universities in the region to help them offer suitable courses. Another option is to place individuals into the universities as professors of telecommunications/ICT policy to perform this work.

3.6 *The missing link to research*

Implicit in the “gap analysis” is the link between teaching and research. It is a connection which seems not to be understood by regulators, who appear of the opinion that courses require little effort to be introduced into their local universities.

European and North American universities conduct research mostly in developed countries that is not readily transferrable to Africa. They may not be interested in research about Africa, because it cannot be used in their teaching and might not be easily published – they may also have a selection of interesting domestic research questions. They may supervise a few PhD students on African topics, but these individuals may not return to their home countries once they have gained their qualifications.

Nonetheless, developed country universities have strong brand names, have expertise in supervision of doctoral work and can assist in teaching skills, research methods and writing case studies. Some developed country universities may be interested in developing partnerships with local African universities and this may offer a better link to research.

3.7 *Former regulators*

There are now a significant number of ex-ministers and ex-regulators who could be called upon to assist with a training programme. While few are trained as teachers, they can certainly be of direct assistance both in training and in the preparation of case studies.

Interviews with former regulators, whether as transcripts or as video recordings, could be very helpful.

A book of “stories” from African ministers and regulators could be valuable.

3.8 *Review boards*

To ensure the adequacy and appropriateness of the training on offer, it would be necessary to have review boards. This must involve representatives of existing regulators, ensuring the appropriateness of programmes and their willingness to pay.

It should ideally also involve some ex-ministers and ex-regulators, whether or not they are active in the teaching, in order to provide a longer-term perspective.

Some of those teaching the programmes should also be involved in the Review Board to provide a feedback loop from the training.

An independent analysis of course evaluation forms from students would be an important input to the process.

3.9 *Business model*

It is clear that regulatory agencies in Africa are frequently willing and already spend significant sums on training. In some instances they will pay to travel to Europe or North America. Indeed, “free” courses are sometimes looked upon with suspicion.

The highest costs are likely to be of travel and of interpretation. The latter are avoidable, only by replication in different languages. Travel costs are avoidable only if there are sufficient numbers in a given location to justify a local course.

One of the problems is likely to be the cost of maintaining teaching materials. Even assuming other areas are self-sufficient, it is necessary to find the money to develop new teaching materials to refresh the stock.

Some costs can be shared with other training networks, whether other sectoral regulators, telecommunications operators or public administration. However, the added coordination costs and the lack of focus may not make this an attractive option. It may be more cost effective simply to exchange information about what is available and to allow credit transfers.

4. Conclusion

4.1 The scale of the problem

It is clear that there is no off-the-shelf solution; indeed there is no single solution to the needs for capacity building. Nor is it something that can readily be attached to an existing technology-based centre or training institution without a careful selection process.

The use of consultants as trainers is expensive and neither replicable nor scalable.

There are a few European and North American degree programmes that might be made to fit in Africa without extensive adaptation. However, the evidence appears to be that inter-disciplinary degree programmes are in decline, in part because conventional discipline-based courses have, after a delay, absorbed the key challenges of ICTs into their syllabuses. Any benefits of inter-disciplinary courses may not outweigh the high coordination costs and may not provide graduates with sustainable advantage in the jobs market. More often there are modules or electives within traditional discipline-based programmes. These could more easily be transferred to Africa, but only provided that suitable data, case studies and textbooks are made available.

The model for individual academics is to conduct research and to supervise doctoral students in telecommunications policy, while teaching in conventional discipline-based degree programmes at bachelor's and master's level. Sometimes they work in small groups, but often it is alone.

The people designing and teaching the programmes and modules in Europe and North America may have little, if any, experience of the continent. Some may have had second-hand knowledge through the supervision of a doctoral student from Africa. While their courses contain theoretical frameworks that could be applied to Africa, very few have yet mapped those frameworks onto recent events and data from the continent. It would put a wholly unreasonable burden on students taking such courses to expect them to do that work. It is therefore necessary to validate the models and materials in Africa, requiring a significant amount of research and pilot programmes, before commencing teaching on a routine basis.

4.2 What can be done?

In the analysis developed here, it is possible to identify a number of possible models that could be used as a platform for enhanced regulatory training on the content of Africa.

4.2.1 Replicate or scale-up an existing model. It would be possible to replicate the existing part-time Masters programmes (for instance those taught at the LINK Centre at the University of Witwatersrand in South Africa). Alternative, it might be possible to provide some combination of the full-time MSc programmes taught externally to the continent with local universities (for instance, the programme taught at the London School of Economics at one or two other universities could be combined with African universities such as Cairo or Makerere). This would meet some of the needs of graduate

trainees and middle ranking staff in regulatory agencies. In both cases it would be necessary to refurbish the programmes and to tailor them to different parts of the continent by creating a pool of case studies and teaching materials.

4.2.2 An inter-disciplinary approach. However, this presupposes that a dedicated inter-disciplinary programme is the answer. It may be going in the wrong direction and the organizational overhead may be too heavy.

An alternative model would be a multi-utility programme, sharing core elements, in order to serve energy, telecommunications and water regulatory authorities, such as that offered by PPIAF and PURC at the University of Florida. One institution that is currently emerging is the Management Programme in Infrastructure Reform and Regulation (MIR) at the Graduate School of Business at the University of Cape Town, South Africa. This model is relatively new for master's degree programmes and may not be sustainable in competition with generic economics and law programmes that offer significant regulatory modules and electives.

The unanswered question is whether the core is regulation or a more traditional discipline, such as, economics or management.

There are a considerable number of LLM, MA, MBA and MPA programmes already offered in Africa, albeit not always of the highest or the most consistent quality. The AABS and MERC have begun the work of improving the quality of some MBA programmes, while the AERC has long been addressing programmes in economics.

It should be possible to assist some of the better institutions that already offer master's level programmes to include modules on telecommunications policy and regulation. They could be provided with a specimen module and a range of the related teaching materials plus contacts with regulators and support for associated research. Alternatively, associations could be asked to develop the modules.

In particular, it would be possible to try to persuade AERC to adopt a joint elective module on regulatory economics. This would help to disseminate the issues, the methods and some of the materials. It would be a relatively low cost option, but the effects would be slow. It should also be possible to persuade other universities to teach the same material.

At the level of the executive or specialist master's programme it is unclear that there is sufficient demand for a dedicated course. The entrance requirements of both a master's degree and good English, combined with the small size of the market and its geographical dispersion, do not make this look especially promising.

Taking African regulators to specialist courses in Asia, Europe and North America risks failing to provide applicable models and relevant examples – sometimes it even fails to convey the necessary minimum conditions for the success of the models used there. It can

be counter-productive, with the adoption of ideas that are untested or inappropriate, such as functional separation and local loop unbundling.⁸⁰

Existing executive MBA and MPA programmes in Africa provide valuable generic skills, even if not much that is specific to ICTs. Gradually, e-government is taking a more prominent place in MPA programmes. Some modules on telecommunications issues could be added, either within individual universities, or like the JFE, at a central location for a group of countries. This would require a credit transfer mechanism between the participating universities. It should be possible to kick-start such a provision.

Academics and teachers in Africa could help as intermediaries for the introduction of non-African programmes and courses, though they would need some assistance to understand the European or North American background. This is one area where a partnership of institutions could be beneficial. However, for the most part African academics have not conducted research into telecommunications regulation and policy, even if they are highly qualified economists, engineers or lawyers. They may find it a thankless task to add African material onto the shells of European or North American courses and syllabuses. It is even possible that the African material would not fit the non-African models.

In many cases training is linked to consultancy and, sometimes to research. The underlying economics and incentives may not be made explicit and some cross-subsidization may be involved. Training is likely to lead on to consultancy projects, while for academics it may generate the contacts for research that result in publications and ultimately in promotion.

4.2.3 Developing teaching materials specific to Africa. The experiences of African regulators are still largely recorded only as a sequence of decisions, often not readily available, and reflected in unreliable statistics. There are very few analytical accounts of their decisions or comparisons of national developments.⁸¹ This should be a priority area with, for example, an edited volume of reflections by and interviews with regulators on their experiences.

The production of case studies for class discussion is very important. These need to cover a range of countries and topics to provide a pool of appropriate materials.

Training needs to be embedded in the HRM strategies of the ministries and the NRAs. The attendance of individuals on courses requires a level of justification, that the person will benefit from the course and that the authority or ministry will undertake to ensure that the person does not leave. At present we do not have evidence of this, suggesting a need for a formal analysis of HRM strategies and budgets.

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⁸⁰ Both of these topics were given serious attention at the FTRA meeting in Dakar in June 2008.

⁸¹ An exception is the recent volume by Nigerian journalist Aaron Ukodie "Ndukwe & telecom regulation: a walk in tandem". This is apparently not available for online purchase.

One of the simplest measures – if people would contribute – would be to create a weblog or wiki of training courses. This could include postings about all the types of courses, with reports of the experiences of students.

4.2.4 Creating a network of funded professorships. Another possibility would be to create a small network of “*infoDev* Professors of Telecommunications Policy” in universities in different parts of Africa (e.g., Tripoli, Kampala, Accra and Gaborone). These could be funded for three to five years, with undertakings from the regional regulatory associations to fund a further two years, in return for teaching short courses over the full period (i.e., to collect funds from them from the first year onwards). Each individual could be provided with some initial training, then mentored by a senior former regulator and by an academic from a developed country, with mutual extended visits. The individuals would be expected to teach specialist modules within existing degree programmes and also short courses for the regional regulatory association. This would open up avenues for research for the *infoDev* professors.

4.2.5 Creating regulatory summer schools. To offer more intensive training there could be a regulatory “summer school”, for example, in Addis Ababa. This would offer a combination of several training courses that could be offered in parallel and consecutively, in order to maximize the opportunities for students and the use of teachers and guest speakers brought in for the event.

It might help to market the summer schools outside Africa if they were held in a globally branded city, such as Timbuktu or Zanzibar, which would attract trainers and students from both within and outside the continent. If successful, it could be repeated at another location to create a cycle of twice yearly regulatory schools.

4.2.6 Working with regional regulator’s associations. In the hurly-burly of technological advance and shifting market, there is a demand for continuing professional development on “hot” topics. It would be possible for the regulators collectively, perhaps through their regional associations, to fund one or two consultancy reports each year. These would draw inputs from regulators and, through a public consultation, from market players and consumers. The results would be compiled into a comparative analysis with a section on each country and could be presented to regulators in regional meetings and published on web sites. The results could be translated for wider dissemination.

Additionally, shorter “global best practice” briefing notes could be drafted for discussion amongst regulators. These could address issues from both developed and developing countries that required explanation, setting out the reasons for their adoption and the conditions for their success. The notes could be subject for a briefing and discussion by conference call.

4.3 Conclusions

A number of projects aimed at building regulatory capacity in Africa have ground to a halt or failed, in part because of the daunting scale of pan-African challenges and the time taken to effect change. The linguistic, cultural, administrative and legal diversity, compounded by the problems and expense of travel create complexities and overheads that are not easily or quickly overcome. It is therefore essential to be realistic in any proposals.

There is a clear fear that by mixing students too widely, that those from less liberalized regimes will hamper discussion in classes. The advanced and the quick wish to be taught together – unencumbered by the fearful and the reactionary.

The solutions appear to be regional within Africa, linked to the existing regional associations, rather than being continental in scope. The regional associations can offer guidance on content, support for events and provide participation in teaching.

Annex 1:

Current research on telecommunications policy in Africa

2008

Getting connected: the social dynamics of urban telecommunications access and use in Khayelitsha, Cape Town

Andrew Skuse (University of Adelaide)
Thomas Cousins (Johns Hopkins University)
New Media & Society **10** (1) pp 9 - 26 (2008).
<http://nms.sagepub.com/cgi/content/abstract/10/1/9>

Gender and National ICT Policy in Africa: issues, strategies, and policy options

Wole Michael Olatokun (Africa Regional Centre for Information Science, Nigeria)
Information Development **24** (1) pp 53 - 65 (2008).
<http://idv.sagepub.com/cgi/content/abstract/24/1/53>

Africa and the digital divide

Christian Fuchs (University of Salzburg)
Eva Horak (University of Vienna)
Telematics and Informatics **25** (2) pp 99 - 116 (2008)
<http://dx.doi.org/10.1016/j.tele.2006.06.004>

Serving under - serviced areas in South Africa: the potential for Wi - Fi community network deployment and the role of regulation

Annemijn van Gorp (Penn State University)
Chris Morris (Penn State University)
Info **10** (1) pp 65 - 78 (2008).
<http://www.emeraldinsight.com/10.1108/14636690810850166>

Mapping theoretical and practical issues in the relationship between ICTs and Africa's socioeconomic development

Levi Obijio (The University of Queensland)
Telematics and Informatics (in print)
<http://dx.doi.org/10.1016/j.tele.2007.12.002>

Unified licensing: facilitator for ICT empowerment and national development in Nigeria

Stella E. Igun (Delta State University)
Festus Prosper Olise (??)
Library Hi Tech News **25** (2/3) pp 8 - 10 (2008).
<http://www.emeraldinsight.com/10.1108/07419050810884483>

Gaming or gaining? comparing the use of Internet cafés in Indonesia and Tanzania

Bjørn Furuholt (University of Agder, Norway)
Stein Kristiansen (University of Agder, Norway)
Fathul Wahid (Department of Informatics, Islamic University of Indonesia)
The International Information & Library Review **40** (2) pp 129 - 139 (2008).
<http://dx.doi.org/10.1016/j.iilr.2008.02.001>

Joutia: street vendor entrepreneurship and the informal economy of information and communication technologies in Morocco

Hsain Ilahiane (Iowa State University)

John Sherry (Intel Corporation)

The Journal of North African Studies **13** (2) pp 243 - 255 (2008).

<http://www.informaworld.com/smpp/content~content=a793017664~db=all>

The impact of market liberalisation on the Mauritian telecommunications sector

Ramessur - Seenarain Shalini (University of Technology, Mauritius)

Journal of Applied Sciences Research **4** (2) pp 207 - 215 (2008).

<http://www.insinet.net/jasr/2008/207 - 215.pdf>

Structural adjustment in the Latin American and African mobile sectors

Peter Curwen (Strathclyde Business School)

Jason Whalley (Strathclyde Business School)

Telecommunications Policy **32** (5) pp 349 - 363(2008).

<http://dx.doi.org/10.1016/j.telpol.2008.02.004>

Globalisation, mobile phones and forbidden romance in Morocco

Donna Lee Bowen (Brigham Young University)

Alexia Green (Brigham Young University)

Christiaan James (Brigham Young University)

The Journal of North African Studies **13** (2) pp 227 - 241 (2008).

<http://www.informaworld.com/smpp/content~content=a793015719~db=all>

Colour, culture deixis as elements of meaning in the discourse of advertising mobile telecommunications networks in Nigeria

Adeyemi Adegoju

N Ile - Ife (Obafemi Awolowo University)

The Public Journal of Semiotics, II (1) pp (2008).

<http://www.semiotics.ca/issues/pjos - 2 - 1.pdf#page=22>

Infrastructure and growth in developing countries: recent advances and research challenges

Stéphane Straub (University of Edinburgh)

World Bank Policy Research Working Paper No. 4460 (2008).

<http://ssrn.com/abstract=1080475>

Easing the burden of fixed telephone lines on small - scale entrepreneurs in Nigeria: GSM lines to the rescue

John Olatunji Adeoti (Nigerian Institute of Social and Economic Research)

Adetola Ibidunni Adeoti (University of Ibadan)

Telematics and Informatics **25** (1) pp 1 - 18 (2008).

<http://dx.doi.org/10.1016/j.tele.2005.12.002>

Modeling services liberalization: the case of Kenya

Edward Balistreri (Colorado School of Mines)

Thomas Rutherford (ETH Zurich)

David G Tarr (World Bank)

World Bank Policy Research Working Paper No. 4544 (2008).

<http://ssrn.com/abstract=1102839>

Customer service in the retention of mobile phone users in Nigeria

O Oyeniyi (Covenant University)

AA Joachim (Covenant University)

African Journal of Business Management 2 (2) pp 26 - 31 (2008).

<http://www.academicjournals.org/AJBM/PDF/pdf2008/Feb/Omotayo%20and%20Joachim.pdf>

Determinants of a digital divide in Sub - Saharan Africa: a spatial econometric analysis of cell phone

P Buys (World Bank)

S Dasgupta (World Bank)

T Thomas (World Bank)

D Wheeler (World Bank)

World Bank Policy Research Working Paper No. 4516 (2008).

<http://go.worldbank.org/F03BV1RR20>

The regulation of international mobile roaming

Ewan Sutherland

info 10 (1) pp 13 □ 24 (2008).

<http://www.emeraldinsight.com/10.1108/14636690810850139>

Role of foreign direct investment in telecommunication industries: a developing countries' perspective

Chun Hung Lin (Feng Chia University)

Contemporary Management Research 4 (1) pp 29 □ 42 (2008).

<http://www.cmr - journal.org/article/view/84>

The political economy of privatization in Sub-Saharan Africa

Samuel Adams (Ghana Institute of Management and Public Administration)

Berhanu Mengistu (Old Dominion University)

Social Science Quarterly 89 (1) pp 78 □ 94 (2008).

<http://www.blackwell - synergy.com/doi/abs/10.1111/j.1540 - 6237.2008.00522.>

The right of access to information: opportunities and challenges for civil society and good governance in South Africa

Albert Arko □ Cobbah

IFLA Journal 34 pp 180 □ 191 (2008).

<http://ifl.sagepub.com/cgi/content/abstract/34/2/180>

Managing the radio spectrum: framework for reform in developing countries

Bjorn Wellenius (World Bank)

Isabel Neto (World Bank)

World Bank Policy Research Working Paper No. 4549 (2008)

<http://ssrn.com/abstract=1105598>

Emerging trends in m-government

Silvana Trimi (University of Nebraska □ Lincoln)

Hong Sheng (University of Missouri □ Rolla)

Communications of the ACM **51** (5) pp 53 □ 58 (2008).

<http://doi.acm.org/10.1145/1342327.1342338>

Information technology and the gender digital divide in Africa: the case of Ethiopia

Wondosen Teshome □ Bahiru (University of Vienna)

Mag Jerusalem Negash (Äthiopisch □ Österreichische Frauensolidarität)

Icfai Journal of Information Technology **3** (4) pp 23 □ 42 (2008).

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1079248

<http://www.iupindia.org/InformationTechnology.asp>

Mapping theoretical and practical issues in the relationship between ICTs and Africa's socioeconomic development

Levi Obijiofor (The University of Queensland)

Telematics and Informatics (proof) 2008.

<http://dx.doi.org/10.1016/j.tele.2007.12.002>

Determinants of mobile network operator's choice of cross-border entry modes

Torsten J. Gerpott (Mercator School of Management, University of Duisburg)

Nejc M. Jakopin (Arthur D. Little GmbH)

International Journal of Mobile Communications **6** (2) pp 177 □ 198 (2008).

<http://inderscience.metapress.com/link.asp?id=jn06231151k5118u>

2007

Evaluation of the reaction of people towards liberalization of the telecommunication sector in Southwestern part of Nigeria

K.O. Odunaike (Tai Solarin University)

O.A. Abimbola (NISER)

Jide Owoeye (Lead City University)

International Business Management **1** (2) pp 24-29 (2007).

<http://www.medwelljournals.com/new/5/detail.php?id=5&jid=ibm&theme=5&issueno=8&article no=100>

Toward universal telephone access: Market progress and progress beyond the market

C Kenny (World Bank)

R Keremane (World Bank)

Telecommunications Policy **31** (3-4) pp 155-163 (2007)

<http://linkinghub.elsevier.com/retrieve/pii/S0308596107000158>

Demand for telecommunication services in developing countries

Christopher Garbacza (Mississippi Public Utilities Staff)

Herbert G. Thompson Jr (McClure School, Ohio University)

Telecommunications Policy **31** (5) 276-289 (2007).

<http://dx.doi.org/10.1016/j.telpol.2007.03.007>

Another instance where privatization trumped liberalization: The politics of telecommunications reform in South Africa: A ten-year retrospective

Robert B. Horwitz (University of California, San Diego)

Willie Currie (Association for Progressive Communications, New York, USA)
Telecommunications Policy **31** (8-9) pp 445-462 (2007).
<http://dx.doi.org/10.1016/j.telpol.2007.05.008>

The rules of beeping: exchanging messages via intentional “missed calls” on mobile phones

Jonathan Donne (Microsoft Research India)
Journal of Computer-Mediated Communication **13** (1) pp 1-22 (2007).
<http://dx.doi.org/10.1111/j.1083-6101.2007.00383.x>
<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1083-6101.2007.00383.x>

From networks to uses patterns: the digital divide as seen from Africa

Annie Chéneau-Loquay (Centre d’Etudes d’Afrique Noire, France)
GeoJournal **68** (1) pp 55-70 (2007).
<http://www.springerlink.com/content/f4t6153w6622n5u6/>

The *Ourobouros* of intellectual property: ethics, law, and policy in Africa

Sandra Braman (University of Wisconsin, Milwaukee)
International Review of Information Ethics pp 1-10 (2007).
<http://www.i-r-i-e.net/inhalt/007/28-braman.pdf>

Mobile telecommunications in Mozambique: the interconnection gaffe

Kuo-Hung Tseng (Mei-Ho Institute of Technology, Taiwan)
Dino Foi (Mei-Ho Institute of Technology, Taiwan)
Mark Findler (Mei-Ho Institute of Technology, Taiwan)
Proceedings of the 6th Conference on WSEAS International Conference on Applied
Computer Science **6** pp 182-186 (2007).
<http://portal.acm.org/citation.cfm?id=1348393>

Price structure and network externalities in the telecommunications industry: evidence from Sub-Saharan Africa

Atsushi Iimi (World Bank)
World Bank Policy Research Working Paper No. 4200 (2007).
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=980818

Approaching the digital divide in Sub-Saharan Africa: technological determinism or social constructivism?

Alea M. Fairchild (Vrije Universiteit Brussel)
Efuwa A. Quansah (Vrije Universiteit Brussel)
International Journal of Knowledge and Learning **3** (6) pp 612 – 627 (2007).
<http://inderscience.metapress.com/link.asp?id=d343027621304t25>

Unraveling the impact of investments in ICT, education and health on development: an analysis of archival data of five West African countries using regression splines

O Morawczynski, Olga (University of Edinburgh)
O Ngwenyama (??)
Electronic Journal of Information Systems in Developing Countries **29** (2007).
<http://www.ejisdc.org/ojs2/index.php/ejisdc/article/view/352/198>

A rural-urban digital divide? Regional aspects of Internet use in Tanzania

Bjorn Furuholt (University of Adger, Norway)
Stein Kristiansen (University of Adger, Norway)

Electronic Journal of Information Systems in Developing Countries **31** (2007).
<http://www.ejisdc.org/ojs2/index.php/ejisdc/article/view/417/216>

First mile, first inch

C Morris (???)

Proceedings of IST□Africa 2007 Conference. Maputo, 9□11 May 2007, pp 9.
<http://hdl.handle.net/10204/1786>

Rethinking African development: a critical assessment of recent developments in the telecommunications sub□sector in Nigeria

Emeka Emmanuel Okafor (University of Ibadan)

Journal of Human Ecology **22** (4) pp 327□336 (2007).

<http://www.krepublishers.com/02-Journals/JHE/JHE-22-0-000-000-2007-Web/JHE-22-4-000-000-2007-Abstract-PDF/JHE-22-4-327-07-1609-Okafor-E-E/JHE-22-4-327-07-1609-Okafor-E-E-Tt.pdf>

Information technology access: cybercafe diffusion in Sub□Saharan Africa

V W A Mbarika (A&M College, Baton Rouge)

M Kah (A&M College, Baton Rouge)

K Samake (A&M College, Baton Rouge)

J C Sumrall (A&M College, Baton Rouge)

IEEE Technology and Society Magazine **26** (3) pp 49□56 (2007).

http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=4300967

Analyzing the World Bank’s blueprint for promoting “Information and Communications”

Sherille Ismail (Federal Communications Commission)

Federal Communications Law Journal **59** (13) pp 241-253 (2007).

<http://www.law.indiana.edu/fclj/pubs/v59/no1/13 - Book%20ReviewFINAL.pdf>

Internet cafés in Asia and Africa – venues for education and learning?

Bjørn Furuholt (Agder University College, Norway)

Stein Kristiansen (Agder University College, Norway)

The Journal of Community Informatics **3** (2) pp ?? (2007).

<http://ci - journal.net/index.php/ciej/article/viewArticle/314/320>

The strategic entry of China’s emerging multinationals into Africa

Lucy Corkin (Centre for Chinese Studies, University of Stellenbosch)

China Report **43** (3) pp 309-322 (2007).

<http://chr.sagepub.com/cgi/content/abstract/43/3/309>

Direct investment for growth and development in Sub□Saharan Africa: policy options and strategic alternatives

David N Abdulai (University of South Africa)

Africa Development (2007).

<http://www.codesria.org/Links/Publications/ad2 - 07/abduahi.pdf>

VoIP services: regulatory perspectives from developing countries

Stephen Rawson (McCarthy Tétrault LLP)

Computer Law & Security Report **23** (2) pp 188-193 (2007).

<http://dx.doi.org/10.1016/j.clsr.2007.01.006>

On the relationship between international telecommunications development and global women's poverty

Micky Lee (Suffolk University, Boston)

International Communication Gazette **69** (2) pp 193-213 (2007).

<http://gaz.sagepub.com/cgi/content/abstract/69/2/193>

Telecommunications stakeholder perceptions of teledensity: a comparison of stakeholders in the Latin American region to those in Sub-Saharan Africa

Victor Mbarika (Southern University)

Peter Meso (Georgia State University)

Philip Musa (Univ. of Alabama Birmingham)

Proceedings of the 40th Annual Hawaii International Conference on System Sciences (HICSS-07) p. 68.

<http://doi.ieeecomputersociety.org/10.1109/HICSS.2007.515>

Stimulating growth and investment in Africa: from macro to micro reforms

Alan Gelb (World Bank, Georgetown University & Center for Global Development)

Vijaya Ramachandran (World Bank, Georgetown U. & Center for Global Development)

Ginger Turner (World Bank, Georgetown University & Center for Global Development)

African Development Review **19** (1) pp 26-51 (2007).

<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1467-8268.2007.00155.x>

Testing a recent model of ICT in development: Botswana and its university

David R. Gerhan (Union College Library, Schenectady)

Stephen M. Mutula (University of Botswana)

Information Technology for Development **13** (2) pp 177-197.

<http://www3.interscience.wiley.com/journal/114189828/abstract?CRETRY=1&SRETRY=0>

African women and the Internet

N Caftori

International Review of Information Ethics (2007).

<http://www.i-r-i-e.net/inhalt/007/30-caftori.pdf>

Monopoly rights in the privatization of telephone firms

Bruno E. Viani (Colgate University)

Public Choice **133** (1-2) pp 171-198 (2007).

<http://www.springerlink.com/content/h61225x2g1x746k0/>

Open access towards bridging the digital divide - policies and strategies for developing countries

Allam Ahmed (SPRU, University of Sussex)

Information Technology for Development **13** (4) pp 337-361 (2007).

<http://doi.wiley.com/10.1002/itdj.20067>

Measuring the international digital divide: an application of Kohonen self-organizing maps

Joel I. Deichmann (Bentley College)

Abdolreza Eshghi (Bentley College)

Dominique Haughton (Bentley College)

Sam Woolford (Bentley College)

Selin Sayek (Bilkent University)

International Journal of Knowledge and Learning 3 (6) pp. 552-575 (2007).

<http://inderscience.metapress.com/link.asp?id=v7068n7723g17043>

Factors affecting the development of information infrastructure in Africa

T. Rexwhite Enakrire

O. George Onyenania

Library Hi Tech News 24 (2) pp 15-20 (2007).

<http://www.emeraldinsight.com/10.1108/07419050710751643>

Diffusion of the Internet: a cross-country analysis

Luis Andres (World Bank)

David Cuberes (Clemson University)

Mame Astou Diouf (International Monetary Fund)

Tomas Serebrisky (World Bank)

World Bank Policy Research Working Paper No. 4420 (2007).

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1062402

Financial integration, regulation and competitiveness in Middle East and North Africa countries

Anastassios Gentzoglani

Managerial Finance 33 (7) 461-476 (2007).

<http://www.emeraldinsight.com/10.1108/03074350710753744>

Market power, competition policy and developing economies: divergent conditions within African and Caribbean economies

A. Vindelyn Smith-Hillman

Journal of Economic Studies 34 (2) pp 120-135 (2007).

<http://www.emeraldinsight.com/10.1108/01443580710745399>

Stakeholders' perceptions of the impact of a global system for mobile communication on Nigeria's rural economy: implications for an emerging communication industry

Tella Adeyinka (University of Botswana)

Josiah .O. Ajiboye (University of Botswana)

Adu Olusola Emmanuel (University of Ibadan)

James Idowu (University of Ibadan)

The Journal of Community Informatics 3 (4) pp ?? (2007).

<http://www.ci-journal.net/index.php/ciej/article/viewArticle/379/382>

Telecommunications- the persistence of monopoly

Jens Arnold (World Bank)

Boutheina Guermazi (World Bank)

Aaditya Matto (World Bank)

In Services Trade and Development: The Experience of Zambia

Edited By Aaditya Mattoo, Lucy Payton

Washington DC: World Bank Publications (2007).

The development of national ICT policy in Kenya: the influence of regional institutions and key stakeholders

Timothy Mwololo Waema (University of Nairobi)

In *Handbook of research on Global information technology management in the digital economy*.

Edited by Mahesh Raisinghani

Information Science Reference (2007)

<http://www.igi-pub.com/reference/>

Some perspectives on understanding the adoption and implementation of ICT interventions in developing countries

Md. Mahfuz Ashraf

Paul Swatman

Dr. Jo Hanisch

The Journal of Community Informatics 3 (4) pp ?? (2007).

<http://www.ci-journal.net/index.php/ciej/article/viewArticle/297>

Africa and the challenges of bridging the digital divide

Esharenana Adomo (Delta State University)

Mahesh Raisinghani (???)

In *Handbook of research on public information technology*

Edited by G. David Garson & Mehdi Khosrow-Pour

Information Science Reference (2007)

<http://www.igi-pub.com/reference/>

Current debates on infrastructure policy

Antonio Estache (Université Libre de Bruxelles)

Marianne Fay (World Bank)

World Bank Policy Research Working Paper No. 4410

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1032030

Internet governance on a dollar a day

Charles Kenny (World Bank)

Information Polity 12 (1-2) pp 83-94 (2007)

<http://iospress.metapress.com/content/54670785p3023h28/fulltext.html>

Beyond harmonization: the role of regions in regulatory policy making

Carleen Maitland (Penn State U)

Annemijn van Gorp (Penn State U)

Proceedings of the 35th TPRC (2007).

<http://web.si.umich.edu/tprc/papers/2007/713/MaitlandvanGorpTPRC%202007.pdf>

The regulatory design problem revisited: Tanzania's pioneering position in Africa

Annemijn van Gorp (Pennsylvania State University)

Carleen Maitland (Pennsylvania State University)

Proceedings of the 35th TPRC (2007).

http://web.si.umich.edu/tprc/papers/2007/711/VanGorpMaitland_TPRC07_TZ.pdf

Adoption and usage of ICT in developing countries: case of Ugandan firms

Ssewanyana, Joseph (Makerere University)

Busler, Michael (Rowan University)

International Journal of Education and Development using ICT 3 (3) pp ? (2007).

<http://ijedict.dec.uwi.edu/viewarticle.php?id=349>

Questioning development industry attention to communication technologies and democracy

Karin Gwin Wilkins (University of Texas at Austin)

Young Gil Chae (University of Texas at Austin)

International Journal of Communication 1 pp 342-359 (2007).

<http://ijoc.org/ojs/index.php/ijoc/article/view/8>

Mobile phones in Africa: how much do we really know?

Jeffrey James (Tilburg University)

Mila Versteeg (Tilburg University)

Social Indicators Research 84 (1) pp 117-126 (2007).

<http://www.springerlink.com/content/u51614j23210xu26>

The performance of newly privatized firms in selected MENA countries: the role of ownership structure, governance and liberalization policies

Samy Ben Naceur (LEFA & IHEC, Carthage)

Samir Ghazouani (IMF)

Mohammed Omran (Arab Academy for Science and Technology)

International Review of Financial Analysis 16 (4) pp 332-353 (2007).

<http://dx.doi.org/10.1016/j.irfa.2006.09.006>

Should state-owned firms change CEOs before privatization? Some evidence from the telecommunications industry

Alberto Chong (Inter-American Development Bank)

Virgilio Galdo (Michigan State University)

Applied Economics Letters 14 (8) pp 591-595 (2007).

<http://www.informaworld.com/smpp/content~content=a779655779~db=all>

Regulatory independence and the development of the telecommunications sector: the Liberian Telecommunications Authority.

Thakur, D. (Georgia Institute of Technology)

Best, M. L. (Georgia Institute of Technology)

Jones, K. (Georgia Institute of Technology)

White paper – Georgia Institute of Technology (2007).

<http://mikeb.inta.gatech.edu/uploads/papers/lta.pdf>

The feasibility of ICT diffusion amongst African rural women: a case study of South Africa and Kenya

A. K. Wafula-Kwake (University of Zululand)

Dennis N. Ocholla (University of Zululand)

International Review of Information Ethics 7 (2007).

<http://www.i-r-i-e.net/inhalt/007/03-wafula-kwake.pdf>

Post-conflict communications: the case of Liberia

Michael L. Best (Georgia Institute of Technology)
Kipp Jones (Georgia Institute of Technology)
Illenin Kondo (University of Minnesota)
Dhanaraj Thakur (Georgia Institute of Technology)
Edem Wornyo (Georgia Institute of Technology)
Calvin Yu (???)
Communications of the ACM **50** (10) pp 33 □ 39 (2007).
<http://doi.acm.org/10.1145/1290958.1290987>

Regulation, market structure and service trade liberalization

Denise Eby Konan (University of Hawaii at Manoa)
Ari Van Assche (HEC Montréal)
Economic Modelling **24** (6) pp 895 □ 923 (2007).
<http://dx.doi.org/10.1016/j.econmod.2007.03.005>

The scramble for Africa

Ewan Sutherland
Proceedings of the 36th TPRC (2007).
[http://web.si.umich.edu/tprc/papers/2007/756/3wan%20 - %20The%20scramble%20for%20Africa.pdf](http://web.si.umich.edu/tprc/papers/2007/756/3wan%20-%20The%20scramble%20for%20Africa.pdf)

Managing distance- rural poverty and the promise of communication in post-apartheid

South Africa
Andrew Skuse (University of Adelaide)
Thomas Cousins (Johns Hopkins University)
Journal of Asian and African Studies **42** (2) pp 185 □ 207 (2007).
<http://jas.sagepub.com/cgi/content/abstract/42/2/185>

Relaxing export supply capacity constraints and promoting export expansion and diversification in Africa: the role of special export development strategies

T. Ademola Oyejide (University of Ibadan)
African Development Review **19** (1) pp 96 □ 122 (2007).
<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1467-8268.2007.00156.x>

Capacity building and IT diffusion: a comparative assessment of e-government environment in Africa

Kalu N. Kalu
Social Science Computer Review **25** pp 358 □ 371 (2007).
<http://ssc.sagepub.com/cgi/content/abstract/25/3/358>

The role of technology in the economic growth of South Africa: the case of frequency allocations to cellular operators

André Mellet (North □ West University)
TD Transdisciplinary research in Southern Africa **3** (2) pp 351 □ 394 (2007).
<http://td-sa.net.dedi554.your-server.de/index.php?page=article/id/10>

The regulation of the quality of service in mobile networks

Ewan Sutherland
info **9** (6) pp 17 □ 34 (2007).
<http://www.emeraldinsight.com/10.1108/14636690710827668>

Multiple geographies of the Arab Internet

Barney Warf (Florida State University)

Peter Vincent (Lancaster University)

Area **39** (1) pp 83–96 (2007).

<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1467-9493.2007.00292.x>

Managing distance: rural poverty and the promise of communication in post-apartheid South Africa

Andrew Skuse (University of Adelaide)

Thomas Cousins (Johns Hopkins University)

Journal of Asian and African Studies **42** pp 185–207 (2007).

<http://jas.sagepub.com/cgi/content/abstract/42/2/185>

The impact of regulation on economic growth in developing countries: a cross-country analysis

Hossein Jalilian (University of Bradford)

Colin Kirkpatrick (University of Manchester)

David Parker (Cranfield University)

World Development **35** (1) pp 87–103 (2007).

<http://dx.doi.org/10.1016/j.worlddev.2006.09.005>

The internet and lawyers in Ghana: some initial qualitative perspectives

Robert Hinson (??)

Raymond Atuguba (??)

Dan Ofori (??)

Julius Fobih (??)

Library Review **56** (4) pp 311 – 322 (2007).

<http://www.emeraldinsight.com/10.1108/00242530710743534>

Telecommunications law and regulation in Lesotho - A critical analysis

Lebone, Likonelo (??)

Thesis – University of Cape Town, Faculty of Law (2007).

<http://lawspace.law.uct.ac.za:8080/dspace/handle/2165/319>

Challenges to e-government in Africa south of Sahara: a critical view, and provisional notes for a research agenda

Mawaki Chango (Syracuse University)

Proceedings of the 1st international conference on Theory and practice of electronic governance, Macao, China pp 384–393 (2007)

<http://doi.acm.org/10.1145/1328057.1328138>

e-governance in an environment with limited resources: a case study of Ghana

Johanna Ekuawotwi (Centre for E-Governance, Mamprobi–Accra)

George Owusu (University of Ghana)

Proceedings of the 1st international conference on Theory and practice of electronic governance table of contents, Macao, China, pp 345–348 (2007).

<http://doi.acm.org/10.1145/1328057.1328129>

Friends and Interests: China's Distinctive Links with Africa

Sautman, Barry (??)

Yan, Hairong (??)

African Studies Review **50** (3) pp 75-114 (2007).

http://muse.jhu.edu/journals/african_studies_review/v050/50.3sautman.pdf

Turning the Rift Valley into Silicon Valley: mobile phones and African entrepreneurship

Nathan Eagle (MIT Design Laboratory)

Interactions **14** (5) pp 14-15 (2007).

<http://doi.acm.org/10.1145/1288515.1288525>

How does influence-peddling impact industrial competition? Evidence from enterprise surveys in Africa

Vijaya Ramachandran (Center for Global Development)

Manju Kedia Shah (World Bank)

Gaiv Tata (??)

Center for Global Development Working Paper No. 127 (2007).

<http://www.cgdev.org/content/publications/detail/14517>

Price structure and network externalities in the telecommunications industry: evidence from Sub-Saharan Africa

Atsushi Iimi (World Bank)

World Bank Policy Research Working Paper No. 4200 (2007).

<http://econpapers.repec.org/paper/wbkwbrwps/4200.htm>

Between two stools: broadband policy in South Africa

Alison Gillwald (University of the Witwatersrand)

Southern African Journal of Information and Communication **8** pp 53-77 (2007).

<http://link.wits.ac.za/journal/journal.html>

Shackling sector development: leased lines in the Republic of South Africa

Ewan Sutherland (University of the Witwatersrand)

Southern African Journal of Information and Communication **8** pp 78-107 (2007).

<http://link.wits.ac.za/journal/journal.html>

Case notes – South Africa's policy incoherence: an update on the Knysna Wi-Fi project

Steve Esselaar (University of the Witwatersrand)

Pieter Soete (SMIT, Vrije Universiteit Brussel)

Southern African Journal of Information and Communication **8** pp 78-107 (2007).

<http://link.wits.ac.za/journal/journal.html>

Connectivity in emerging regions: the need for improved technology and business models

Rahul Tongia (Carnegie Mellon University)

IEEE Communications Magazine **45** (1) pp 96-103 (2007).

<http://dl.comsoc.org/cocoon/comsoc/servlets/GetPublication?id=9019312>

2006

The use of mobile phones by microentrepreneurs in Kigali, Rwanda: changes to social and business networks

Jonathan Donner (Microsoft Research India)

Information Technologies and International Development 3 (2) pp 3-19 (2006).

<http://www.mitpressjournals.org/doi/abs/10.1162/itid.2007.3.2.3>

'I don't trust the phone; it always lies': trust and information and communication technologies in Tanzanian micro- and small enterprises

Thomas Molony (University of Edinburgh)

Information Technology and International Development 3 (4) pp 67-83 (2006).

<http://www.mitpressjournals.org/doi/abs/10.1162/itid.2007.3.4.67>

Infrastructure and public utilities privatization in developing countries

Emmanuelle Auriol (University of Toulouse I)

Pierre Picard (University of Manchester)

World Bank Policy Research Working Paper No. 3950 (2006).

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=923257

Telecentres and sustainable community development in South Africa

Zandi Lesame (University of South Africa)

Proceedings of the 34th TPRC (2006).

<http://web.si.umich.edu/tprc/papers/2006/605/ZandiLesameTelecentresTPRM2006.pdf>

Connectivity and the digital divide – technology, policy and design tradeoffs for developing regions

Rahul Tongia (Carnegie Mellon University)

Proceedings of the 34th TPRC (2006).

<http://web.si.umich.edu/tprc/papers/2006/512/ConnectivityDigitalDivide.pdf>

Leap-frogging the divide: next-generation networks in developing countries

Michael Kende (Analysys)

Onuche Ocholi (Analysys)

Proceedings of the 34th TPRC (2006).

<http://web.si.umich.edu/tprc/papers/2006/580/Microsoft%20Word%20-%20Leap-frogging%20the%20divide.pdf>

Roaming in Africa

Ewan Sutherland

Proceedings of the 34th TPRC (2006).

http://web.si.umich.edu/tprc/papers/2006/522/3wan_TPRC_africa_roaming_paper.pdf

Back to the future for African infrastructure? Why state-ownership is no more promising the second time around

John Nellis (Center for Global Development)

Center for Global Development Working Paper No. 84 (2006)

<http://ssrn.com/abstract=983201>

Telecommunications services in Africa: the Impact of multilateral commitments and unilateral reform on sector performance and economic growth

Alexander Keck (World Trade Organization)
Calvin Djiofack (Université d'Auvergne)
WTO Staff Working Paper No. ERSD-2006-10 (2006)
<http://ssrn.com/abstract=946907>

Infrastructure, regional integration and growth in Sub-Saharan Africa: dealing with the disadvantages of geography and sovereign fragmentation

Benno J Ndulu (World Bank)
Journal of African Economies **15** (supp 2) pp 212-244 (2006).
http://jae.oxfordjournals.org/cgi/content/abstract/15/suppl_2/212
<http://dx.doi.org/10.1093/jae/ejl033>

VoIP deregulation in South Africa: next term implications for underserved areas

Marshini Chetty (Georgia Institute of Technology)
Edwin Blake (University of Cape Town)
Ewan McPhie (Bridges.org, South Africa)
Telecommunications Policy **30** (5-6) pp 332-344 (2006).
<http://dx.doi.org/10.1016/j.telpol.2005.11.007>

The effects of international telecommunication investment: wireline and wireless technologies, 1993–1998

Samuel C. Yang (California State University, Fullerton)
Lorne Olfman (Claremont Graduate University)
Telecommunications Policy **30** (5-6) pp 278-296 (2006).
<http://dx.doi.org/10.1016/j.telpol.2005.11.008>

Do institutions matter more for services?

Mohammad Amin (World Bank)
Aaditya Mattoo (World Bank)
World Bank Working Paper Series No. 4032 (2006).
<http://ideas.repec.org/p/wbk/wbrwps/4032.html>

Infrastructure and growth in South Africa: direct and indirect productivity impacts of 19 infrastructure measures

Johannes W Fedderke (University of the Witwatersrand)
Zeljko Bogetic (World Bank)
World Bank Policy Research Working Paper No. 3989 (2006).
<http://ssrn.com/abstract=926442>

International benchmarking of Lesotho's infrastructure performance

Zeljko Bogetic (World Bank)
World Bank Policy Research Working Paper No. 3825 (2006).
<http://econpapers.repec.org/paper/wbkwbrwps/3825.htm>

Forecasting investment needs in South Africa's electricity and telecommunications sectors

Zeljko Bogetic (World Bank)
Johannes Wolfgang Fedderke (University of Cape Town)
World Bank Policy Research Working Paper No. 3829 (2006).
<http://econpapers.repec.org/paper/wbkwbrwps/3829.htm>

International benchmarking of South Africa's infrastructure performance

Zeljko Bogetic (World Bank)
Johannes W Fedderke (University of the Witwatersrand)
World Bank Policy Research Working Paper No. 3830 (2006)
<http://ssrn.com/abstract=922956>

Some policy proposals for future infrastructure investment in South Africa

Johan Fourie (Stellenbosch University)
Stellenbosch University, Department of Economics Working Paper No. 05 (2006).
<http://econpapers.repec.org/paper/szawpaper/wpapers19.htm>

International benchmarking of infrastructure performance in the Southern African

Customs Union countries
Zeljko Bogetic (World Bank)
Johannes Fedderke (University of the Witwatersrand)
World Bank Policy Research Working Paper No. 3987 (2006).
<http://ssrn.com/abstract=922467>

Mobile communication and society: a global perspective

Manuel Castells (University of Southern California)
Mireia Fernandez-Ardevol (University of Southern California)
Jack Linchuan Qiu (University of Southern California)
Araba Sey (University of Southern California)
Boston: MIT Press (2006).
<http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=10935>

Political accountability and regulatory performance in infrastructure industries: an empirical analysis

Farid Gasmi (IDEI, Université de Toulouse I)
Paul Noumba (World Bank)
Laura Recuero Virto (World Bank)
World Bank Policy Research Working Paper No. 4101 (2006).
<http://go.worldbank.org/3SYCKHG7K0>

Beware dongas! An assessment of the road ahead for under-serviced area telecommunications operators in South Africa

Fabian van Leijden
Ton Monasso
Southern African Journal of Information and Communication 6 pp (2006)
<http://link.wits.ac.za/journal/journal.html>

Mobile Cellular Telephone: Fixed-line Substitution in Sub-Saharan Africa

Steve Esselaar (University of the Witwatersrand)
Christoph Stork (University of the Witwatersrand)
Southern African Journal of Information and Communication 6 pp (2006)
<http://link.wits.ac.za/journal/journal.html>

Annex 2

University Degrees

University of Namur – Diploma in law and management of ICTs

Since 1992, the University of Namur has offered a *Diplôme d’Etudes Spécialisées (DES) en Droit et Gestion des Technologies de l’Information et de la Communication (DGTIC)*⁸². This is taught by the staff of the *Centre de Recherche Informatique et Droit (CRID)*.

The CRID also offers continuing professional development for lawyers in ICTs under the JuriTIC brand⁸³. With ICRI⁸⁴ and Cullen International, it offers a programme of CPD in Brussels for telecommunications lawyers, economists and lobbyists entitled Competition Law in Electronic Communications (CLEC).

[The University is accredited by the Belgian Federal Government.]

Katholieke Universiteit Leuven – LLM specialized in ICTs

Interdisciplinary Centre for Law and ICTs (ICRI)⁸⁵. Offers a master of laws degree specializing in Information and Communication Technologies⁸⁶. It contains modules in telecommunications law.

[The University is accredited by Belgian Federal Government.]

Danmarks Tekniske Universitet – MSc in ICTs

The CICT, through COM.DTU, offers an MSc in Telecommunications which is primarily technical or socio-technical, but includes some limited policy course modules⁸⁷. There are also doctoral programmes and a summer school on “Political economy of ICT”, the latter under the NordICT programme⁸⁸. The CICT has an International Advisory Board (IAB) meeting annually. Many of the staff are presently in the process of transferring to the Centre for Communication, Media and Information technologies (CMI) at the Aalborg Universitet⁸⁹.

CICT has been linked to a private college in Ghana, backed by the incumbent operator, that offers a technical programme leading to the degree of Master in ICT⁹⁰. This appears now to be being transferred to CMI.

[Both the Danish Technical University and the University of Aalborg are accredited by the Danish government. There is no specific accreditation for the CMI or CICT.]

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⁸² <http://www.fundp.ac.be/facultes/droit/dtic/>

⁸³ <http://www.juritic.be/>

⁸⁴ <http://www.law.kuleuven.be/icri>

⁸⁵ <http://www.law.kuleuven.be/icri/>

⁸⁶ <http://www.law.kuleuven.be/icri/master/>

⁸⁷ http://www.cict.dtu.dk/Education/MSc_programmes/MSc_in_Telecommunication/Services_and_Markets.aspx

⁸⁸ <http://phdsummerschool.nordict.aau.dk/>

⁸⁹ <http://www.cmi.aau.dk/>

⁹⁰ <http://www.gtuc.edu.gh>

Universitet I Oslo – LLM in ICT

The University of Oslo offers a one-year master’s degree in ICT law⁹¹. The programme encompasses telecommunications law, intellectual property law, data protection law and e-commerce law. In addition to taught courses, students write a thesis in a specialist area of their choice.

[The University is accredited by the Norwegian government.]

Telecom Bretagne –

Francophone technical institution, with some management courses⁹². Nothing on regulation. Telecom Bretagne is accredited as a “grande ecole”.

Telecom Paris Tech –

Telecom Paris is a Francophone technological institution with a focus on telecommunications⁹³. Telecom Paris Tech is accredited as a “grande ecole”.

Telecom & management Sud Paris –

Telecom Sud Paris⁹⁴.

Telecom & Management Sud Paris is accredited as a “grande ecole”.

Universität Bonn – LLM in European Regulation of Network Industries

The *Zentrum für Europäische Integrationsforschung* (ZEI) of the Rheinischen Friedrich-Wilhelms-Universität Bonn offers a Master of European Regulation of Network Industries (MERNI) which has the title of Master of Laws (LLM)⁹⁵. The course is supported by operators in a range of regulated industries that reflect the scope of the German Federal Networks Agency (Bundesnetzagentur)⁹⁶:

- electronic communications
- energy
- postal services
- transport
- water

The course is taught by both academics (from Bonn and elsewhere) and also by practitioners from the regulator, operators and lawyers. It has a link to the EPFL.

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⁹¹ <http://www.uio.no/studier/program/ictlaw-master/>

⁹² <http://www.enst-bretagne.fr/>

⁹³ <http://www.telecom-paristech.fr/>

⁹⁴ <http://www.it-sudparis.eu/>

⁹⁵ <http://www.zei.de/merni/index.html>

⁹⁶ <http://www.bundesnetzagentur.de/>

[The University is accredited by German Federal Government and the course by a German language body, the Foundation for International Business Administration Accreditation (FIBAA)⁹⁷].

Technische Universität Wien – MBA Regulation

Since March 2008, the Continuing Education Centre⁹⁸ of the TU Wien has offered an executive MBA in regulation⁹⁹. It is a programme of the economics and law of utility regulation, including telecommunications.

Although styled as an MBA it is not, lacking both the core elements and the approach usual in such a programme. Moreover, it is not accredited by the AACSB, EFMD or AMBA. The TU-Wien offers some MBA programmes in German, including a general programme, facilities management and mergers & acquisitions.

The TU Wien is accredited by the Austrian government. The TU-Wien German language MBA programmes, but not the MBA Regulation, are accredited by the FIBAA.

NUI Maynooth – Master in competition and regulation

Maynooth offers a master's degree in competition and regulation¹⁰⁰. This is concentrated on economics, covering different utilities. The National University of Ireland (NUI) is a federal university encompassing several campuses which are, in effect, autonomous universities. NUI Maynooth is accredited by the Government of Ireland, while the associated St Patrick's University is accredited by the Holy See.

City University – MSc in Economic regulation and competition

The Department of Economics at City University offers an MSc in economic regulation and competition¹⁰¹. This is closely related to the Centre for Competition and Regulatory Policy (CCRP)¹⁰². The course is taught by academic staff and practitioners. The course offers grounding in the legal background and financial analysis with specialized training in the concepts and skills involved in the regulatory process and competition policy.

City University is accredited by the UK Government.

London School of Economics – MSc programmes

Media@LSE is a department in the London School of Economics offering a number of programmes leading to the degree of Master of Science¹⁰³:

- Communications Regulation and Policy¹⁰⁴

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⁹⁷ <http://www.fibaa.de/engl/home.htm>

⁹⁸ <http://cec.tuwien.ac.at/>

⁹⁹ <http://www.regulation-mba.eu/>

¹⁰⁰ http://economics.nuim.ie/postgraduate/comp_reg/comp_reg.shtml

¹⁰¹ http://www.city.ac.uk/economics/dps/city_econ-reg-and-comp.pdf

¹⁰² <http://www.staff.city.ac.uk/ccrp/index.htm>

¹⁰³ <http://www.lse.ac.uk/collections/media@lse/study>

- Communication, Information and Society
- Global Media and Communications
- Media, Communication and Development
- Media and Communications
- Politics and Communication

A variant on the MSc is the “research track” programme providing advanced training in methodological and statistical skills for those intending to go on to pursue an MPhil or PhD. The Departments of Law and of Government, together with the Centre for Analysis of Risk and Regulation (CARR), offer a generic MSc in Regulation¹⁰⁵.

The LSE is part of the University of London, operating under a Royal Charter with its teaching overseen by the Quality Assurance Agency for Higher Education (QAA).

University of London – LLM and MSc

The University of London offers “external” or distance learning degrees and has done so for many years¹⁰⁶.

In particular, it offers:

- Master of Science (MSc) in Public Policy and Management¹⁰⁷
- Master of Laws (LLM)¹⁰⁸

The MSc was developed by staff at the Centre for Financial and Management Studies (CeFiMS), a department within the School of Oriental and African Studies (SOAS)¹⁰⁹. It comprises eight courses taken over two to five years. The LLM comprises four courses from a very wide selection taken over one to five years. There are specializations in competition law, computer & communication law, economic regulation, international business law and media law. The programme was developed by staff at Queen Mary and University College London. Examinations are usually written in the country of residence of the student. The University of London operates under a Royal Charter with its teaching overseen by the Quality Assurance Agency for Higher Education (QAA).

University of Manchester – MSc in ICTs for development

The Institute for Development Policy and Management (IPDM) at the University of Manchester offers two programmes each available at both MSc and Post-graduate Diploma levels:

- ICTs for Development¹¹⁰.
- Management and Information Systems: Change and Development¹¹¹

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<http://www.lse.ac.uk/resources/graduateProspectus2008/taughtProgrammes/MScCommunicationRegulationandPolicy.htm>

¹⁰⁵ <http://www.lse.ac.uk/resources/graduateProspectus2008/taughtProgrammes/MScRegulation.htm>

¹⁰⁶ <http://www.londonexternal.ac.uk/>

¹⁰⁷ http://www.londonexternal.ac.uk/prospective_students/postgraduate/soas/pub_pol/index.shtml

¹⁰⁸ http://www.londonexternal.ac.uk/prospective_students/postgraduate/laws/index.shtml

¹⁰⁹ <http://www.cefims.ac.uk/>

¹¹⁰ <http://www.sed.manchester.ac.uk/postgraduate/taught/courses/06237/index.asp>

¹¹¹ <http://www.sed.manchester.ac.uk/postgraduate/taught/courses/01388/index.asp>

The University of Manchester operates under a Royal Charter with its teaching overseen by the Quality Assurance Agency for Higher Education (QAA).

[The IDPM is supported by the Department for International Development (DFID).]

University of Oxford – MSc in the Social Science of the Internet

This course will be launched by the Oxford Internet Institute in October 2009¹¹².

The Continuing Education programme at Oxford offers technical courses as continuing professional development accredited by the Institution for Engineering and Technology (IET)¹¹³. For example, on the mobile Internet, Wimax and UMTS.

The University of Oxford operates under a Royal Charter with its teaching overseen by the Quality Assurance Agency for Higher Education (QAA).

University of Strathclyde – Master of Communications Management

The University of Strathclyde offers a one-year full-time Master of Communications Management (MCM), supported by the UK Government through the Chevening Programme and by the Vodafone Foundation. The course is aimed at experienced managers working within the global telecommunications industry. It provides an understanding of the issues that surround global telecommunications and equip individuals with the knowledge and tools to shape the development of their organisations and the policy agenda in this dynamic environment. The University of Strathclyde operates under a Royal Charter with its teaching overseen by the Quality Assurance Agency for Higher Education (QAA). The Strathclyde Business School is accredited by AACSB, EFMD and AMBA. [but does this cover MCM?]

University of Westminster – MA in Communications Policy

The University of Westminster formerly offered a ten-week post-graduate certificate course¹¹⁴. It was first offered in 1995 and lasted until 2005, being completed by students from over 30 countries. The School of Media, Arts & Design (MAD) at the Harrow campus of the University of Westminster offers an MA in Communications Policy¹¹⁵. This is a broad course, with a very wide definition of communications, including significant media content. The University of Westminster operates under a Royal Charter with its teaching overseen by the Quality Assurance Agency for Higher Education (QAA).

Ecole Polytechnique Fédérale de Lausanne – Executive Master in Urban Utilities Management

The Centre for Urban Utilities at EPFL runs an Executive Master in Urban Utilities Management (UrbUtil)¹¹⁶. This multi-utility course is provided by the Chair in Management of Network Industries (MIR) and the Transportation and Mobility Laboratory (Transp-Or).

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¹¹² <http://www.oii.ox.ac.uk/teaching/>

¹¹³ <http://cpd.conted.ox.ac.uk/electronics/>

¹¹⁴ <http://www.wmin.ac.uk/mad/page-270>

¹¹⁵ <http://www.wmin.ac.uk/mad/page-269>

¹¹⁶ <http://urban-utilities.epfl.ch/>

[The University is accredited by the Swiss Government.]

Université de Fribourg – Executive MBA in ICT and utility management

The bi-lingual University of Fribourg¹¹⁷ (Universität Freiburg) in Switzerland, offers a part-time Master of Business Administration (MBA) degree through its International Institute of Management in Technology (IIMT)¹¹⁸. The IIMT is a unit headed by a professor with assistants and guided by an advisory board representing a number of operators and manufacturers in different sectors.

The Master of Business Management Administration in ICT and utility management includes the conventional topics such as finance, marketing and strategy. There are also a series of modules on utilities and ICTs that contain some elements of regulation. The IIMT also offers short courses in general and technical management topics.

[The University is accredited by the Swiss government.]

Carnegie Mellon University – MEng in Public Policy

Engineering and Public Policy (EPP) is a department in the College of Engineering at Carnegie Mellon University (CMU) addressing “problems in technology and policy in which the technical details are of central importance”. It offers a PhD programme and double-major undergraduate Bachelor of Science programmes with each of the traditional engineering departments and also computer science. The College of Engineering includes a number of research centres, including:

- Center for the Study and Improvement of Regulation¹¹⁹
- Engineering and Public Policy Information and Communication Technology and Policy¹²⁰

These do not have specific teaching programmes, but contribute to the PhD and BS teaching. Students interested in engineering and public policy issues in networked infrastructures can undertake a “dual” PhD with CMU and the *Instituto Superior Tecnico* in Portugal¹²¹. This requires a year of coursework including economics, policy and regulatory topics¹²².

Courses at CMU are accredited by a range of bodies, including the Accrediting Board for Engineering and Technology (ABET), the Association to Advance Collegiate Schools of Business (AACSB) and the National Association of Schools of Public Affairs and Administration (NASPAA). These bodies are in turn approved by the US Government.

Harvard University – Executive MPA

The Kennedy School of Government at Harvard University offers a range of courses¹²³:

- Master in Public Policy (MPP)
- Master in Public Administration (MPA)

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¹¹⁷ <http://www.unifr.ch/>

¹¹⁸ <https://www.iimt.ch/>

¹¹⁹ <http://www.epp.cmu.edu/csir/>

¹²⁰ <http://www.epp.cmu.edu/httpdocs/research/technology.html>

¹²¹ <http://www.icti.cmu.edu/epp>

¹²² See, for example, <http://www.icti.cmu.edu/epp/docs/sample.pdf>

¹²³ <http://www.hks.harvard.edu/degrees/masters>

- Mid-career Master in public administration (MPA)
- Master in Public Administration in International Development (MPA/ID)

The MPA is full-time for two years or one year full-time for those in mid-career, i.e., “well established, high-performing professionals.” There is also a range of part-time executive programmes¹²⁴.

The Harvard Law School offers the degrees of Doctor of Laws (JD) and Master of Laws (LLM) with a very wide ranging programme of courses, including administrative and commercial law, plus the regulation of financial, medical and technological markets¹²⁵. The Berkman Center for Internet and society offers opportunities for research¹²⁶.

[Harvard University is accredited by the US Government. The Harvard Business School is accredited by the AACSB.]

Michigan State University – MA in Information, Policy and Society

The Department of Telecommunication, Information Studies, and Media offers an MA in Information, Policy and Society¹²⁷. The MA offers a wide range of courses from sociology to technology. Some modules relate to telecommunications regulation, usually from academic staff in the Quello Center¹²⁸.

Michigan State University is a land grant university accredited by the US Government.

University of Colorado at Boulder – Interdisciplinary Programme

The University of Colorado at Boulder offers a range of interlocking courses:

- Master of Science in Telecommunications
- Master of Engineering in Telecommunications
- Certificate in Computer and Network Security
- Certificate in Wireless Networks and Technologies
- BS Information Systems and MS Telecommunications
- MBA and MS Telecommunications
- ME in Engineering Management and MS Telecommunications
- Juris Doctor (JD) and MS Telecommunications

The University of Colorado is accredited by the US Government.

University of San Francisco – MBA in telecommunications management

As part of the Master of Business Administration (MBA) programme at the University of San Francisco, the McLaren School of Business offers an opportunity to concentrate on Communications and Technology Management (CTM)¹²⁹. This programme of elective courses is

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¹²⁴ <http://ksgexecprogram.harvard.edu/ProgramList.aspx>

¹²⁵ <http://www.law.harvard.edu/academics/courses/2008-09/>

¹²⁶ <http://cyber.law.harvard.edu/>

¹²⁷ http://www.cas.msu.edu/modules.php?name=Pages&sp_id=533

¹²⁸ <http://www.quello.msu.edu/>

¹²⁹ <http://www.usfca.edu/clubs/telecom/dept/>

supported by an advisory board of representative of ICT manufacturers and service providers. USF also offers an MA in Economics with a concentration in Communication Technologies Management and a non-degree Certificate Program.

The University of San Francisco is accredited by the US Government. The McLaren School is accredited by the AACSB.

University of Southern California – Advanced Management Program (AMP)

The Institute for Communication Technology Management (CTM) at USC offers a full complement of educational programs designed to meet the needs of 21st century executives and managers in this exciting environment¹³⁰.

USC is accredited by US Government. The Marshall School of Business is accredited by the AACSB.

University of the West Indies – Telecommunications regulation and policy

The UWI offers a Master of Telecommunications Regulation and Policy (TRP) at the Mona Campus on Trinidad¹³¹. A substantial part of the programme is taught by nonresident faculty, for example, from PURC, LSE and the University of Strathclyde. The course is substantially delivered “asynchronously over the Internet” though with some face-to-face seminars.

The TRP Programme Review Board comprises representatives from industry, CANTO, CTU, ECTEL, ITU and related international university programmes. The Board assists in the development and oversight of programme aims and objectives. The University of the West Indies has campuses on Barbados, Jamaica and Trinidad & Tobago, the latter hosting the Department of Electrical and Computer Engineering which is responsible for the TRP. [accreditation of UWI?]

Australia and New Zealand School of Government – Executive MPA

ANZOG was founded by a consortium led by the governments of Australia and New Zealand, with leading universities and business schools. ANZOG offers:

- fellowships
- executive Master of Public Administration (MPA)¹³²
- short courses (e.g., Managing Regulation, Enforcement and Compliance)¹³³

It is accredited by the governments of Australia and New Zealand.

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¹³⁰ http://www.marshall.usc.edu/ctm/executive_education/

¹³¹ <http://mrp.uwi.tt/>

¹³² <http://www.anzsog.edu.au/programs/empa.php>

¹³³ http://www.anzsog.edu.au/programs/managing_regulation.php

Monash University – LLM in Regulatory Studies

Monash University in Melbourne offers a Graduate Diploma or Master of Laws in Regulatory Studies¹³⁴. This programme covers a very wide range of areas subject to regulation including finance, health, utilities and telecommunications. Monash University is accredited by the federal Australian government.

University of New South Wales – LLM in Media, Communications & IT

The University of New South Wales (UNSW) offers a Master of Laws degree in media and ICTs¹³⁵. The programme provides a range of opportunities for study including competition law, intellectual property law, media and broadcasting law.

UNSW is accredited by the federal Australian government.

Dubai School of Government – Executive Diploma in Public Administration

The DSG operates in partnership with the Kennedy School of Government at Harvard University and in collaboration with the Lee Kuan Yew School of Public Policy at the National University of Singapore, the World Bank, the UNDP and the Brookings Institution (Washington DC). DSG offers:

- Executive Diploma in Public Administration¹³⁶
- Master of Public Administration¹³⁷

It operates the Middle East and North Africa e-Government Research Initiative¹³⁸. DSG is accredited by the Government of the UAE, with the Prime Minister as its patron.

L’Ecole supérieure des communications de Tunis

The Higher School of Communications of Tunis is a francophone institution founded in 1998¹³⁹. It offers technical and engineering courses at bachelor and master’s level. It is accredited by both the Ministries of Higher Education and of Communication Technologies.

L’Institut National des Postes et Télécommunications

Based in Rabat, the INPT offers training for telecommunications engineers¹⁴⁰. It has a number of institutional links to Francophone technical institutes and with a range of manufacturers. INPT also offers continuing professional development, including short courses in programming, technological issues and management, plus a Master’s degree in web technologies. With INT-Evry (France) it offers a master’s degree in telecommunications management.

[Affiliated with the regulator. Accredited by the government of Morocco.]

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¹³⁴ <http://www.monash.edu.au/pubs/handbooks/courses/3393.html>; <http://www.monash.edu.au/pubs/handbooks/courses/3394.html>

¹³⁵ http://www.law.unsw.edu.au/Future_Students/postgraduate/specialisation/mcit.asp

¹³⁶ <http://www.dsg.ae/en/main/design.and.curriculum.aspx>

¹³⁷ <http://www.dsg.ae/en/main/master.in.public.administartion.aspx>

¹³⁸ http://www.dsg.ae/en/main/egovernment.aspx#middle_east_research

¹³⁹ <http://www.supcom.mincom.tn/>

¹⁴⁰ <http://www.inpt.ac.ma/>

Graduate School of Telecommunication & Information Technology – MBA & MEng

The Graduate School was an extension of CTIT a training college in Addis Ababa, established by the Ethiopia Telecommunications Company (ETC), with assistance from a number of donors and equipment vendors¹⁴¹. GSTIT offer master's level courses in IT, telecommunications engineering and an MBA in telecommunications. There was no admission of student in the autumn of 2007 and GSTIT can now be considered closed. This appears to be due to the lack of support from ETC and from the government, whose interest has switched to more basic training for the new Chinese hardware suppliers.

University of South Africa – Postgraduate diplomas in ICTs

The University of South Africa (UNISA) is a distance learning institution, offering a very wide portfolio of certificate and degree programmes in South Africa and beyond. UNISA offers¹⁴²:

- Post-graduate Diploma in telecommunications and information policy
- Post-graduate Diploma in ICT policy and regulation
- Master of Arts in ICT policy and regulation

The MA can be completed in a minimum of two years and a maximum of five years. It also offers an MPA programme¹⁴³.

[UNISA is accredited by the Government of South Africa.]

University of the Witwatersrand – Master of Management

The LINK Centre, in the Graduate School of Public & Development Management at the University of the Witwatersrand, offers a Master of Management in ICT Policy and Regulation¹⁴⁴. The course began in 2005, with its fourth intake in January 2008. The MM (ICTPR) provides a formal post-graduate academic qualification for staff engaged in policy formulation and regulation of ICTs. The University of the Witwatersrand is accredited by Government of South Africa. The independent Council of Higher Education ensures quality¹⁴⁵.

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¹⁴¹ <http://www.gstit.edu.et/>

¹⁴² http://www.unisa.ac.za/contents/studyinfo/docs/download/brochures_2008/com_e.pdf

¹⁴³ <http://brochure.unisa.ac.za/brochure/data/pdf/07056.pdf>

¹⁴⁴ <http://link.wits.ac.za/training/training4.html>

¹⁴⁵ <http://www.che.ac.za/>

The need for improved and expanded training for telecommunication regulators has been demonstrated by the national authorities in developing and least developed countries, especially in Africa. This paper addresses the need for ICT regulatory training amongst African policy makers, parliamentarians, regulators, and judges. However, it is less clear that the systems are in place to identify the true scale of demand and to ensure that those participating in training are not subsequently lost to industry or to the brain drain to developed countries. The challenge is to find mechanisms that are appropriate, cost-effective, and scalable and anchored in Africa.

The Information for Development Program (infoDev)

infoDev's mandate is to invest in Global Knowledge on the use of Information and Communication Technologies for Development (ICT4D).

infoDev possesses the depth of experience to equip donors, development agencies, policymakers, and developing countries with the knowledge, tools, and best practices to understand more deeply the inextricable link between ICT and development.

infoDev is supported by the governments of Finland, Germany, India, Ireland, Japan, Korea, Sweden, Switzerland, United Kingdom as well as the European Union and the World Bank.

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