

EU-Africa cooperation on ICT under FP7 - Status & Perspectives -

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EXECUTIVE SUMMARY

This document provides a more informed context for the development of future Science and Technology (S&T) cooperation on Information and Communication Technologies (ICT) between the European Union (EU) and sub-Saharan Africa, particularly under the ICT Theme of the 7th Research Framework Programme (FP7). It was prepared within the framework of the START Project (also known as the EuroAfrica-ICT Initiative), and supported by the European Commission (DG INFSO - DG Information Society and Media) under the 6th RTD Framework Programme (FP6). The EuroAfrica-ICT Initiative is a multi-year set of activities initiated in September 2006 and developed by a consortium of three partners: Orionis (France, Project Coordinator), the Panos Institute West Africa (PIWA, Senegal) through its CIPACO project, and the Meraka Institute of CSIR (South Africa).

The need stems from a historically low level of participation of organisations from Sub-Saharan African countries into the FP6 IST (Information Society Technologies) thematic area. This can be largely attributed to the lack of contact between European and African researchers, and the lack of awareness on what opportunities exist to explore collaborative research. The EuroAfrica ICT initiative created opportunities for EU-African dialogue through workshops in both Europe and Africa, as well as opportunities for broader online inputs from key institutions and individuals. The outcomes of these activities have contributed to the development of a set of twelve recommendations, which provided the basis for the development of a EuroAfrica-ICT Manifesto. The contents of the Manifesto have been ratified by European and Africans with the intention that the conclusions be taken into consideration in the ongoing revision process of the FP7 Work Programme (WP) related to the ICT theme.

As background, the first part of this document briefly explores the context for Science and Technology cooperation, followed by a short analysis of the situation within Africa in terms of this cooperation framework. This is followed by an overview of current orientations and ongoing activities relevant to this context and how ICT research can be placed within this broader S&T framework. A brief analysis of cooperation frameworks for Europe and Africa is presented.

The second part provides an analysis of the enabling environment in Africa for ICT research and highlights areas where opportunities exist for future EU-Africa FP7 cooperation on ICT. The section includes an overview of existing capacities, including ongoing ICT R&D activities and proposes the following 12 recommendations for future cooperation:

#1. A Competing International Context	Strengthen the EU Positioning in Africa through the Development of a Deeper & Broader S&T Cooperation on ICT <i>At a time when many countries in the world are developing closer relations with Africa, the EU could strengthen its positioning through the development of a deeper and broader S&T cooperation on ICT</i>
#2. Growth and Opportunities in African ICT Markets	Support the Emergence of Promising African ICT Markets <i>EU-Africa S&T cooperation on ICT can support the present emergence of promising African ICT markets</i>
#3. The African ICT Institutional Framework	Rely on an Already Structured African ICT Institutional Framework <i>The development of EU-Africa S&T cooperation on ICT can rely on an already structured African ICT institutional framework</i>

#4. African National ICT Policies and Strategies	Benefit from Existing African ICT Policies & Strategies <i>Cooperation in ICT research between the EU and sub-Saharan Africa can benefit from existing African ICT policies and strategies</i>
#5. The African ICT Regulatory Environment	Benefit from the Ongoing Developments of African Regulatory Frameworks <i>The emerging markets for ICT products and services in sub-Saharan Africa are benefiting from the ongoing development of suited regulatory frameworks</i>
#6. The African ICT Research Priorities	Concentrate on Research Priority Areas Identified at African National & Regional Levels <i>Efforts to develop S&T cooperation on ICT Should concentrate on research priority areas identified at African national and regional levels</i>
#7. The African ICT Research Capacities	Build on the Existence of a Growing Number of African Organisations Offering Skills & Experience in ICT Research <i>The development of EU-African S&T partnerships on ICT can build on the existence of a growing number of African organisations offering skills and experience in ICT research</i>
#8. The African ICT Networks	Build & Expand on Efficient African Networks <i>The development of EU-Africa S&T cooperation on ICT can build and expand on efficient networks (NGOs, networks, platforms, associations, media) in sub-Saharan Africa</i>
#9. The African ICT Private Sector	Encourage the Involvement of the African Private Sector in EU-funded R&D Projects in the ICT Field <i>It is essential to encourage the involvement of the African private sector in EU-funded R&D projects in the ICT field</i>
#10. The Development of e-Infrastructures in sub-Saharan Africa	Ensure a Full Connection with GEANT2 <i>It is of mutual strategic interest for Europe and Africa that a full connection can be quickly ensured between GEANT2 and the research, and education e-Infrastructures emerging in sub-Saharan Africa</i>
#11. African Awareness of Cooperation Perspectives	Build on the Strong Interest of the African ICT Community in Joining FP7 Projects <i>The present level of interest from the African ICT community in the opportunities offered by FP7 should contribute to the effective involvement of African organisations in FP7 projects in the short term</i>
#12. European Projects, Programmes and Initiatives	Ensure the Best Synergies Between Policies, Projects, Programmes & Initiatives Developed in Europe <i>To maximise the impact of EU-Africa S&T cooperation in ICT, it is essential to ensure the best synergies between policies, projects, programmes and initiatives developed in Europe</i>

ACKNOWLEDGEMENTS

To ensure that views and accumulated knowledge of the European and African ICT communities at large are taken into consideration in the preparation of the present document, it has been subjected, in its successive versions, to a EuroAfrica-ICT open consultation process through the www.EuroAfrica-ICT.org dedicated website.

Remarks and suggestions on the document have also been requested from the "EuroAfrica-ICT group", an open constituency of European and African organisations active in the development of S&T cooperation between the EU and sub-Saharan Africa on ICT. These group members are regularly invited by the European Commission to meet in Brussels (Belgium) to exchange information and experience, share visions and envision joint actions.

This document has also been proposed for discussion to the organisations attending the EuroAfrica-ICT awareness workshops periodically organised in Africa within the framework of the START/EuroAfrica-ICT initiative.



Figure 1: Second Meeting of the EuroAfrica-ICT Group - March 2007, Brussels (Source: the START Consortium)



Figure 2: HE Yaye Kène Gassama, Minister of Scientific Research, Senegal, at the 2nd EuroAfrica-ICT Awareness Workshop - March 2007, Dakar (Source: the START Consortium)

Last but not least, the document has been submitted for in-depth review to the "EuroAfrica-ICT expert panel members", composed of 15 European and African experts (see member list on next page) who have kindly accepted to provide the EuroAfrica-ICT partnership with their inputs, remarks and suggestions.

The authors (the START consortium members: Orionis, France - The Meraka Institute of CSIR, South Africa - The Panos Institute West Africa, Senegal) would like to express their warmest thanks to all persons and organisations having contributed to the preparation of this document.

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INTRODUCTION

This document has been prepared within the framework of the “START Project”, also known as “the EuroAfrica-ICT Initiative” (please visit www.EuroAfrica-ICT.org for full details). The initiative is supported by the European Commission (DG INFSO - DG Information Society and Media) under the 6th RTD Framework Programme (FP6). The EuroAfrica-ICT Initiative is a multi-year set of activities initiated in September 2006 and developed by a consortium of three partners: Orionis (France, also Project Coordinator), the Panos Institute West Africa (PIWA, Senegal) through its CIPACO project, and the Meraka Institute of CSIR (South Africa).

The EuroAfrica-ICT initiative aims at contributing to the development of increased Scientific and Technological (S&T) cooperation between the European Union (EU) and sub-Saharan Africa, under the ICT Theme of the 7th research Framework Programme (FP7). It stems from a historically low level of participation of organisations from Sub-Saharan African countries into the FP6 IST (Information Society Technologies) thematic area. This can be largely attributed to the lack of contact between European and African researchers, and the lack of awareness on what opportunities exist to explore collaborative research.

The purpose of this document is to provide a more informed context for the development of future EU-Africa S&T cooperation on ICT. Existing information was specifically collected for this project from secondary sources and from the partners of the START Project (promoters of “the EuroAfrica-ICT Initiative”).

As stated in the “acknowledgements” section of this document further valuable inputs were received from the “EuroAfrica-ICT Expert Panel Members”, participants in the periodical meetings (“concertation”) of the “EuroAfrica-ICT Group”, participants in the “EuroAfrica-ICT Awareness Workshops”, and respondents to the “EuroAfrica-ICT online Open Consultation”.

The document is presented in three parts:

- Part 1 briefly explores the context for Science and Technology cooperation, followed by a short analysis of the situation within Africa in terms of this cooperation framework. This is followed by an overview of current orientations and ongoing activities relevant to this context and how ICT research can be placed within this broader S&T framework. A brief analysis of cooperation frameworks for Europe and Africa is also given in this part of the report.
- Part 2 presents a concise analysis of the enabling environment in Africa for ICT research and highlights areas where opportunities exist for future EU-Africa FP7 cooperation on ICT. The section includes an overview of existing capacities and proposes recommendations for future cooperation.
- The 3rd section of this document presents the EuroAfrica-ICT Manifesto which has been inspired by the activities developed by the EuroAfrica-ICT Project. These activities have led to some conclusions that are described into the Manifesto. It is expected that these conclusions are duly taken into consideration in the ongoing revision process of the FP7 Work Programme (WP) related to the ICT theme.
- The final section (appendices) of this document includes some useful material: list of figures, list of acronyms, list of selected information resources, list of useful web links, and finally a brief overview of the “EuroAfrica-ICT Mapping Database” developed in the framework of the Initiative. This database contains approximately 400 references to institutions, programmes, projects and activities that could usefully be used as the foundation for future EU-African cooperation in ICT.

PART I - EU-AFRICA COOPERATION ON ICT - STATE OF THE ART

1.1 - The Science & Technology (S&T) Context

In order to address the objective of the START/EuroAfrica-ICT project, one needs to understand the context in which this participation will happen. This is broadly described here in terms of the role of S&T in development, the national impact of S&T, the globalisation of scientific effort, the associated policy environments framing the national and international S&T aspects, and the aims and objectives of FP7 itself.

While it is recognised that this is a complex environment with many interlinked issues, this document looks specifically at the issue of FP7/ICT participation.

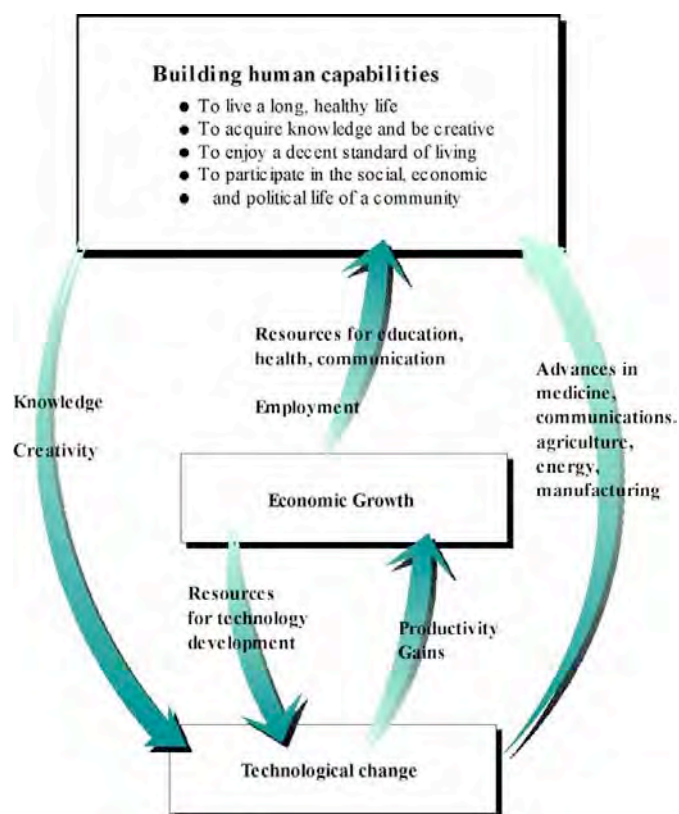
1.1.1 - The Role of S&T in Development

The departure point for the arguments described within this document is the potentially positive correlation between S&T advancement and the advancement of sustainable development. The United Nations Development Programme's (UNDP) Human Development Report 2001 develops this argument considerably (See Figure 3) and the linkages within the sustainable development and S&T endeavours were rigorously debated and accepted during global fora such as the World Summit on Sustainable Development (WSSD).

In literature and numerous strategies (South Africa's National R&D Strategy, 2002 - UNDP, 2003 - NEPAD's S&T CPA, 2005), it is acknowledged that S&T can be important contributors to socio-economic development, *if* choices are made to translate them into social transformation:

- Firstly, they contribute through tackling a variety of problems affecting both the developed and developing world such as the provision of appropriate health care and educational services, food security, sensible governance and physical infrastructure development through the application of new technologies and scientific know-how,
- Secondly, they contribute to economic growth on both institutional and country/regional levels through embedding scientific knowledge and technologies in services, products and processes supporting increased productivity and competitiveness (Wagner, 2001),
- Finally, they contribute to issues such as expanding the supply of trained graduates, and further enabling business and nations to innovate.

Figure 3: Links between Technology and Human Development (Source: UNDP Human Development Report 2001)



A second pillar of the argument deals with the national environment in which S&T benefits accrue. S&T activities do not happen in a vacuum. They are guided by specific

policies and strategies developed on the national level. As illustrated by a number of studies (Wagner, 2001 - UNDP, 2003), the differences in the ability of countries and regions to engage appropriately with the S&T agenda creates an ever-growing divide between those that struggle with S&T engagement and those that fully integrate S&T as core to socio-economic advancement. Within the latter, the consensus view is that government policies that support S&T are essential. Yet, debates on the need for these types of policies are still found in developing countries, even though the studies mentioned earlier sketch a compelling case.

A critical issue to consider in this debate is that the focus on S&T for sustainable development does not and should not detract from the key developmental focus that dominate discussions in the developing world. Synergies between the S&T domain and the sustainable development agenda should be recognised and indeed strengthened. Recognition of the unique value contribution of all actors within the sustainable development domain is critical.

Moving beyond the national picture, the issue of scientific collaboration and globalisation of S&T endeavours is key to the argument. The literature (Wagner, 2001 - DTI OST UK, 2004 - Sonnenwald, 2007) provides a strong case for the benefits of international collaboration in S&T. Africa contributes about 1% of the global S&T knowledge production, although this figure does not take into account the African Diaspora contribution and some papers published in African publications. If we accept that this scientific knowledge positively impacts on Africa's socio-economic future, then access to the other 99% is critical to accelerate the continent's development and the need to gain increased access to global networks and collaborative research efforts becomes critical. Likewise, the ability to draw in the African Diaspora could usefully be considered in building international bridges.

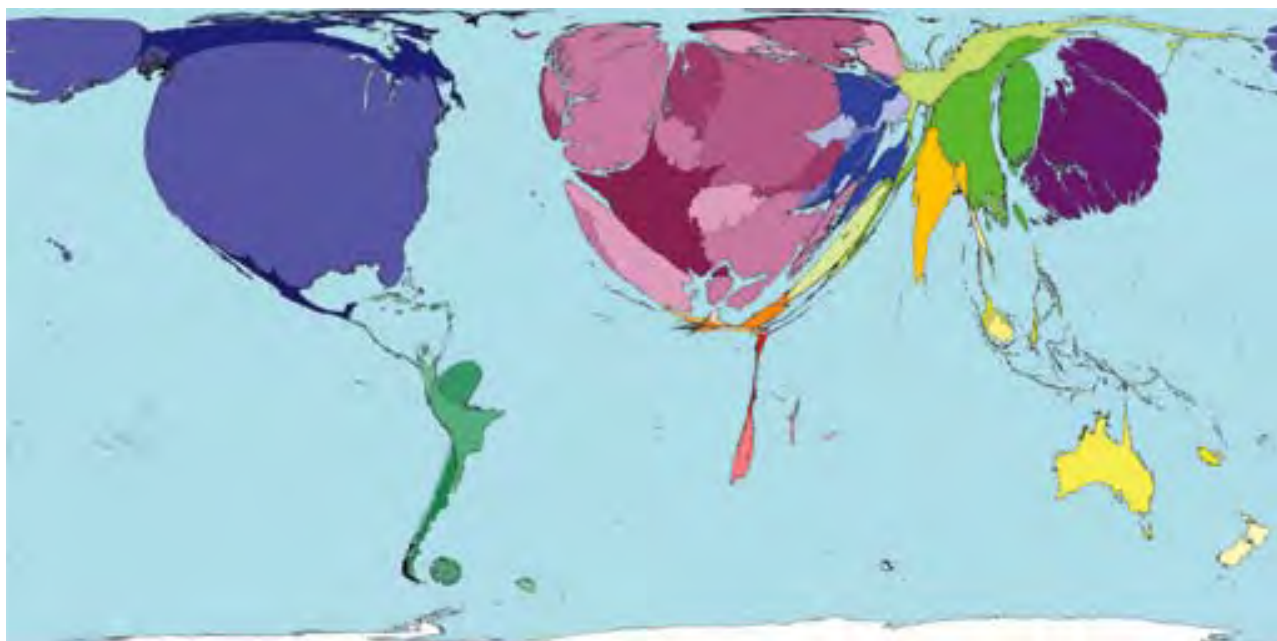


Figure 4: A worldwide Overview of Scientific Research (Source: Worldmapper)

Territory size shows the proportion of all scientific papers published in 2001 written by authors living there

There are key success factors influencing the successful execution of international S&T collaboration. Developing countries have to do more than open their doors to ensure an easy flow of technologies and know-how. Additional effort is required to develop their S&T capacities, supported by associated policies and infrastructure. Their ability to absorb, use, diffuse, adapt and improve imported know-how and technologies depend heavily on it. Technology transfer activity is also not sustainable without capacity to generate new knowledge. This document examines a number of issues relating to this absorptive capacity and the generation of knowledge as important contextual elements for the anticipated collaboration efforts. Figure 6 below illustrates an alternative view in which the

development of human capacity is regarded as pivotal to the development of S&T in support of sustainable development.

While significant effort is evident on issues of national nature, the regional aspects, especially from a policy and strategy perspective, provide the framework in which regional programmes such as the FP7 operate. Participation of African countries in the FP7 should therefore be considered within the context of the EU-Africa perspectives and other international relationships to draw out issues of specific relevance to S&T cooperation and development.

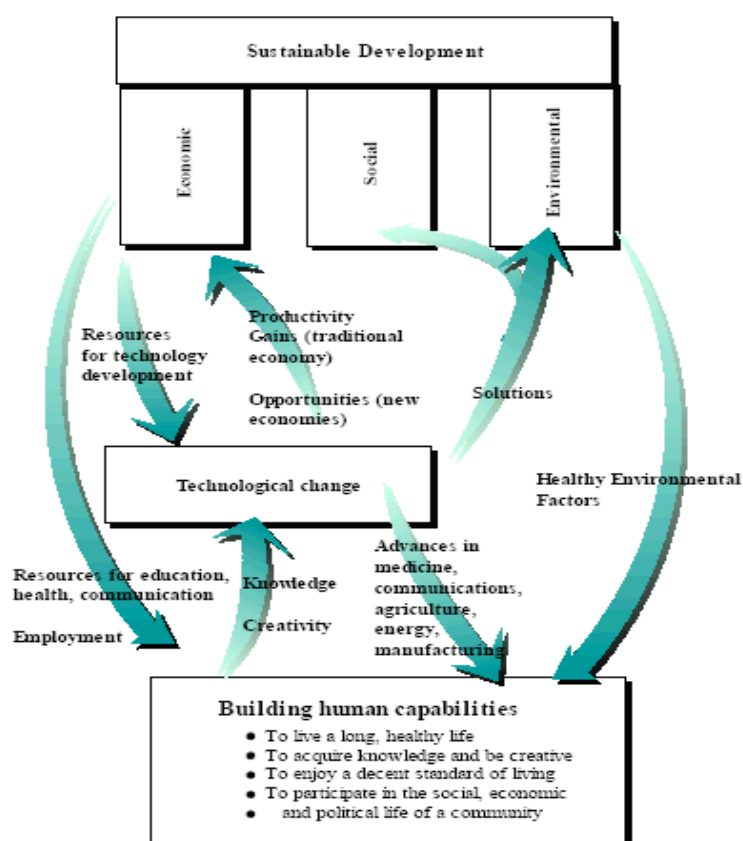


Figure 5: Links between Human Capabilities, Technological Change & Sustainable Development (Source: J. J. Eksteen, M. Woodborne - 2002)

1.1.2 - National and Regional Contexts in sub-Saharan Africa for S&T in Development

Under the NEPAD S&T Consolidated Plan of Action (CPA), developed in 2005, Africa has developed a theoretical framework that aims to enable Africa to harness and apply science, technology and related innovations to eradicate poverty and achieve sustainable development. It also aims to address the production of scientific knowledge and technological innovations.

It is encouraging to note the effects of S&T-positive policies within Africa. Growth in government funding for R&D is typically one of the first indications of the implementation of such policies. Several African nations are in the process of increasing their investment in S&T. Rwanda grew its investment in science to 1.6% of Gross Domestic Product (GDP),

aiming for a target of 3% within the next 5 years. South Africa also aims to invest 1% of GDP by 2009 in R&D by building on the National R&D Strategy adopted by its Cabinet in 2002. The number of loans from institutions such as the World Bank (WB) and African Development Bank (ADB) are supporting capacity development and closer university-industry ties in countries such as Zambia and Uganda. These examples stand in sharp contrast against those countries where, for various reasons, the development of S&T policies is either not being addressed, is still under debate or not being implemented.

While significant progress is evident, Africa as a whole lacks strong S&T infrastructure on which S&T cooperation activities could be built. Two main problems can be underlined here, both typical symptoms of policy regimes that do not foster an integrative approach to S&T and infrastructural development:

- The lack of relations between the industry and S&T research - i.e. between the private sector and the research community, and
- The lack of relations between national industrial strategies and R&D initiatives - i.e. between state and non-state stakeholders.

It is increasingly accepted that home-grown science is a critical aspect to be addressed by policy. It is imperative that African nations must educate, grow and support a new generation of scientists who will be able to solve local and global problems. This often translates into reforming educational systems, building world-class research universities and establishing centres of excellence that can collaborate with the best of the world to deal with the complex challenges faced by both the developed and developing world. As was made clear earlier, scientific endeavour on its own, cannot address the challenges of poverty and development. These are as much social and political as they are scientific and technical. Policies that create and sustain broad channels of communication between these two communities, enabling them to work together, exchange ideas, and learn from one another are essential, creating the dynamic in the systems as described earlier.

1.1.3 - Why is S&T Cooperation on ICT Important for Sub-Saharan Africa?

Cooperation in S&T can take different forms:

- Developing joint and cooperative science projects
- Facilitating the exchange of scientific results
- Providing protection and allocation of intellectual property rights
- Holding workshops and conferences
- Sharing joint laboratories and libraries
- Setting common standards for Research and Development, and
- Facilitating access for researchers to research facilities

This cooperation also encourages investment in national science infrastructure and education, and facilitates the implementation of scientific standards.

Numerous advantages can be drawn from S&T cooperation. For African countries, below are stressed some of them:

- Accessing new knowledge, foreign skills and training opportunities
- Accessing larger research facilities
- Avoiding the cost of duplication of research
- Widening social networks and establish fruitful relations at an international level
- Opportunities to establish multidisciplinary research activities and teams
- Easier access to international funding
- Building or strengthening local and regional R&D capacities, including R&D management
- Stimulating investments in R&D at a national or regional level
- Enhancing the quality of academic education

S&T cooperation with Africa is also key to Europe, so that it can benefit from African research frameworks, and specific expertise which Africa has developed e.g. Free and Open Source Software (FOSS), connectivity solutions (mesh networks), and wide-ranging research in the application of ICT for development.

The same arguments as already mentioned for S&T can be applied to ICT and in particular because it is recognised as one of the key technologies for development.

"The new technologies that are changing our world are not a panacea nor a magic bullet. But they are, without doubt, enormously powerful tools for development. They create jobs. They are transforming education, health care, commerce, politics and more. They can help in the delivery of humanitarian assistance and even contribute to peace and security"

*Kofi Annan, former Secretary General of the United Nations
November 20, 2001*

A strong relationship exists between ICT, development and poverty reduction. Three factors contribute to this:

- The wider access to information and knowledge
- The stronger voice of the people participating in democratic processes and decision-making affecting their lives
- And finally the increasing networking and communication among people and organisations.

As stressed by the 2005 World Summit on the Information Society (WSIS) in Tunis, and through the Tunis Plan of Action, ICT must be effectively integrated into development activities if the internationally agreed Development Goals (the Millennium Development Goals - MDGs) are to be achieved by 2015

- ICTs are an increasingly powerful tool for participating in global markets, promoting political responsibility, improving the delivery of services (health, education, agriculture); and enhancing development opportunities
- The role of ICT as an enabler of social and economic development has been widely recognised by international organisations, various stakeholders and developing countries since the end of 1990's. The transformative power of ICTs for development in Africa is now widely recognised. Developing S&T cooperation on ICT is, in this framework, particularly relevant since it will enable to foster long-term and sustainable strategies for development
- Information, knowledge and communication have been core elements of sustainable development efforts. The major changes with regard to information flows and communication brought by ICT are the following: interactivity, speed, lower costs, and integration.

The diagram below illustrates this inter-relationship between knowledge, being able to access such knowledge and facilitating the use of it. All three areas intersect into the focus area of ICT for development:

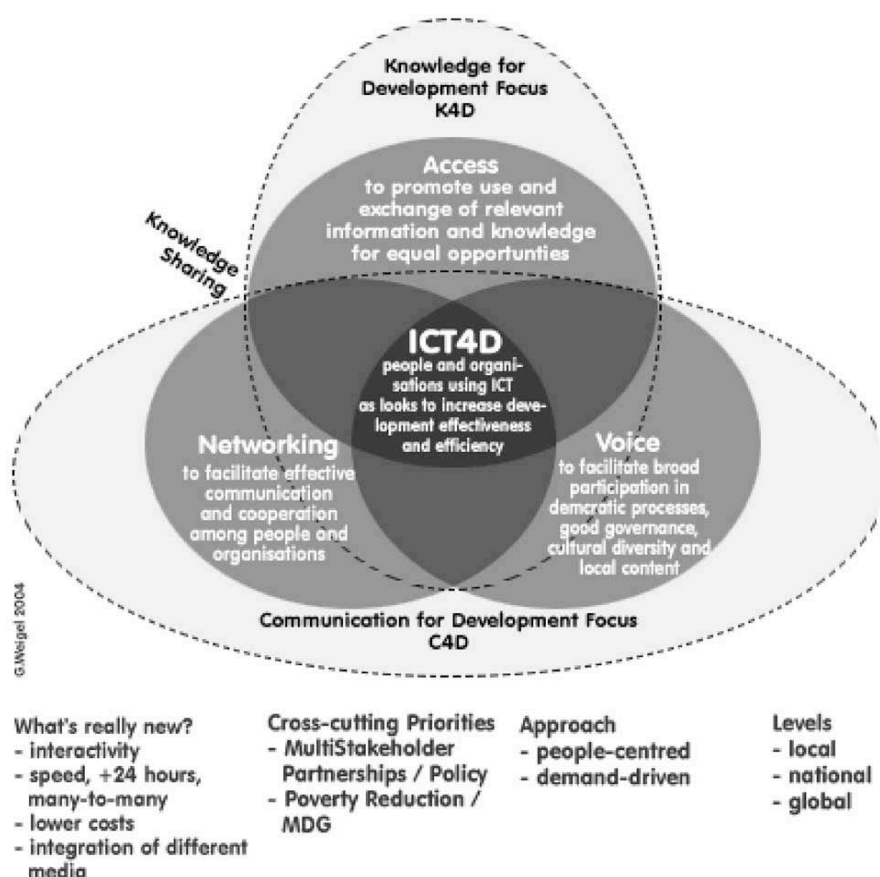


Figure 6: ICT4D - Connecting People for a Better World, Lessons, Innovations & Perspectives of ICT in Development (Source: G. Weigel and D. Waldburger - 2004)

The increase in scientific and technological capabilities across the developing world and in emerging economies, most notably in Brazil, China, and India, have opened significant opportunities for South-South cooperation. This is particularly true for the science-poor countries of sub-Saharan Africa. For instance:

- The Chinese USD 5 billion Development Fund for Africa is designed to assist African nations to meet the United Nations Millennium Development Goals (MDG) through cooperative projects with China.
- Brazil's Pro-Africa Program supports scientific and technological capacity building in sub-Saharan Africa, especially in the Portuguese speaking countries, Angola and Mozambique.
- India, Brazil, and South Africa have launched the tripartite IBSA initiative to finance joint projects addressing common challenges in which S&T will contribute significantly.

When considering the dynamics in terms of knowledge activity and market conditions, it is not far-fetched to see how these South-South partnerships will translate into significant market opportunities for those countries investing in the S&T capabilities in Africa, a key lesson for European organisations.

While this might seem like a threat, it actually creates a significant opportunity for EU engagement through instruments such as the FP7. While significant effort is evident on issues of national nature, the regional aspects, especially from a policy and strategy perspective, provide the framework in which regional programmes such as the FP7 can operate.

Europe is the closest, both geographically and historically, influential region with the ACP countries. The EU is important for Africa as a major contributor of aid and development assistance. African countries have close trading ties with the EU and the EU is a very significant investor in the continent. A close partnership in the peace and security sector also exists. Developing and strengthening S&T cooperation on ICT between Europe and sub-Saharan Africa is of mutual interest today and will logically complement and support the existing cooperation framework.

1.2 - Background Information

1.2.1 - The African Union (AU)

The African Union is an organisation consisting of 53 African states. Established in 2001, the AU was formed as a successor to the amalgamated African Economic Community (AEC) and the Organisation of African Unity (OAU). The purpose of the Union is to help secure Africa's democracy, human rights, and to establish a sustainable economy, especially by bringing an end to intra-African conflict and creating an effective common market. It also seeks to accelerate the process of integration in the continent to enable it to play its rightful role in the global economy while addressing multifaceted social, economic and political problems compounded as they are by certain negative aspects of globalisation.

The idea of creating the AU was revived in the mid-1990s as a result of the efforts of the African Unification Front. The heads of state and government of the OAU issued the Sixth Declaration in September 1999 calling for the establishment of an African Union. Following the Summits of Lomé (2000) and Lusaka (2001), the African Union was launched in Durban on July 2002, by its first president Thabo Mbeki, at the first session of the Assembly of the African Union.

The Vision of the AU

- The AU is Africa's premier institution and principal organisation for the promotion of accelerated socio-economic integration of the continent, which will lead to greater unity and solidarity between African countries and peoples
- The AU is based on the common vision of a united and strong Africa and on the need to build a partnership between governments and all segments of civil society, in particular women, youth and the private sector, in order to strengthen solidarity and cohesion amongst the peoples of Africa
- As a continental organisation it focuses on the promotion of peace, security and stability on the continent as a prerequisite for the implementation of the development and integration agenda of the Union

This Pan African institution is therefore vital to supporting the use of ICTs and S&T for economic and social development. The New Partnership for Africa's Development (NEPAD) - a structure of the AU - is playing the central role in driving the use of ICTs and S&T to support African countries.

1.2.2 - The New Partnership for Africa's Development (NEPAD)

NEPAD is a merger of two plans for the economic regeneration of Africa:

- The Millennium Partnership for the African Recovery Programme (MAP)
- The OMEGA Plan for Africa

At an extraordinary Summit in Libya, in March 2001, the Organisation of African Unity (OAU) agreed that the MAP and OMEGA Plans should be merged. The United Nations Economic Commission for Africa (UNECA) developed a "Compact for Africa's Recovery" based on both these plans and on resolutions on Africa adopted by the United Nations Millennium Summit in September 2000, and submitted a merged document to the Conference of African Ministers of Finance and Ministers of Development and Planning in Algiers, May 2001. In July 2001, the OAU Assembly of Heads of State and Government meeting in Lusaka, Zambia, adopted this document under the name of the New African Initiative (NAI). The leaders of G8 countries endorsed the plan on July 20, 2001 which was named as the New Partnership for Africa's Development (NEPAD) in October 2001.

NEPAD is now a program of the African Union, though it has its own secretariat based in South Africa to coordinate and implement its programmes.

NEPAD is based on underlying principles of a commitment to good governance, democracy, human rights and conflict resolution; and the recognition that maintenance of these standards is fundamental to the creation of an environment conducive to investment and long-term economic growth. NEPAD seeks to attract increased investment, capital flows and funding, providing an African-owned framework for development as the foundation for partnership at regional and international levels.

ICT and NEPAD

A key strategy of NEPAD focuses on ICT. This is captured in their ICT Framework Document, which mentions that "the goals of achieving a Common Market and an African Union can benefit immensely from the revolution in information technology. In addition to fostering intra-regional trade, the use of ICTs could also accelerate Africa's integration into the global economy".

According to NEPAD's framework, ICT can have a central impact to;

- Provide an impetus to the democratisation process and good governance
- Facilitate the integration of Africa into the new information society
- Better use the existing complementarities to provide training and allow the emergence of a critical mass of professionals
- Establish African programmes in the research sector as well as technological exchange programmes capable of meeting the continent's specific needs, with particular regard to the fight against illiteracy
- Identify and exploit opportunities for trade, investment and finance
- Establish regional distance learning and health education programmes to improve the situation in the health and education sectors
- Help, in conflict management and control of pandemic diseases, to the implementation of an efficient early warning mechanism by providing the tools for constant monitoring

In this regard, the objectives of the NEPAD ICT component are to:

- Increase tele-density to an adequate level of access for households
- Lower the cost and improve reliability of service
- Achieve e-readiness for all countries in Africa
- Develop and produce a pool of ICT-proficient youth and students from which Africa can draw trainee ICT engineers, programmers and software developers
- Develop local content software, based especially on Africa's cultural legacy

In addition, NEPAD has constructed a Plan of Action which consolidates S&T programmes (Africa's Science and Technology Consolidated Plan of Action). This plan of action that implements the decisions of the first African Ministerial Conference on Science and Technology (November, 2003 - Johannesburg, South Africa) gives practical

manifestation of the agreements and decisions of the Secondary Ordinary Session of the Assembly of the AU (July, 2003 - Maputo, Mozambique). Having evolved from several continental and regional meetings, it was adopted in November 2003 and consists of 12 flagship programme and policy areas. The meeting also established the African Ministerial Council on Science and Technology and stressed the urgency of "building the continent's capacities to harness, apply and develop science and technology in order to eradicate poverty, fight diseases, stem environmental degradation, and improve economic competitiveness".

1.2.3 - Specific Pan-African Agreements on S&T Cooperation

African countries and regional structures have also developed policy frameworks and plans for the use of ICT to develop their economies and countries. The huge challenges facing the higher education and research community in Africa have been widely recognized and a few pan-African initiatives have been launched in the past five years to find solutions. They are key enabling instruments in raising the profile of African research in general (and ICT research in particular). Introduced below are some of the major cooperation plans related to S&T cooperation and having developed a focus on ICT.

a) The NEPAD Africa's S&T Consolidated Plan of Action (CPA)

The S&T Consolidated Plan of Action (CPA) was released in 2005 and is a consolidation of the actions of NEPAD and the African Union (AU). Its intention is to strengthen the S&T basis in Africa, having been weakened by a lack of investment and too much emphasis on short-term activities in developing human S&T capacity.

The ICT cluster has identified two key research projects (with a strong emphasis on the development of software, and Free and Open Source Software (FOSS)):

- The first focuses on e-learning, building on the KEWL (Knowledge Environment for Web-based Learning) next generation platform which was developed by the University of the Western Cape (South Africa). The project aims to:
 - o Develop new generations of e-learning systems
 - o Train users on new e-learning systems
 - o Improve infrastructure for ICT software research and development
- The second project will focus on e-health applications and particularly on the development of software to support the administration of anti-retroviral drugs to combat HIV/AIDs. A total of USD 2 million has been budgeted for these activities.

The Plan of Action makes provision for the strengthening of S&T decision-making capacity on the continent, through focused interventions on increasing regional cooperation, building common strategies including a pan-African biotechnology strategy, the creation of technology parks, and the raising of public awareness about S&T.

b) The African Regional Action Plan on the Knowledge Economy (ARAPKE)

The ARAPKE framework developed upon request from the Second African Regional Preparatory Conference for the World Summit on the Information Society (WSIS - Tunis, 2005), held in Ghana in 2005 is based on the "Accra Commitments for Tunisa 2005".

The vision is defined by both the African Information Society Initiative (AISI) and African Union. The action plan is designed to:

- Define an African approach and positions in the process of preparation of the second phase of WSIS, to become the African approach in the current debate on the main issues of the WSIS

- Create a foundation for national, regional and international cooperation over a period of 10 years, up to 2015, with the aim of improving the life of the African populations

This Action Plan aims at building a region fully benefiting from ICTs by the year 2015. R&D has been recognised as one of key area of the framework for an African Regional Action Plan on the Knowledge Economy (ARAPKE).

c) The ICT R&D and Innovation Strategy for South Africa

ICT has been identified by the South African President, as well as by a number of other Government strategic and policy initiatives, as a “key technological platform” that has a pervasive impact on government service delivery in domains such as education, health and social facilities, and broad aspects of industrial and economic development. Optimal utilisation of information and communications technology for such social and economic benefit requires vigorous and focused research and innovation activity as well as a strong skills and knowledge base.

The National R&D Strategy (2002) sets the agenda and framework for maximising the contribution of research, development and innovation in S&T in South Africa. It specifically identifies ICT as a key mission to bring about improved quality of life for all citizens and boost the economic competitiveness of industry.

The ICT R&D and Innovation Strategy has been developed by the Department of S&T (DST) in conjunction with national experts and international advisers. The strategy aims at examining the current state of ICT R&D in South Africa and proposes a number of objectives, strategies, actions and interventions to realise a vision for ICT R&D and Innovation that will optimally position South Africa to take advantage of the benefits of ICT and the associated Knowledge Society.

The ICT R&D and Innovation strategy has three clear priorities:

- Develop focused and strengthened ICT research activities to achieve world-class research competencies in South Africa
- Build a strong and robust ICT innovation environment in South Africa
- Build advanced human capital (ICT skills base) for research and industry

The strategy will provide direction and critical mass for R&D and innovation in ICT technology domains, which were identified during the foresight process, such as High-Performance Computing, Human Language Technologies, Information Security, Open Source Software, Software Engineering and Software Architecture, Mobile, Wireless and Satellite technologies, FutureWeb applications, Geomatics and Spatial Technologies and Next Generation Networks and ICT application domains such as ICT for Disability, Education, Health, Service Delivery, Agriculture, Manufacturing, Resource Based Industries, and Aerospace.

1.3 - R&D on ICT in Africa: Status

1.3.1 - Policy and Strategy

Most African countries have developed national ICT policies and strategies that encourage the use of ICT in education, health and agriculture and promote research and development in ICT. However, the rhetoric around ICT R&D has not been realised in almost all African countries, largely due to lack of research funding and insufficient human resources to carry out research. Besides, not all countries have developed frameworks for ICT research and development at national and regional levels.

Research agendas for ICT and sustainable development can be defined from various perspectives including applied research aimed at improving computing hardware and software, network and connectivity research, content and

human capacity, ICT in different development fields (e.g. ICT in education), investigating the social implication of computing on individuals and organisations, especially on development and the community. While some research is underway in the applications of ICTs in development and policy areas, there is limited activity in the core hardware and software, connectivity and networking streams. Research on the social implication of computing is also minimal, even though it seems to be a focus area for most research activities.

ICT-related research at national level is weak, often spearheaded by individuals and donors rather than academic institutions or the private sector. Much of the ongoing research cannot be regarded as innovative and is often no more than repackaging of innovative solutions developed outside of Africa.

- Creation of ICT R&D sub-regional Centres of Excellence
- Creation of ICT incubator centres in each sub-region
- Setting up funds to promote R&D
- Creation of sub-regional S&T parks
- Development of partnerships between universities
- Creation of the African Research Network on the Information Society (ARN)
- Outsourcing South/South and North / South
- Building the capacity of academia to enable active and meaningful contribution to government policy processes

Figure 7: Key action lines for R&D in the ICT field (Source : ARAPKE)

1.3.2 - ICT Infrastructure

Universities lack state-of-the-art ICT infrastructure and connectivity to carry out teaching and research, not only in the ICT sector but also across all other disciplines. Reliable energy sources needed to operate the required ICT infrastructure are likewise lacking in many instances.

The lack of ICT infrastructure has resulted in the isolation of universities at the continent level, with little regional collaboration possible due to the limitations imposed by expensive and frequently unavailable broadband capacity. Efforts to develop National and Regional Education Research Networks that promote advanced broadband connectivity are at an early stage of development. Examples include

- The UbuntuNet Alliance (www.ubuntunet.net) that aims to link major universities in eastern and southern Africa
- The GEANT research network which links selected African countries to Europe
- The African Research Network initiative (AFREN) which is being driven through the African Association of Universities in establishing national research networks

This poses huge challenges to the expansion of collaborative research activities with countries in the North. Europe's extensive experience in wireless/broadband technologies could be usefully applied in providing African solutions, not only in R&D environments, but also in key areas such as eHealth and eAgriculture.

1.3.3 - Technology Transfer

The low level of ICT R&D is exacerbated by the limited collaboration between the private sector and research institutions, particularly the universities. Contrary to experiences in developed countries, there is limited interaction between firms in the ICT sector and universities or research institutions concerning technology transfer. A few countries such as South Africa, Kenya, Nigeria and Mozambique have set up incubators and the concept of science

parks is emerging. Other countries are in the process of launching such initiatives, e.g. Ivory Coast, Nigeria and Senegal. Intellectual Property Rights (IPR) have also not been given sufficient attention but will be required if future European-African ICT technology transfer is to be encouraged.

ICT curricula, particularly in computer science and engineering, fall far behind market needs and graduates generally lack understanding of the business environment, often entering the job market without the necessary skills to be used effectively in the ICT sector without considerable training. The private sector has not been able to capitalise on the theoretical strengths of academic institutions, although there have been recent attempts by multinationals to engage in partnerships such as the Cisco Networking Academies, Microsoft's ICT graduate programmes, and the Bell Computer University in Nigeria.

The ICT sector has been prioritised by government policy in almost all African countries, but generally this has not resulted in increasing technological capabilities in other sectors, nor contributed to increased competitiveness for countries. The extract below alludes to the need to approach North-South collaboration on R&D through a greater emphasis on institutional learning and change.

Technological Capabilities and Competitiveness in sub-Saharan Africa - Fostering technological capabilities in sub-Saharan Africa (Source: Carlo Pietrobelli - Nov. 2006)

The few available data for sub-Saharan Africa suggest that the continent lags behind other developing regions. Many firms are technologically isolated, working in an information-poor environment where interactions with other firms and organisations are often restricted and collective support systems are largely non-existent or poorly delivered. The relationships between firms and technology institutions in sub-Saharan Africa are weak... Business associations and other industry-specific organisations do exist, but they deliver virtually no technology services to their members. Neither are collective support systems, like technical extension centres, much used.

(...) While the research institutes do little to establish working relationships with local companies, the firms think poorly of institutes' abilities and expect little from them. As a result, technology institutions do no industrial research, and are used by just a few companies that, for the most part, simply want to access testing facilities.

(...) In either case, the differences in background, attitudes and 'technological language' between firms and institutions, combined with the lack of cooperation between public and private support service providers, makes it hard to link the two communities.

The article recommends "North-South partnerships can also help build S&T capacity. In this regard, an 'innovation system' could provide a framework for building the collective capacity of networks of universities, research institutes and government organisations, interactively linked with a view to innovate. This contrasts with the conventional view of capacity development as accumulating stocks of research infrastructure and trained scientists, so the traditional objectives of North-South partnerships need rethinking to include institutional learning and change."

The lack of engagement of the African private sector in R&D might also be explained through this comment made by one of its stakeholders during the open consultation process launched by the EuroAfrica-ICT consortium:

"Businesses in Africa are constrained by the legal and policy environments that are not enabling, finance and high taxation constraints; we are in our day to day business very busy by these issues. If the situation was adequate, the private sector could engage in R&D .New businesses and young managers (...) understand today the importance of research but they cannot engage in it alone"

Comlan Hervé Hountondji, Director H2COM, Benin
(interviewed in July 2007)

Increasingly, civil society has been playing an important role in ICT research in Africa. Even though most research undertaken by its stakeholders cannot be qualified as "scientific", a number of organisations investigate ICT usages and policies and produce reports. Examples include PIWA in West Africa, CIPESA in Southern and Eastern Africa, the Association for Progressive Communication (though it's African network), Yam-Pukry in Burkina, etc. In addition, civil society networks contribute to be the dissemination of research through various channels

1.3.4 - Human Capital and Research Capacity

The majority of the computer science and engineering schools lack staff with a strong research orientation. There are few African ICT researchers. University lecturers generally focus on teaching, and in most universities the curriculum covers outdated technologies, resulting in a student body with little exposure to innovative research, or ICTs that can be usefully applied in the private sector.

It is difficult to find postgraduate programmes at the Masters and particularly at the PhD levels. Some efforts are underway by institutions such as the Faculty of Computing and IT at Makerere University, Uganda or at the National University of Rwanda which has recently started offering a Masters Programme in ICT.

There has been no comprehensive assessment of ICT research capacity. As a result, Africa's ICT human resource base is little understood but it can safely be said that it is very thin with a small circle of researchers and practitioners participating in almost all related ICT activities at the local, regional and international levels.

Although some very capable and prominent women are active in ICT research and development, the ICT sector as such is still largely male-dominated and echoes the international trend in ICT.

1.3.5 - Research Field

There is a large dependence on donor funding for research activities; government funding for research is very low to non-existent. The wide array of issues to be covered in ICT research, from economics to law, from content specific to communities to gender issues, necessitate the collaboration and sharing of experience between different disciplines (i.e. economics, telecommunications, business, management, computer science, information systems, political science, sociology, amongst others). The participation of beneficiaries, end users, policy makers and institutions in the research process is as important as collaboration among different fields and researchers. However, research - which has been thus far highly fragmented and non-participatory - lacks trans-disciplinary approach.

In the absence of research, the ICT sector is clogged with anecdotal and "best practice" evidence that does not stand scrutiny and emulation. Practical research and development in universities is a new phenomenon.

"Research in the field of ICT policy and development in Africa is limited, fragmented and typically undertaken as isolated and disconnected projects. Most of the understanding of the information age comes from the theory and experiences gained in the developed world than through participatory policy formulation based on evidence. Africa produces little in the way of independent, primary research feeding into the ICT policy and regulatory processes".

*Alison Gillwald, IDRC meeting
Boston, 2003*

Little work has been published in traditional international research journals; much of the quoted work is only available through reports to founders and presentations at conferences; there are limited academic peer review processes. This is a very serious challenge. African ICT researchers cannot publish because the quality of research is generally low and reports cannot substitute for peer-reviewed publications. Few journals encourage authors from the South.

A few donor agencies are currently involved in funding research in ICT application and innovation in Africa. The Canadian International Development Research Centre (IDRC) takes the lion share of ICT research funding in the region. IDRC does not only support local researchers through project funding (e.g. Research ICT Africa, LOG-IN Africa), but also provides grants for innovative projects that could have an impact on poverty and economic growth.

The Foundations' Partnership for Higher Education in Africa (Carnegie, Ford, MacArthur, Mellon and Hewlett) is increasingly involved in encouraging ICT innovations in a number of Eastern and Western African countries. Norway, Sweden and the Netherlands are among the European countries that provide funding for ICT related research and development including human capacity building.

However, there is a significant interest by African institutions to participate in innovative ICT projects. A recent call for proposals by the Foundations' Partnership for Higher Education in Africa has generated a large number of useful projects that could have a long-term impact on S&T and their role in poverty eradication and economic development in Africa.

1.3.6 - Major Initiatives in ICT in sub-Saharan Africa

At the African level, various initiatives are addressing S&T cooperation in the ICT sector. Different levels of actions can be distinguished here.

a) Pan-African Enabling Initiatives

Regional and international cooperation initiatives on ICT have been developed in Africa for quite a long time and have registered a clear increase during the last decade. Regarding international initiatives in Africa, two major initiatives addressing ICT in Africa have to be mentioned here:

- The NEPAD e-Africa Commission
The NEPAD e-Africa Commission was established in 2001, with the mandate to manage the structured development of the ICT sector on the African continent in the context of NEPAD and aims to develop broad strategies and a comprehensive action plan for ICT infrastructure and its use for ICT applications and services. Six ICT projects presented in 2003 have been identified as priorities:
 - o The NEPAD e-schools initiative
 - o The low-cost satellite access project for NEPAD e-schools
 - o The East African submarine cable project
 - o The associated NEPAD broadband access fibre-optic project for landlocked African countries
 - o The NEPAD capacity building project for e-learning in Africa (based on the Africa Virtual University)
 - o The e-policies and e-strategies project
- The African Information Society Initiative (AISII)
The African Information Society Initiative (AISII) - adopted in May 1996 by the African ministers responsible for economic development and planning - is the key framework for the development and implementation of national e-strategies of National Information and Communication Infrastructure (NICI) plans. With the assistance of the UN Economic Commission for Africa (UNECA), approximately 32 African countries have already developed such strategies and in the coming years, efforts will be geared towards financing the NICI process, building the

implementation capacity of relevant institutions and stakeholders and harmonizing regulatory and legal frameworks. PICTA (Partnership for ICTs in Africa), an informal group of donors and executing agencies committed to improving information exchange and collaboration around ICT activities in Africa, has built on the work of the African Networking Initiative (ANI) and the African Internet Forum (AIF). The Network was set up by ICT partners to assist in development, follow-up and coordination of the implementation of the African Information Society Initiative (AISII).

b) Regional Initiatives

There are many regional initiatives focussing on the various ICT sectors. To follow is a sample of some key initiatives operative in the African region.

- **RIA! (Research ICT in Africa)**
RIA! hosted by the LINK Centre, in Johannesburg South Africa generates information and analysis needed to inform appropriate but visionary policy formulation in sub-Saharan Africa. RIA! has been collaborating with institutions in Europe in defining research areas and methodologies and conducting joint research.
- **ICT Research Surveys Sector**
SCAN ICT, is a collaboration between UNECA and the Canadian IDRC that aims to build support for development of Africa's capacity to collect and manage information needed to support the growing investment in ICTs and the transition of Africa into an Information society.
- **ICT for Development - Poverty, Governance, Spatial Technologies and Education**
The IDRC embarked on mission to analyse the impact of ICTs on poor people through longitudinal studies, covering Eastern African countries. In Spatial Technologies, the AICDev has funded a project called Global Forest Management via Spatial Technology; this project aims to combine spatial technologies to increase efficiencies in decision making for forestry operations. For ICT in education, NEPAD has started an e-school Satellite Network, which seeks to establish an Africa wide satellite network that will connect the schools to the Internet as well as points within each country from which educational content will be fed continuously.
- **Partnership for Higher Education in Africa**
The Partnership for Higher Education in Africa was launched in 2000 and its members are currently the Carnegie Corporation of New York, The Ford Foundation, the John D. and Catherine T. MacArthur Foundation, the Rockefeller Foundation, the William and Flora Hewlett Foundation, the Andrew W. Mellon Foundation and Kresge Foundation. One of the main objectives of the project was to supply cheaper and more reliable Internet access to partnership grantees from Egypt, Kenya, Ghana, Mozambique, Nigeria, Tanzania and Uganda. The Partnership for Higher Education has recently launched a competitive grant for universities to encourage the application of ICTs in education and curriculum development. In the future, the Partnership may expand to include foundations with similar interests in increasing the knowledge base about higher education on the continent and in assisting African institutions in a variety of countries with their transformation and growth. The Partnership is interested in coordinating its activities with other funding agencies to achieve maximum impact. There are no formal mechanisms for doing this as yet, but the planned Partnership website and other communication mechanisms will facilitate information sharing. Inquiries can be made to any of the Partner foundations.
- **Software Development Sector**
AVOIR (African Virtual Open Initiative and Resources) is a project hosted by the University of Western Cape (UWC) South Africa in collaboration with other African Universities whose aim is to support capacity building in Free and Open Source Software (FOSS) engineering, through software design, development, deployment and support. Also developed by the UWC is the KEWL (Knowledge Environment for Web-Based Learning) Next Generation project with the objective to partner with other African Institutions to enable collaboration, open sharing of learning and make possible distance learning.
- **ICT Infrastructure Sector**
Huge initiatives have also been undertaken to improve the state of ICT infrastructure. The East African Submarine

Cable System (EASSy) cable - which will connect East African countries to the rest of the world - is a project hugely driven by Telecommunications Companies in these countries. Business, NEPAD, Governments and Non-Governmental Organisations also offer broad-based support to this initiative.

c) Selected National Initiatives

- **Botswana**
Botswana hosts the BOTswana TEchnology Centre (BOTEC) whose aim is to carry out R&D work in the field of electronics and IT, designs and develops electronic products for manufacture and sales. The ICT Health initiative runs with the Department of Computer Science at the University of Botswana. This project investigates wireless and mobile technologies that will enable user to access health information using PDAs (Personal Digital Assistants).
- **Ethiopia**
Ethiopia participates in the Indian and African Union sponsored Pan-African e-Network that aims to link 12 universities (7 from India and 5 from Africa), 17 Super Specialty Hospitals (12 from India and 5 from Africa) and 53 telemedicine centres. The pilot project on telemedicine in Ethiopia was set up at the Black Lion Hospital. Connection between the Black Lion hospital and CARE hospital in Hyderabad was established to conduct one-hour live tele-consultation in Cardiology and Radiology. A continuing medical education for students in Ethiopia was also established between the Indira Gandhi Open University and Black Lion Hospital. Links with local hospitals in Ethiopia and more specialized hospital in India are envisaged.
- **Kenya**
Kenya's African Medical and Research Foundation (AMREF) is working with Accenture - a global management consulting, technology services and out sourcing company - and the nursing council of Kenya the country's professional organisation for nurses to provide the resources for an innovative electronic training programme to address Kenya's critical nursing shortage. The goal is to bring 26,000 nurses to diploma-level certification in five years, a number that would take 100 years under traditional methods.
- **Mozambique**
The Mozambique Information and Communication Technology Institute (MICTI) is a multi-faceted initiative aiming at addressing the challenges of skills shortage, post secondary education and a weak ICT sector in Mozambique. MICTI aims, through ICT applications and ICT research foci, to serve broader governance, social services delivery and economic development needs of the country. It has several components including learning, research, technology incubator and a S&T park. The long term goal is to place the institute and job incubation activities into a science park environment. MICTI is now in its second intake of ICT entrepreneurs. It is housed on the campus of the University of Eduardo Mondlane and has strong linkages to the Centre for Informatics at the University (CIUEM).
- **Zambia**
LinkNet is an ICT cooperative in Zambia that is focussed on research and development in Zambia's rural areas. It provides for cost-based building, operations and maintenances of communications infrastructure and aims to grow local expertise. It is collaborating with the University of Zambia to allow students to gain experience in rural areas.

d) International Organisation Initiatives

Most international organisations are now involved in the ICT field in Africa and have developed specific programmes and initiatives.

- The Global Alliance for Information and Communication Technologies and Development (GAID) is a new initiative approved by the United Nations Secretary-General (2006) with the aim to be an answer for an inclusive global forum and platform for cross-sectorial policy dialogue on the use of ICT

- InfoDev - a partnership of international development agencies, coordinated and served by an expert Secretariat housed in the Global ICT Department (GICT) of the World Bank - acts on its side as a neutral convener of dialogue and as a coordinator of joint action among bilateral and multilateral donors supporting global sharing of information on ICT for development (ICT4D), and helping to reduce duplication of efforts and investments.

e) Multilateral Partnerships

In parallel of the work undertaken by international organisations, relevant multilateral partnerships have been developed.

- **Bellanet International**
 Bellanet International is a multi-donor initiative created with the mission to promote and facilitate effective collaboration within the international development community. Hosted by the International Development Research Centre (IDRC), it is funded by the Canadian International Development Agency (CIDA), the Danish International Development Assistance (DANIDA), the Swedish International Development Cooperation Agency (SIDA) and the Swiss Agency for Development and Cooperation (SDC).
- **Development Gateway**
 Development Gateway - an international non-profit organisation - is an interactive portal for information and knowledge sharing on sustainable development and poverty reduction which has been launched by the World Bank (WB).
- **The Catalysing Access of ICT in Africa (CATIA)**
 The Catalysing Access of ICT in Africa (CATIA) is a programme (ended in 2006) of the United Kingdom Department for International Development (UK DFID) in collaboration with other donors and role players (e.g. SIDA, IDRC, CIDA, and USAID). It supported a package of strategic activities to improve affordable access to the full range of ICTs, from Internet to community radio.
- **The Global Knowledge Partnership (GKP)**
 The Global Knowledge Partnership is a multi-stakeholder and international network with an African representation promoting innovation and advancement in Knowledge for Development and information and Communication Technologies for Development.
- **The Open Knowledge Network (OKN)**
 The Open Knowledge Network (OKN) grew out of the Digital Opportunity Task Force (DOT Force) set up by the G8 Heads of State to make a decisive contribution to bridging the digital divide. Open Knowledge Network is an initiative to support the creation and exchange of local content in local languages across the South, supported by a range of Information and Communication Technologies (ICT).

1.3.7 - Cooperation on ICT between Africa & non-EU countries

In the last years a number of initiatives addressing cooperation on ICT have logically been launched by Africa with non-EU countries. An overview of the situation to date is provided below.

China

Main focus	: Infrastructure, Technology Transfer, Research & Development
Region, country	: Uganda, Tunisia, Senegal
Summary of activities	: ICT R&D in Africa is conducted in the framework of the Forum on China-Africa Cooperation Addis Ababa Action Plan (2004-2006)

- : Adopted in 2003, China "encourages and supports its strong and viable enterprises of all ownerships to invest in Africa, including through the creation of China-Africa joint ventures aimed at encouraging transfer of technology and the creation of employment in African countries"
- : The Beijing Action Plan (2007-2009) reaffirms this by placing importance on the role of infrastructures in Africa's development and the potential of cooperation between the two sides based on China's technology and expertise to Africa
- : More specifically, in research and development, a section in the Beijing Plan mentions that, "....the two sides agreed to step up scientific and technological cooperation in areas of common interest including agriculture bio-technology, solar energy utilisation, geological survey, mining and development of new medicine"

Japan

Organisations involved

- : Government of Japan
- : Global Coalition for Africa (GCA)
- : United Nations Office of the Special Advisor on Africa (UN OSSA)
- : United Nations Development Programme (UNDP)
- : World Bank (WB)

Main focus

- : Development Aid, Policy Support

Region, country

- : Cameroon, Benin, Nigeria, Tanzania, Zimbabwe

Summary of activities

- : Launched in 1993, the Government of Japan conducts R&D on ICTs in the framework of the Tokyo International Conference on African Development (TICAD)
- : The objectives are: to (1) promote high-level policy dialogue between African leaders and development partners and (2) mobilise support for African-owned development initiatives
- : TICAD includes as Africa IT initiative that supports ICTs policy and connectivity. A major achievement includes the development of an ICT policy framework and training conducted through CISCO Networking Academy

South Korea

Organisations involved

- : United Nations Development Programme (UNDP)

Main focus

- : Capacity Building, Technology Transfer, Research & Development

Region, country

- : Various African countries including Kenya, Algeria, Egypt, Cameroon, Swaziland, Zimbabwe, Mauritius, Uganda and Senegal

Summary of activities

- : The Korean Agency for Digital Opportunity and Promotion (KADO) - a specialised government subsidiary devoted to provide comprehensive support for domestic and international digital divide closure - was established in 1984 with the aim of bridging the digital divide
- : KADO aims at providing developing countries with IT infrastructure, informatisation education and Internet Use opportunity by 2012 that specifically targets 7 objectives:
 - Information access environment creation
 - Skills and content development aimed at bridging the digital divide
 - International cooperation to narrow the global digital divide
 - Public IT education to upgrade people's IT literacy
 - Promotion of public awareness on the digital divide
 - Encouragement of productive information use & prevention of informatisation adverse function
 - Research and development on the digital divide and its bridging strategy.
- : A contribution from Japan of USD 5 million is channelled through UNDP, and in collaboration with UN Volunteers (UNV), a force of volunteers from Asia working in many African countries to transfer technical know-how.

India

Main focus

- : Capacity Building, Technology Transfer, Research & Development

Region, country	: Ghana
Summary of activities	: India is being targeted by African decision-makers as an important partners regarding technology transfer, which is included in a number of ICT policy documents : The Koffi Annan Centre of Excellence in ICTs (KACE-AITI) in Ghana is an example of collaboration of Indian collaboration that engages in activities in software development and research : India and NEPAD are in discussions around a joint satellite-based telemedicine and tele-education network project
Australia	
Organisations involved	: The Australian Government's overseas aid program (AusAID) : World Bank (WB) : Monash University, South Africa
Main focus	: Development Aid, Infrastructure, Capacity Building
Region, country	: Southern and Eastern Africa
Summary of activities	: AusAid is responsible for managing Australia's overseas aid programme. : In conjunction with the World Bank, AusAid has launched the Virtual Columbo Plan as a strategic response to the anticipated demand for both education and knowledge from developing countries : Monash University - a leading public university in Australia - owns the Monash University South Africa campus from where students with IT honours
Canada	
Organisations involved	: International Development Research Centre (IDRC) : ACACIA : Connectivity Africa
Main focus	: Capacity Building, Policy Support, Research & Development
Region, country	: Sub-Saharan Africa
Summary of activities	: IDRC is a public corporation which aims at helping developing countries use S&T to find practical, long-term solutions to the social, economic and environmental problems they face : Support is directed toward developing an indigenous research capacity to sustain policies and technologies that developing countries need in order to build healthier, more equitable, and more prosperous societies : IDRC's main thematic areas of research on ICTs are focused on ICT policies and indicators : Launched in 1997, ACACIA is IDRC's ground-breaking program, investing USD 40 million in research, demonstration, and evaluation projects on key ICT issues to demonstrate how sub-Saharan communities can benefit from ICTs for their social and economic development : Connectivity Africa in partnership with the Economic Commission for Africa and within the framework of the African Information Society Initiative (AISI), is supported by the Canada Fund for Africa that aims at applying Canadian expertise in ICTs to education, health, and community development : IDRC also supports Research ICTs Africa, a network that focuses its activities on social-economic issues. It has already published a number of documents and organized a number of conferences on Africa ICT issues
United States of America	
Organisations involved	: United States Agency for International Development (USAID)
Main focus	: Infrastructure, Policy Support
Region, country	: Sub-Saharan Africa

Summary of activities

- : USAID's activities are not focused on scientific cooperation but target the development of ICTs in Africa in general
- : Specific S&T cooperation activities have been implemented, for example, within the framework of the Leland Initiative, funded by USAID in the middle of 1990s to connect and strengthen African countries Internet connections
- : In 2003, 351 ICT activities were reported by USAID missions and 114 amounting to 32% of all these activities were implemented in Sub-Saharan Africa
- : USAID also participated in the definition of the DFID operated Catalyzing Access to ICT in Africa (CATIA) programme alongside with other donors and role players
- : Other initiatives implemented by USAID are related to strengthening opportunities for business using ICTs, notably through the Digital Freedom Initiative (DFI) from which countries such as Senegal benefited

1.4 - EU-Africa Cooperation Frameworks

At the African level, three different frameworks for cooperation and dialogue with the European Union and can be distinguished:

- The European Neighbourhood Policy (ENP), formerly known as the Barcelona process, addressing EU's relationship with its Southern and Eastern neighbours, among them North African countries (Algeria, Egypt, Libya, Morocco, Tunisia)
- The Cotonou partnership agreement
- The Trade and Development Cooperation Agreement with South Africa (TDCA)

As we will focus on sub-Saharan Africa, we will concentrate on the latter two.



Figure 8: Main Existing EU-Africa Cooperation Frameworks

1.4.1 - From Yaoundé and Lomé to Cotonou

The Cotonou partnership agreement is the main framework, and defines EU's relationship with the ACP region (Africa, Caribbean and Pacific) region. This agreement is the follow up of the Yaoundé and Lomé Conventions (respectively in 1963 and 1969, and then in 1975, 1979, 1984, and 1990), which determined Europe's cooperation and trade framework with some of its former colonies.



Figure 9: ACP (Africa, Caribbean, and Pacific) Countries

The expiration of the Lomé Convention in February 2000 provided the opportunity for a review of EU-ACP relations. The new agreement was signed on June 23, 2000 in Cotonou (Benin) and concluded for a 20-year period from March 2000 to February 2020. This agreement is global, introducing radical changes and ambitious objectives. It is built on five interdependent pillars, with the underlying objective of poverty alleviation:

- An enhanced political dimension
- An increased participation
- A more strategic approach to cooperation focusing on poverty reduction
- New economic and trade partnerships
- An improved financial cooperation

The participation of non-state role players in policy-making has become a key element of good governance since this agreement.

A clause foresees that the Cotonou agreement can be revised every five years. In accordance with this clause, negotiations to revise the Agreement were launched in May 2004 and concluded in February 2005.

1.4.2 - TDCA: a Specific Framework for South Africa

Taking into account the specific role and dimension of South Africa at the African continent level, Europe has developed a specific framework for South Africa, the Trade and Development Cooperation Agreement (TDCA), addressing the various dimensions of European relations with South Africa. It came into force in May 2004.

The TDCA includes provisions for a Free Trade Area, financial assistance and development cooperation, cooperation in trade related issues, economic cooperation, social and cultural cooperation and political dialogue.

1.4.3 - A Positive International Context to Deepen EU Relations with Africa

a) A General Concern for the African Continent

During the last decade, an unprecedented determination was stressed by the world's richest nations to ensure the development of least developed countries and especially of African countries. The year 2005 was symbolised by a unique focus of attention on the African continent and development. This general concern for a sustainable and long-term development of the African continent was also driven by a stronger public demand for action, notably from African and European non-governmental organisations.

Among other initiatives to ensure a sustainable and long-term development of Africa, the report of the Commission for Africa put in place by the British government - *"Our Common Interest"* - defined the themes that dominated the G8 discussions at Gleneagles during the summer of 2005 and proposed a coherent vision to achieve the Commission's goal of a strong Africa.

This document as well as the different declarations and statements on Africa's development in the recent years (including the 2005 Paris Conference on aid effectiveness) stressed that Africa needed a transition from short-term to long-term approaches based on partnership and economic development that would allow African countries to build on their strengths rather than being dependant on external aid.

In this context, the role of *"science, technology and innovation, both as a driver of economic growth within the developing countries and as a core element in nurturing the managerial and governance competencies that will allow a risk-taking, problem-solving approach to development co-operation"* has been recognised in this framework as a major issue (cf. *Going for growth: Science, Technology and Innovation in Africa* - The Smith Institute, 2005).

b) A New International Context

This new interest for Africa has also been based mainly on the emergence of a pan-African vision and reality. The beginning of the 21st century (with changing political climate and the collapse of the former USSR) brought encouraging signals from Africa and enabled the consideration of new partnerships with Africa.

In parallel, several African countries manifested their will for a deeper cooperation at the continental level. The New Partnership for Africa's Development (NEPAD) launched in 2001 as well as the new African Union (AU) in 2002, which is the successor to the Organisation of African Unity (OAU) created in 1963, contributed to the emergence of a very positive framework, both for a pan-African strategy and for deeper cooperation with international partners (including the European Union).

Through the AU's Constitutive Act, African countries defined not only what they wanted for Africa but also what they expected from the international community. Initiating a better coordination of all involved actors and stakeholders and the possibility to deal with a unique representative at the African level, this event definitely paved the way for a real ownership of the process.

c) From a new EU Strategy for Africa to a joint EU-Africa strategy

Since the late 1990s, Europe, the closest region to Africa (geographically, historically and culturally), has gradually developed a more specific relationship with Africa, beyond its relationship with ACP countries.

Before the establishment of the African Union in 2002, the EU-Africa summit in Cairo (April 2000) marked a turning point in EU-Africa relationship by defining a comprehensive framework for political dialogue between the two regions and an action plan in the following priority areas: regional integration in Africa, integration of Africa into the world economy, human rights, democratic principles and institutions, good governance and rule of law, peace-building, conflict prevention, management and resolution, development issues, sustainable development, challenges and poverty eradication, health, environment, food security, drug consumption and trafficking, culture.

In December 2005, the Heads of State and Government of the EU (the European Council) adopted a new Strategy for Africa, with the title "The EU and Africa: Towards a Strategic Partnership", suggesting a framework for action for all EU Member States and the European Commission to support Africa's efforts to attain the United Nations Millennium Development Goals (UN MDGs). This strategy also provides guidelines for coordination at the international level (UN, G8, international players such as China, etc.) with the aim to establish a policy of effective multilateralism, and will be implemented around the pillars illustrated below, a formal review of its implementation being planned every two years.

Furthermore, in October 2006 in Brazzaville (RDC), both sides agreed to define a joint EU-Africa strategy that will take even better into account African priorities and ensure a real ownership of all (state and non-state) stakeholders on both sides, and will more precisely aim at:

- Promoting peace, security, development and integration of Africa
- Strengthening the political Partnership as a means of finding solutions to concerns of each party and common issues
- Combining efforts to establish an alliance for global governance in international fora
- Involving all stakeholders on the two continents in a people centred partnership

A joint consultation process (www.europafrica.org) has been launched in 2007, in the perspective of the EU-Africa Summit of December 8 & 9, 2007 to be held in Lisbon under the Portuguese EU Presidency.

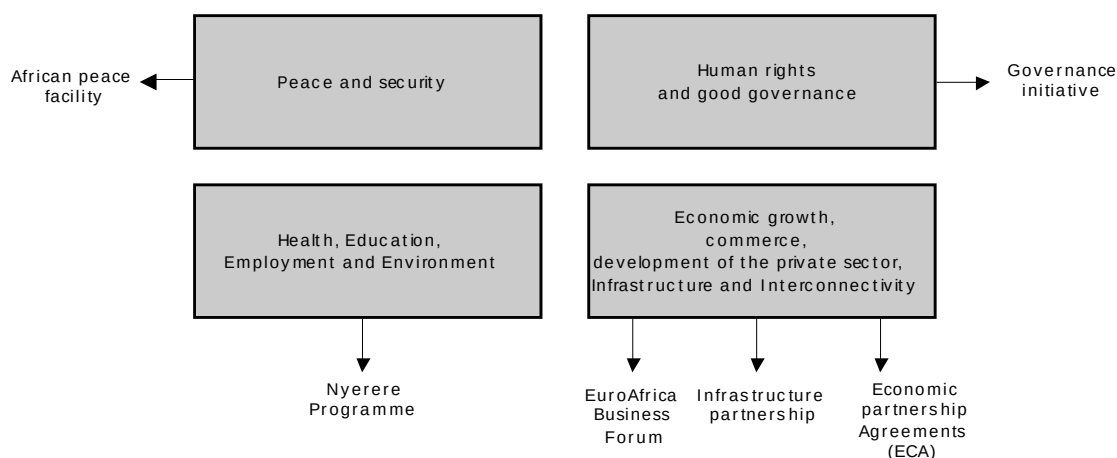


Figure 10: The 4 Pillars of the EU Strategy for Africa

c) A Strategy for South Africa

At the same time, taking into account the diversity and size of the African continent, the need was clearly highlighted for specific and adapted frameworks targeting certain countries or regions. A first proposal for such a specific framework between Europe and South Africa was presented in June 2006 by the European Commission (EC). This Strategy for South Africa is linked to the overarching objectives for Africa and aims at deepening European relations with a specific country.

Deepening the relations with South Africa is essential given the country's role in the international relations and at the continent level. It will therefore fully take into account the country's position as an anchor in the region. This renewed partnership covers political and economic relations and builds on existing privileged relations.

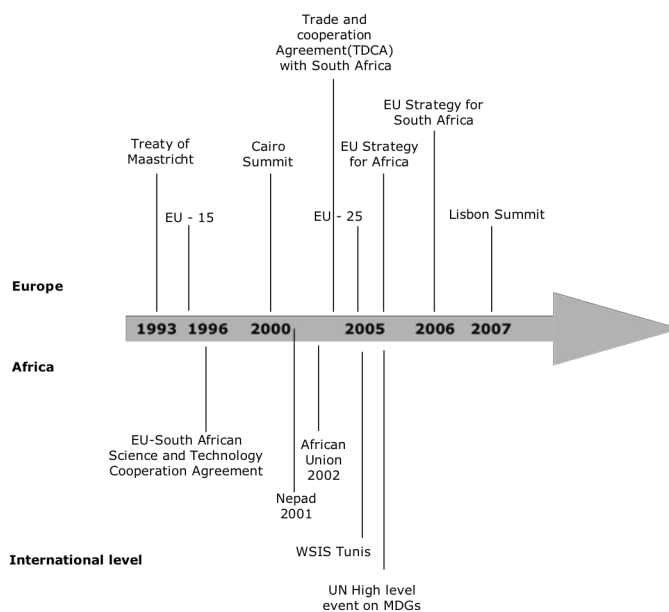


Figure 11: Overview of Recent Developments of the EU-Africa Cooperation Framework

1.5 - EU-Africa Cooperation on ICT: Current Orientations and Ongoing Activities

For historical and political reasons, the involvement of European countries in bilateral cooperation with sub-Saharan African countries has been developing for quite a long time. Initiatives, projects and programmes in the ICT field have logically been developed between African and European countries. This involvement has been strengthened in recent years due to renewed international interest in Africa as well as the broadly-accepted recognition of the transformative power of ICT in the development process and international commitment for Africa in the political agenda.

It is however important to recognise the differences, similarities and synergies between initiatives and instruments such as FP7 and the activities of, for instance, the infrastructure initiatives of the European Commission Directorate General Development (EC - DG DEV) and the various donor agencies. One possible approach is to categorise these initiatives in terms of the extent to which they generate new (scientific) knowledge, or whether the focus is mostly on usage of the knowledge. Another perspective is to consider the broad market conditions or contexts within which these activities are concentrated (i.e. areas where market forces operate or those characterised by market failure).

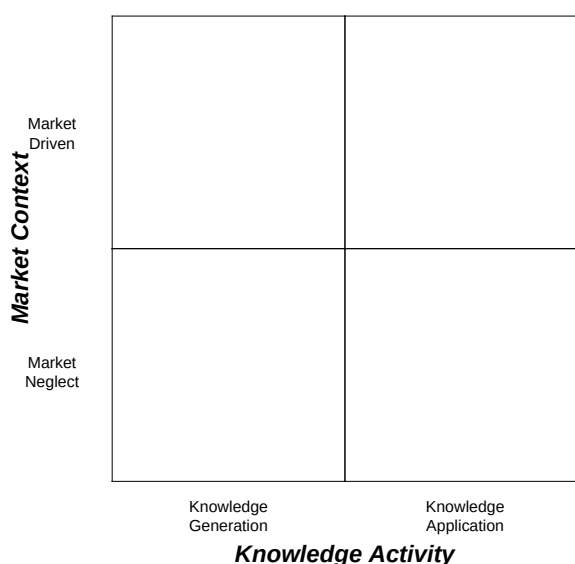


Figure 12: Matrix Relating Initiatives within the Market Context & Knowledge Activity (Source: CSIR)

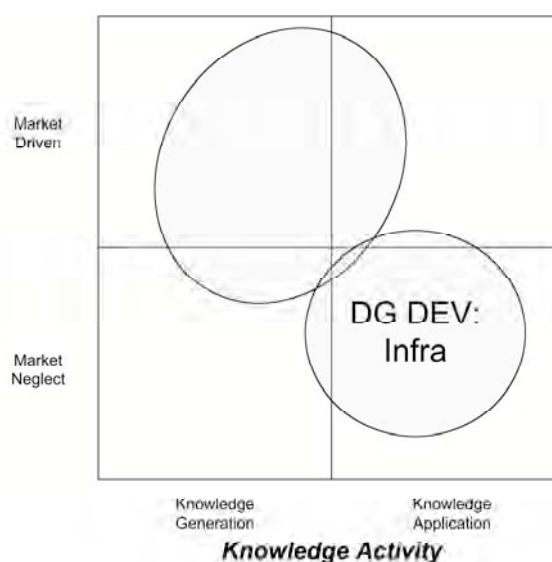


Figure 13: Illustrative Position of FP7 and DG Development's Infrastructure Programme Activity (Source: CSIR)

Combining this in a matrix (Figures 12 and 13 above) assists in recognising the primary goal of each initiative and recognises the synergies between these. For example, in Figure 14 an illustrative positioning of FP7 and the EU DG Development's Infrastructure Initiative shows that the main thrust of FP7 is in ensuring the continued competitiveness of the EU industry and society, based on research and development. It functions largely within a market context characterised by "normal" market forces where, for instance, supply and demand determine pricing. There are some activities such as caring for people living with disabilities and the aged, where these supply and demand factors might not be visible or in existence. The major focus is also on generating new knowledge.

This can be compared to the activities of the EU DG Development's Infrastructure Initiative, which addresses key infrastructure rollout activities in Africa where market forces cannot as yet determine the direction of the investment.

It is also aimed at implementation and rollout of infrastructure that requires no new knowledge to be generated, but significant knowledge application and transfer. To measure the latter activity in terms of production of new intellectual property or an increase in the number of PhDs graduating from universities would not be rational.

Within this framework it is important to note that activities do not necessarily stay static in terms of their positioning or influence. The example of the involvement of South African institutions in the biotechnology related themes of FP4, FP5 and FP6 illustrates this clearly. Initially, through the EC International Cooperation (EC INCO) programme in food security and animal health, organisations such as the Council for Scientific and Industrial Research (CSIR) in South Africa became involved in a number of framework projects that aimed to use technologies developed in the EU to provide specific development outcomes in African countries. These activities can be placed in the knowledge application arena but also serve an area of market neglect.

The CSIR's work with European partners in food security research activities is a good example of how an African institution has increasingly become a valued partner in a number of FP6 and FP7 projects. It now often takes the lead in some of these projects that have primary applications in the market driven areas.

As the awareness of the CSIR's capabilities grew within the European partners, and as CSIR's longer-term research trajectories became more aligned with those of EU partners due to their continued collaboration, there was increased trust in their scientific capabilities from EU partners. This growth led to the formulation of an increasing number of R&D projects that relied on the knowledge generation capabilities of the CSIR. While the applications were still within areas of market failure, the emphasis shifted from a purely knowledge application activity to joint knowledge generation.

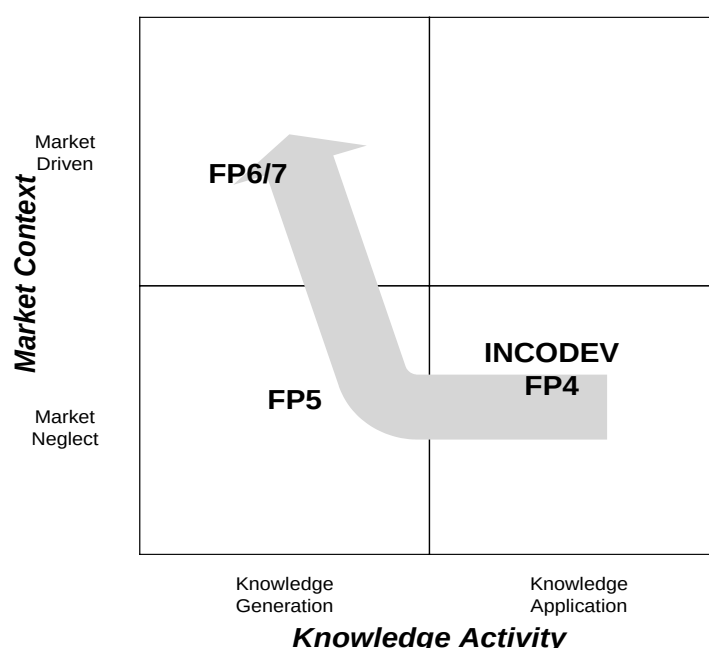


Figure 14: Illustration of Shifting Emphasis in CSIR Contributions in the Food Security Domain within the EC Research Framework Programmes (Source: CSIR)

Another important dynamic is the understanding that activities happening in the market neglect - knowledge application area can have a direct influence on activities and success in some of the other quadrants and vice versa. A focus on strengthening African universities, largely a "knowledge generation in market neglect" condition, would be

futile if, amongst others, the required communications infrastructure necessary for collaborative research is not established.

These “research networks” normally do not get implemented in isolation, but are dependent on the rollout of traditional telecommunications infrastructure. This rollout, as seen earlier, is often the result of developmental activities in the ‘knowledge application in market neglect’ conditions, such as the DG Development Infrastructure Initiative. Similarly, research into wireless mesh networks, a knowledge generation activity applicable to both the market driven and neglect condition will most likely succeed in accelerating the rollout of telecommunications infrastructure in market neglect conditions through the application of this research.

1.5.1 - European Member State Policies on ICT in Africa

If the involvement of European countries is important in sub-Saharan Africa, including in the ICT field, their implication greatly differs from one country to another. Some major initiatives undertaken at the level of Member States (MS) can be underlined here.

- **Germany**
The German Government recognises ICTs as much as tools for reducing poverty as the creation of physical infrastructure. At the beginning of 2000, ICT was designated as one of the priority areas of Germany's Africa policy. The German Federal Ministry for Economic Cooperation and Development (BMZ) has developed an appropriate strategy for promoting ICT in developing countries. For this purpose, it has set up a task force composed of officers from KfW (KfW banking group), GTZ (the German development cooperation agency) and other official development organisations as well as representatives of development research institutes. GTZ has many years of experience both in the use of ICTs in Development Cooperation and in cooperation with technology-oriented partners from the private sector. Since 2000, GTZ has implemented 150 projects with an ICT focus – of which around 40 have been in collaboration with the private sector. Furthermore, the GTZ has been commissioned to support the UN Economic Commission for Africa (UNECA) in strengthening its efforts to assist member countries in the application of ICT and integration in the development process. While GTZ's involvement in ICT focuses on technical assistance, KfW's promotion of ICT lies in projects where investment is needed for the promotion of ICT (financial cooperation).
- **The Netherlands**
The Netherlands was also one of the first bilateral donors to include ICT and development on its agenda. The ICT strategy of the DGIS (Dutch Ministry for Cooperation) is implemented through partnerships. The Building Digital Opportunity (BDO) and its successor, BCO (Building Communication Opportunities) brought various donors (the UK Department for International Development (DFID), DGIS and the Swiss Development Cooperation (SDC) notably) and partners together for purposes of exchange and creating synergies. To assist with developing new ICT policies in developing countries, the Dutch government funded agency IICD (International Institute for Communications in Development) hosted different national policy level roundtables in Africa. The Dutch co-financing organisation - the Humanist Institute for Cooperation with Developing Countries (Hivos) - implements ICT projects through a special action programme. TNO, the Dutch Organisation for Applied Scientific Research is also involved through its Development Cooperation Programme.
- **Denmark**
The Danish International Development Agency (DANIDA) is sending more than 60% of its bilateral aid to sub-Saharan Africa. The Danish aid programme does not include an explicit ICT policy, but over the years the use of ICT tools has gradually increased and become an integral part of the planning and implementation of numerous Danish funded aid activities. The key partner for the Finnish cooperation in Africa is South Africa. Finland and South Africa have created a cluster of partnership programmes supporting the knowledge society development of South Africa. Each programme is targeting its support for own specific sector of interest. The common theme is focusing on institutional skills and capacity development instead of infrastructure investment. The Finnish knowledge society programme cluster is implemented as a set of individual interventions. Some programmes (COFISA, Cooperation systems between Finland and South Africa, - SAFIPA, South Africa Finland Knowledge

Partnership on ICT programme) are co-financed by the South African Department of Science and Technology (DST) and are interlinked. The programme INSPIRE (Provincial Information Strategy Development Programme) is a cooperation between South African Department of Science & Technology and Finland in the field of Innovation Systems. Its main objective is to support DST in the creation of the South-African Innovation programme.

- The United Kingdom

The Department for International Development (DFID) of the United Kingdom has initiated the Science and Development Network (SciDev.Net) aiming at providing reliable and authoritative information about S&T for the developing world. The DFID has also developed its activities in the field of ICT through different programmes (notably CATIA, Imfundo, the Open Knowledge Network, etc.). Catalysing Access to ICTs in Africa (CATIA) also initiated by DFID, was an African regional programme designed to act as a strong catalyst for a positive reform process and to increase significantly affordable ICT access across Africa which ended on August 2006. The Open Knowledge Network is a programme run by OneWorld International and IICD and aimed to promote local knowledge creation and the realisation of its value by facilitating its exchange in the South. Imfundo is a partnership for Information Technology in Education which considers ways in which Information and Communication Technology can be used to support Education in Sub Saharan Africa.

- Sweden

The Swedish Program for Information and Communication Technology in Developing Regions (SPIDER) is a national entity created to unify knowledge resources and make them available to developing countries. Behind the program stands SIDA (the Swedish International Development and Cooperation Agency; which is the Swedish government agency for bilateral international development cooperation) and KTH (the Royal Institute of Technology).

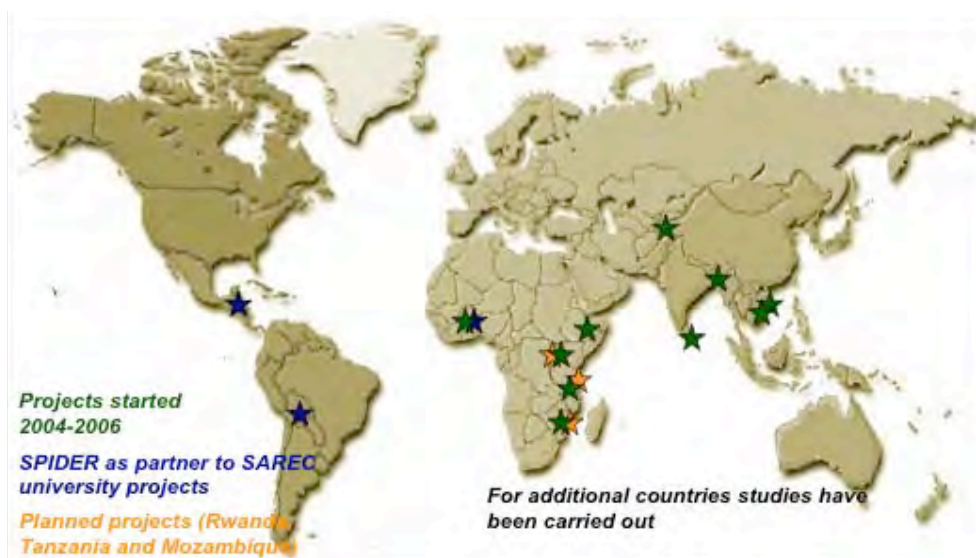


Figure 15: Main SPIDER projects (Source: Swedish Program for ICT in Developing Regions)

- France

In France, the ICT cooperation with Africa is mainly managed by the French Agency for Development (AFD) and the General Department for International Cooperation and Development (DGCID) through different programmes. For instance, African Development Education Network (ADEN) aims at enabling network access for the greatest possible number of users as well as reduces access costs. The French-South-African programme in ICT (SAFeTI)

has been launched and resulted from a joint initiative of the French Ministry of Foreign Affairs and the South African Department of S&T (DST) in order to enable high-level collaborations in the field of R&D on ICTs.

- **Italy**
Italy is active in promoting e-Government for development and is a major donor of the Food and Agriculture Organisation (FAO) who has developed project in the field of ICTs.
- **Ireland**
Ireland has developed a strategy for Africa which included ICT as a tool to aid practical and sustainable interventions which address the underlying causes of poverty. In the area of education, for instance, Irish aid supports the Dublin-based Global e-Schools and Communities Initiatives (GeSCI).
- **Belgium**
Through the Agence Universitaire de la Francophonie (AUF), European French speaking countries (France, Belgium, etc.) collaborate with African French speaking universities. For example, a number of initiatives are conducted within the framework of it's REFER network (Réseau Electronique Francophone pour l'Education et la Recherche).

1.5.2 - European Research Centres

At the European level, several initiatives of S&T Cooperation in the ICT field have been launched by European Research Centres. Some countries are more involved and represented in this domain, namely Germany, the United Kingdom, European Nordic countries as well as France and Switzerland.

The Fraunhofer Institute is the main German research organisation involved in this field and is one of the best represented among current research projects in Africa.

The Danish Technological Institute (DTI) as well as the Norwegian "Studies in Technology, Innovation and Economic Policy" (STEP Group) have also developed programmes and projects addressing S&T cooperation on ICT in Africa.

Other research and academic European bodies are involved in this field such as the Swiss Science Council or the Technical Centre for Agricultural and Rural Co-operation (CTA) based in the Netherlands. TNO, the Dutch Organisation for Applied Scientific Research, supports the Zambian organisation LinkNet to develop and deploy low-cost connectivity solutions in rural Zambia.

Finland's institute of Science and Technology is also very involved in Africa, as are the Belgians on a smaller scale through the Free University of Brussels SMIT and its Institute for Broadband Technologies.

At the French level, we can mention two activities hosted by the French National Centre for Scientific Research (CNRS) - a public basic-research organisation - NetSuds (an international research group addressing policy, use and impact of ICTs in Africa and Latin America) and CEAN (Study Centre on sub-Saharan Africa). The French National Institute for Research in Computer Science and Control (INRIA) is also implementing the SARIMA project which is based on the reinforcement of the scientific and administrative team capacities (in the field of mathematics and computer science) and aims at developing common research themes and limiting the brain drain towards North countries.

1.5.3 - European Private Sector

The involvement of the European private sector in S&T cooperation on ICT with Africa has remained quite limited so far. However, different companies have already launched some activities or shown a clear interest - to mention only a few such as SAP, Alcatel Alenia Space, Nokia, Ericsson, Siemens, Microsoft, Intel, Cisco and France Telecom.

A typical example is the cooperation of Alcatel Alenia Space (now Thales Alenia Space), the European leader in satellite systems, at the forefront of orbit infrastructures, with the South African Council for Scientific and Industrial Research (CSIR) in order to develop space science skills in South Africa. Alcatel Alenia Space and the CSIR are committed to combine their respective skills and contribute to improving the quality of life in South Africa and throughout Africa. Many areas of cooperation have been identified inside this cooperation framework which include land cover mapping, broadband solutions via satellite dedicated to tele-epidemiology, satellite navigation and transport applications as well as development in astronomy related initiatives and spatial data infrastructure.

It has to be noted that one country, South Africa, has concentrated most of the European private sector initiatives in terms of S&T cooperation. This applies equally to S&T cooperation with European research partners and raises the challenge, and the need, to expand cooperation beyond South Africa to other sub-Saharan countries.

1.5.4 - At the European Union (EU) Level

"Intra-African telecommunications mostly need to be sent via the North due to a lack of interconnections and clearing houses; as a result, Africa is paying an additional \$400 million a year for telecom services. These funds could be used elsewhere in a much more appropriate way"

*The EU-Africa partnership on infrastructure
 EC DG for Development and Relations with
 African Caribbean and Pacific States, 2006*

In the new framework development and cooperation policy aiming to accelerate Africa's growth (the EU Strategy for Africa), the digital divide is addressed through a "EU-Africa Partnership for infrastructure". Proposed in July 2006, the EU-Africa Partnership on infrastructure has been adopted at the end of 2006.

The partnership responds to the development goals of the AU and the New Partnership for Africa's Development (NEPAD) as the socio-economic programme of the AU. *"The Partnership for Infrastructure is the EU's response to the infrastructure gap that hinders Africa's economic development"*. It aims at increasing EU investments in African infrastructure and supporting programmes that facilitate interconnectivity at a continental and regional level as well as to develop cross-border infrastructure and promote efforts to bridge the digital divide.

The first projects under this partnership should be launched in the coming months. The map below represents the position of each country regarding the digital opportunity (the digital opportunity index is based on 11 core ICT indicators). It clearly demonstrates that the African continent, and more precisely sub-Saharan Africa, presents the highest number of countries with a low index.

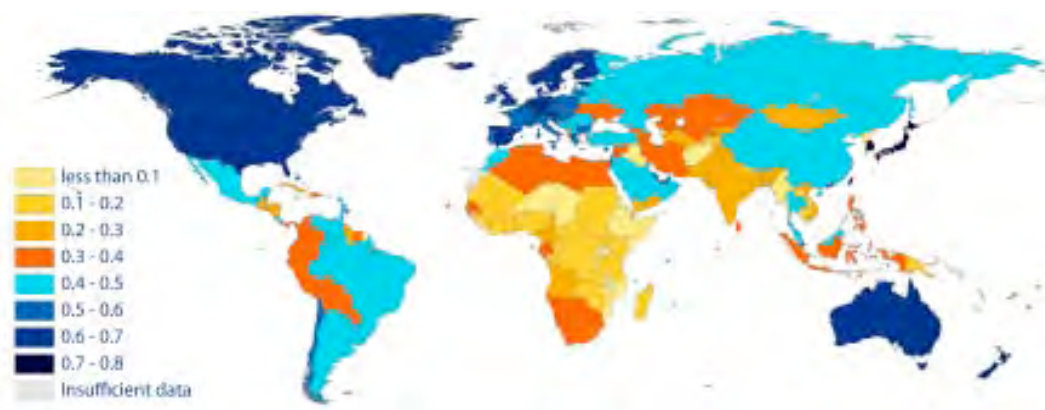


Figure 16: The Digital Opportunity Ranking (Source: World Information Society Report 2006)

The dialogue is ongoing between the EU and African partners to identify mutual benefits and needs for cooperation in the area of Science, Technology and Research. It is all the more needed that the greater representation of Sub-Saharan African countries in S&T international cooperation projects is widely recognised as beneficial and to be ensured at the soonest.

As far as ICT research is concerned, cooperation between the EU and Africa has remained quite limited so far in the EU research programme, except for South Africa, a country benefiting from a separate S&T Agreement.



Figure 17: Participation of 3rd country organisations in the FP6 IST Programme (in % of the total number of participating 3rd country organisations) (Source: the START Consortium)

Limited participation of sub-Saharan Africa as a whole is understandable since the positive dynamic and new framework observed in Africa, and the renewed partnership between Europe and Africa, are relatively recent.

The participation of South Africa in the FP6 IST programme has however been significant (6 participations out of 16 for sub-Saharan African countries) with CSIR (the Meraka Institute) playing a central role in most of them, in particular in four important specific support actions:

- ESASTAP, aiming at strengthening the overall S&T partnership between the EU and South Africa
- IST-Africa, focusing on the development of EU – Southern Africa cooperation on ICT
- START, aiming at fostering the involvement of sub-Saharan organisation in FP7 on ICT
- ST-EAP, aiming at strengthening S&T cooperation, via the EC Framework Programmes, between sub-Saharan African scientists and between African and European scientists

As far as the FP7 ICT Theme is concerned, the presence of Africa in the present version of the Work Programme (WP) (covering Calls for proposals 1 to 3) remains weak, in particular in terms of SICAs (Specific International Cooperation Actions) addressing cooperation with Africa.

This gap between official statements and the possibility to develop concrete projects under FP7 may be surprising. It can in fact be explained by the context of the Work Programme formulation, a very strict process which does not allow the programme to be fine-tuned according to most recent developments and needs. The next versions of the Work Programme should be more favourable in this respect.