TAB

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Development Through Electronic Networks

Information and Communication Technologies in Africa

Final Report
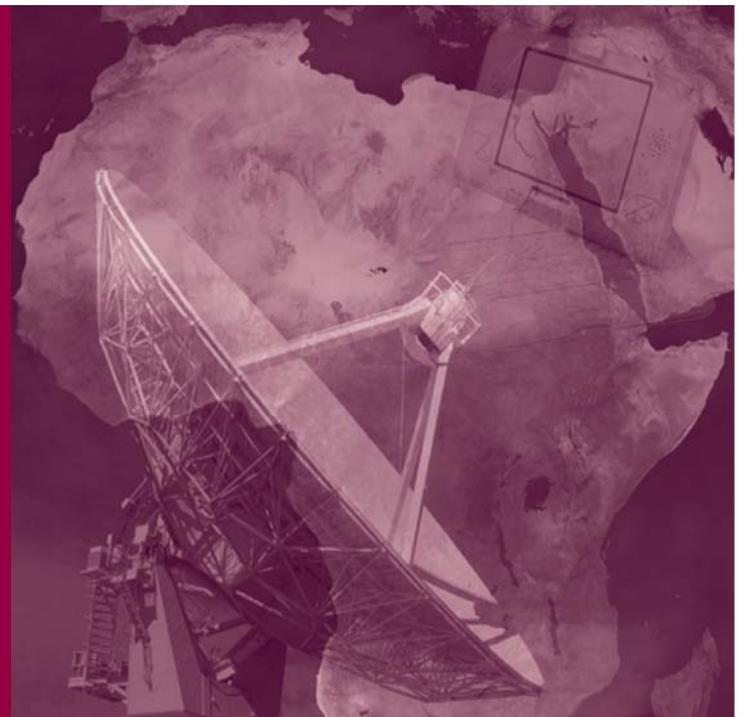
DEVELOPMENT THROUGH ELECTRONIC NETWORKS

The Office of Technology Assessment at the German Bundestag is an independent scientific institution created with the objective of advising the German parliament and its committees on matters relating to research and technology.

TAB is operated by the Institute for Technology Assessment and Systems Analysis (ITAS) at the Karlsruhe Research Centre. In executing its working programme the Karlsruhe Research Centre cooperates with the Fraunhofer-Institut für System- und Innovationsforschung (ISI), Karlsruhe.

TAB's task is to design and implement technology assessment (TA) projects and to monitor and analyse important scientific and technological trends and the associated social developments (Monitoring, Future- and Innovation Reports, Policy-Benchmarking Reports).

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DEVELOPMENT THROUGH ELECTRONIC NETWORKS

INFORMATION AND COMMUNICATION TECHNOLOGIES IN AFRICA

Report on TA project »Internet communication in and with developing countries. Opportunities for development co-operation – the example of Africa« for the Committee on Education, Research and Technology Assessment

TAB

THE COMMITTEE'S PREFACE

Following an initiative of the Committee on Economic Co-operation and Development, the Office of Technology Assessment (TAB) at the German Bundestag (i.e. the German parliament) has carried out a project on the relevance of the Internet and other new information and communication technologies (ICTs) for social advancement in developing countries. This final report, entitled »Internet communication in and with developing countries – the example of Africa and opportunities for development co-operation«, documents the results of the project.

The past decade has seen the topic of ICT move significantly up the development policy agenda. Although there has been highly controversial discussion on the best ways of approaching the promotion of ICT and on the outcomes of promotion activities, everyone agrees that the problems faced by developing countries will only be exacerbated if they continue to lag behind in respect of ICT in the long term. What is more, both new and old ICTs – including the Internet and mobile telephony – are in many cases already being put to good use in development co-operation activities, although considerable potential still remains untapped.

Against this backdrop, the Committee on Education, Research and Technology Assessment commissioned the TAB to investigate opportunities presented by ICT and in particular the Internet, problems of the global digital divide, and basic prerequisites for ICT use to promote development. Because sub-Saharan Africa faces highly specific development challenges and because many of its problems, in the area of ICT as elsewhere, are particularly dramatic in nature, this region was chosen as the project's geographical focus. During the course of the project, quantitative and qualitative empirical studies into the use of the Internet and other ICTs were conducted; these also included research at the local level. Actors from African and other developing countries were involved in work on the project.

In the first place, the report analyses and discusses the use of ICT and how it can contribute to social development in the context of the situation in developing countries.

Secondly, a more detailed examination is undertaken of contributions relating in particular to the areas of democracy, good governance and civil society, of industry and trade, and of education, research and technological development.

Thirdly, the results of these analyses are used to draw conclusions about concrete and strategic courses of action and challenges for German development co-operation within the context of general issues relevant to research and education policy.

As one might expect, it was found that ICTs can, under certain circumstances, make a considerable contribution to social advancement in developing countries. Precisely the example of sub-Saharan Africa, however, shows that there are still very significant obstacles to the use of these technologies, and especially the Internet, to promote development throughout society. Be that as it may, societies in developing countries are in great need of both new and old ICTs, and a variety of sensible uses can already be observed. Besides strengthening development-oriented elites in civil society, government and business, such use also directly improves the life situation and opportunities of the poor. One can hardly over-emphasise the importance of the shift in cultural and political mentality that goes hand in hand with the dissemination of modern ICTs. As far as development co-operation is concerned, there are many different ways to promote the use of ICT, a challenge that cuts across many areas of development policy.

This report provides the German Bundestag with a broad and solid information basis for further engagement with the question of ICT for development. For sub-Saharan Africa, a region of great importance in development policy, the report considerably extends the contextual knowledge available to political decision-makers and development co-operation actors. Furthermore, the study will make a valuable contribution to any future attempt to come to terms with the opportunities and challenges one may expect to meet on the often difficult common path towards a global knowledge society.

Berlin, April 15, 2008

The Committee on Education, Research and Technology Assessment

Ulla Burchardt, Member of the German Bundestag
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FOREWORD

From time to time, one still encounters dismissive reactions when Africa is mentioned in the same breath as modern information and communication technologies. Perceptions of the »black continent« have been profoundly marked by standard clichés: to the traditional racist images of primitive, instinct-driven and technologically backward natives and a population apathetically enduring the worst famines have been added new images of horror that draw their persuasive power from phenomena such as the mass murders in the Sudan and the continuing massive spread of Aids, as well as from worrying developments like the unchecked growth of the continent's major cities. To counter an image of Africa constructed from such elements, current political arguments seek to emphasise above all the manifold processes of democratisation and modernisation that are at work. In addition, a more nuanced view of African cultures has brought globally relevant aspects of sub-Saharan traditions into the public's field of vision.

Focusing on Africa south of the Sahara, this report, entitled »Development Through Electronic Networks«, discusses ways in which modern information and communication technologies and, above all, the Internet can contribute to social development. Rather than expressing unfounded optimism, the report explains how difficult the current overall situation is in this region of the world and how great the obstacles still are to sensible utilisation of modern information and communication technology. At the same time, however, to counter the pessimistic cliché of perpetual African backwardness and passivity, the report highlights the diverse use of information and communication technologies in this region and discusses the extent to which these may be able to help improve the lives of the African populations and reform their societies and political systems.

A considerable dynamism has long since been apparent, and not only in those fields of application of information and communication technologies which have formed the particular focus of the study (democratisation, the economy, education and research); such a dynamism might enable sub-Saharan Africa to secure an appropriate position in the evolving global information society. One may cite many examples of this, from the active role played by African states and non-governmental organisations in international political activities and discussions around this theme, via the variety of ways in which African businesses and civil society actors are adopting modern information and communication technologies, to the efforts being made through development co-operation. The opportunities and challenges that co-operation with sub-Saharan Africa presents in this context are also a central theme of this report. The numerous possible courses of action that are presented and discussed in the study, however, are proposed

against the backdrop of a detailed and wide-ranging analysis of current use of the Internet and of other information and communication technologies.

Just how inaccurate the defeatist images are that portray Africa as a lost and technophobic continent wallowing in its own misery is shown, among other things, by the developments of recent months, during which a variety of efforts to improve broadband cable links have been gathering momentum. For example, following long and complicated negotiations, the »Eastern Africa Submarine Cable System« (EASSy) project, targeting Eastern Africa (including some inland areas), has overcome some important hurdles. Not least thanks to German support, all the necessary promises of finance have now been given, small African providers have been engaged and production of the cable has begun. As far as the much-discussed »100 dollar laptop« is concerned, which its proponents expect will constitute nothing short of a revolution, in Africa as elsewhere, in the use of information and communication technologies for education, a promising start has been made, although, as the study predicted, a certain ambivalence towards the project and a lack of clarity as to which players will be involved have become manifest. Set against the growing interest shown by some global information technology companies is the disillusionment of idealistic supporters and a growing political scepticism in Africa. While large-scale projects of this type often run the risk of forcing the populations of developing countries into mere spectator roles, the sub-Saharan Internet public sphere that was thoroughly analysed in the study has continued to grow. This Internet public sphere not only provides a commentary on advances and setbacks in the area of information and communication technologies, but has once again, during recent political events in the region, shown itself to be an important factor in the debate within Africa and in informing the global public.

Overall, the study shows that sub-Saharan Africa is one of the areas in which development through electronic networks is both possible and ripe for implementation. If the complex reality of this region of the world is not ignored in a wave of excessive optimism and if dubious panaceas are avoided, modern information and communication technologies, and particularly the Internet, can make important contributions to social development.

Berlin, July 2008

SUMMARY

Since the 1990s, Africa has moved back up the political agenda, thanks above all to the United Nations Millennium Declaration and to Africa's own efforts to achieve reform and unity. The use of information and communication technologies (ICTs) to promote social development, on the other hand, continues on the whole to be marginalised in the international development policy debate. It is true that the subject has received a certain amount of attention, in which Africa has had its share, on account of the two-phase United Nations World Summit on the Information Society (2003/2005), but outside the continent, a development policy community comprising for the most part only non-government actors, a small number of »Northern« states and a handful of international organisations has adopted the issue so far.

A glance at the current programmes and strategies put in place by African states and regional organisations, the practices and representations made by the institutions of African civil society and the development in Africa – in some cases extremely rapid – of the Internet and mobile telephony, however, shows how topical the subject is. The fact that Africa itself is interested in putting information and communication technologies to use in a way that will benefit the continent's development is in itself enough to ensure that German development policy and co-operation will have to devote its ongoing attention to this subject and clarify its own strategy.

It is against this backdrop that this report by the TAB investigates in particular the current state of Internet use in Africa south of the Sahara and its potential for the future. Three areas of application, which largely correspond to the priority areas designated by the German government, form the central focus of this analysis:

> Democratic development, government action and civil society;
> Economic development and trade;
> Education, research and technological development.

The enquiry, commissioned by the Committee on Education, Research and Technology Assessment of the German Bundestag (i.e. the German parliament) in co-operation with the Committee on Economic Co-operation and Development, is primarily concerned with Internet use. Nonetheless, it does not regard the Internet as being detached from other information and communication technologies, whether conventional (e.g. radio and television) or new (e.g. mobile telephony). In consequence, the analysis also contributes to the overall discussion of the use of information and communication technologies for development

(ICT4D). As far as German development co-operation is concerned, an insufficient strategic clarification of the importance of »ICT4D« is evident.

This report will present an evaluation of the current and probable future importance for African development of the Internet and other ICTs, and an account of the study's main findings with regard to the status quo in sub-Saharan Africa and the three key areas of application on which the study focused. In conclusion, concrete courses of action for individual areas of practice will be indicated, and general guidelines aimed at clarifying the strategic importance of ICT4D in German development co-operation will be put forward for discussion.

THE INTERNET – AN ELITE MEDIUM WITH A FUTURE?

Generally speaking, the Internet in sub-Saharan Africa – though considerable differences exist between the various groups of stakeholders and states – is still an elite medium. In 2005, approx. 3% of the sub-Saharan population used the Internet, the rate in many states being below 1%. The fact that the Internet is used to a relatively low extent in sub-Saharan Africa, however, must be qualified and put into context in a number of respects:

> Firstly, Nigeria and South Africa, both populous countries, have Internet populations of roughly five million people each; this is a level of Internet use at which even ambitious Internet-based projects and strategies appear worthwhile. The same applies to less populous countries where the rate of Internet penetration of the population is relatively high in comparison with other African countries.

> Secondly, the Internet should not be judged solely on the basis of its direct benefit for or direct use by broad sections of the population. Alternative elites (e.g. non-governmental organisations, NGOs) which can have a multiplier effect, as well as government and pan-African official bodies, already require high levels of modern ICT for their internal and external communication. The same applies to internationally active business enterprises and institutions of higher education, and to communication with African migrants (the »diaspora«) in developed countries.

> Thirdly, the Internet, in conjunction with mobile telephones and radio, can be useful in a range of important areas (e.g. good governance, strengthening of civil society, the healthcare sector, agriculture, disaster prevention).

Nonetheless, there is still a very great need for systematic monitoring and an extensive evaluation of ICT4D activities. Unless there is a marked improvement in the knowledge base in this area, it is likely that many activities will also not produce the desired results in the future. Even within the development co-operation activities of individual donor countries, there is room for improve-

ment as regards the state of knowledge about and the coordination of ICT-relevant activities.

Whether there are political grounds for promoting the use of ICTs in developing countries must – in line with the international consensus on development policy – be determined on the basis of how suitable these technologies are for making a contribution to the elimination of poverty and to the achievement of the other Millennium Development Goals (MDGs) contained in the United Nations (UN) Millennium Declaration. Although many question marks remain in this context and a stronger »pro-poor« orientation is urged in many cases, considerable potential is evident and indeed a number of actual successes can be pointed to in areas such as education and health. In addition, the use of ICTs can make sense when it comes to strengthening governmental and non-governmental structures regarded as crucial for the development of society as a whole. In Africa, together with reform countries and non-governmental organisations (NGOs), the New Partnership for Africa's Development (NEPAD) and the African Union (AU) are important partners.

To date, the general verdict as to the chances offered by Internet use has been inconclusive: although there are examples showing that the Internet can directly play a useful role in combating poverty and achieving the MDGs (e.g. in the area of healthcare), its deployment often does not yet appear practicable due to a lack of basic prerequisites (from literacy levels in the general population and good governance structures to the availability of electric power). It is above all, therefore, the elites in the widest sense who are likely to profit from use of the Internet – teachers and non-governmental organisations, institutions of higher education and national and pan-African stakeholders.

NO UNIVERSAL FORMULA FOR THE USE OF ICT FOR DEVELOPMENT

Current studies initially show that the use of ICTs has a positive effect on productivity and economic growth, albeit not at the same level across all industries and countries. If one compares the developed and the developing countries, it is noticeable that the use of ICTs has a stronger impact on economic growth in the former than in the latter. What is more, economic and social development do not necessarily go hand in hand; positive economic development can, especially in developing countries, actually be accompanied by a widening in social inequality. Social inequality, particularly when it is extreme, can also prevent economic growth in the longer term. As far as strategies for development policy are concerned, this means that it is not enough simply to pin one's hopes on economic growth, and that this must be complemented by a policy aimed at improving the quality of life equally for everyone.

In principle, the diffusion of mobile telephones, computers and the Internet follows the same pattern, i.e. general growth accompanied by increased differentiation. Though developing countries are making increasing use of these technologies, they are not catching up with the developed countries. Incontestably, some ICT4D projects have brought about positive effects, as this TAB report shows in various areas. Overall, however, the progress achieved hitherto is somewhat sobering, for a number of reasons: because many projects failed or could not be established on a sustainable basis; because the desired effects in terms of development policy did not materialise; because the use of ICTs was not embedded within a framework of wide-ranging development strategies; because investments were made in the wrong technologies, i.e. ones not adapted to the local circumstances; and because no comprehensive, well-founded evaluations were carried out.

The discussion as a whole indicates that there is no universal formula for using ICTs in line with development policy goals. Prerequisites for the successful use of ICTs include the following: a strategic focus on the Millennium Development Goals, due consideration of the local circumstances and conditions, active participation of the persons and institutions directly involved, coordinated collaboration between development co-operation organisations, long-term and sustainable planning, continuous monitoring of project progress, and avoidance of negative side-effects.

THE SITUATION IN SUB-SAHARAN AFRICA: CHASING WITHOUT CATCHING UP

An overview of the general social conditions and situation as regards the dissemination of ICTs south of the Sahara reveals a mixed picture: despite all the progress in key areas, e.g. with respect to democratic forms of government, debt reduction and economic growth, Africa is in overall terms the continent that in recent decades has lagged furthest behind the rest of the world, development in many sub-Saharan countries being particularly dismal. Any such statements, it should be borne in mind, are subject to the proviso that the differences within sub-Saharan Africa and within the individual countries are in some cases extremely great.

This paradoxical picture – progress without ever catching up – is equally evident in the domain of ICT. Following a prolonged period of stagnation, recent years have seen considerable growth, particularly in the area of mobile telephony. This is linked, among other things, to the waves of privatisation and liberalisation of the telecommunications sector in the 1990s that led to the introduction of competition in the mobile phone sector in almost all African countries. Both the pan-African institutions and national governments have presented ICT ac-

tion plans aimed, for example, at expanding the African information infrastructure, improving IT education at all levels, from primary school to university, and creating export-oriented ICT service centres.

Africa's ICT infrastructure, especially its links to international electronic networks, together with the creation of networks within the African continent, continues to be poor. Possible advances through more intensive use of the undersea broadband cable along Africa's Atlantic coast have hardly been realised to date due to restrictive access regulations. For political and financial reasons, the long-planned extension of the submarine cable on the east coast has been repeatedly delayed. The much wider use of mobile telephones has exacerbated the »fixed network crisis«, with investments in this area failing to keep up with demand.

As far as use of ICTs is concerned, radio is the most popular, remaining far more widespread than television, the second mass medium. Political reforms have been one factor in the emergence of a diverse radio landscape, one that is partly commercial, partly state-funded, and partly financed by development organisations. In many African countries this radio network offers programmes that are tailored to local information needs. Mobile telephones have not only far outstripped fixed line telephones in terms of usage, but continue to exhibit high rates of growth. Nevertheless, Africa still ranks bottom as compared with other continents. First and foremost, it is the urban middle classes who are able to afford their own mobile phones. In rural areas, however, there is great scope for community use of mobile telephones – potential that is already being tapped to some extent by development co-operation projects. The picture as regards use of the Internet is rather similar to that for mobile telephony, albeit on an even lower level. The growth rates are relatively high, yet the level lags well behind that of other regions of the world. The costs of using the Internet are still extremely high as compared with other countries, and therefore unaffordable for the majority of the impoverished population of sub-Saharan Africa.

DEMOCRACY, GOOD GOVERNANCE AND CIVIL SOCIETY

»Democratisation, good governance and civil society« is a focal area in German development co-operation and the country's partnership with Africa. The priority here is to identify new possibilities for action on the part of both government administrators and civil society actors. What can ICT contribute to development in this field, and what is it already achieving, not least in supporting a democratic political public sphere?

STATE AND ADMINISTRATIVE ACTION

Examining the handful of existing external and internal evaluations of e-government projects in developing countries, it is easy to gain the impression that

the overall appraisals they contain are hardly sufficient to support robust generalisations. Clearly, however, there is a series of e-government projects which have been successful in meeting even the higher-level goals of development co-operation. At the same time, on the other hand, it seems plausible to assume a high failure rate, especially in cases where planning proves unrealistic in terms of the existing conditions relating to infrastructure, qualifications and administrative culture. The concerted efforts to improve the Internet presence of government institutions, particularly noticeable at the beginning of the decade, must in any case be regarded critically, especially when these take place independently of any general increase in internal administrative efficiency. In the medium- to long-term, however, the advantages of e-government, even in sub-Saharan Africa, would appear to be that government institutions (especially the people's representatives) are easier to reach electronically and that extensive online information can be provided. An urgent priority is greater involvement of organised civil society through the use of ICTs. From the point of view of democratic governance, the fundamental question arises whether more efficient government action is in fact desirable in countries under authoritarian rule.

Nonetheless, ICTs offer much scope for making administrative and government action not only more efficient and more effective, but also more democratic, which potentially can be expected to contribute substantially to the development of society as a whole. To adapt what is offered to poor segments of the population, however, and to help overcome or prevent poverty, additional efforts are needed: first, the target groups among the poorer segments and their specific requirements must be precisely identified. Furthermore, it may be useful – especially in areas where the costs of using the Internet are still exorbitantly high – to create e-government centres or to make greater use of existing facilities (community telecentres, community media). In addition, e-government can be expected to have a beneficial impact on development when the use of ICTs goes hand in hand with a comprehensive and sustained administrative reform (including training at all administrative levels, particularly local ones) and with a focus on the poorer sections of the population.

CIVIL SOCIETY AND THE POLITICAL PUBLIC SPHERE

In sub-Saharan Africa there is a whole host of civil society organisations, projects (including in the area of development co-operation), groups, individuals and media stakeholders for whom the Internet already plays a central role or could play such a role given better conditions for access and use. To this may be added the wide use of the Internet by transnational networks who are based in, or who communicate intensively with, this region of the world and by the diaspora. The key functions offered by the Internet are the same for users south of the Sahara, namely easier transnational exchange (where physical distance is irrelevant) and self-portrayal through websites, the use of online information

resources, access to or creation of political public spheres and the mobilisation of supporters and, in the case of some actors, the improvement of internal networks. Non-governmental organisations often note that a great deal still needs to be done in the area of ICTs, in terms of both quantity and quality, that is to say also as regards new ICTs.

Having a website is frequently seen as a sign of professionalism. Moreover, to achieve an »eye-to-eye partnership« with »Northern« actors (especially in development co-operation where NGOs are concerned) it is important to be able to use e-mail. Transnational communication is also essential for civil society organisations, political opposition parties and others who have a matter they wish to communicate to the international, pan-African or national public sphere (including the diaspora). It is noticeable that non-governmental organisations and civil society networks specialising in ICT form a diverse and closely interwoven ICT- and Africa-based Internet public sphere that continued to thrive even after the second UN World Summit on the Information Society (Tunis 2005). Their specific competencies are increasingly benefiting the activities of African civil society as a whole, as the example of the women's movement shows.

The Internet can also serve as a relatively inexpensive means of reaching the general public (e.g. as compared to newspapers, flyers or posters), especially when it supplements other channels of communication. It has a relatively low direct impact, but does reach potential information multipliers and influential actors, allows abundant information to be made publicly accessible and, what is more, offers a high level of interaction. E-mails have long played a central role in political debates and are also used to send information to large numbers of people in sub-Saharan Africa. Among the risks that Internet use entails are new opportunities for propaganda, communication and recruitment on the part of political fanatics.

Using the Internet in conjunction with other ICTs means that some organisations can also improve internal networks and the general efficiency of their work, especially with long-distance partners. In journalism, the Internet is already an integral part of the working day in many places: while providing an online edition of established newspapers and magazines is merely one additional benefit (albeit a considerable one when one thinks, for example, of the diaspora), the Internet has become a vital means of research and communication for journalists themselves. This applies not only to journalists in big cities but, if anything, even more so to their colleagues in peripheral rural areas. Moreover, an anonymous online publication on politically sensitive issues is relatively safe. Media development co-operation often concentrates in particular on providing training and continuing education and (at least in Germany, and worldwide according to the World Bank) is not given the weight within development co-operation that it deserves in view of the importance of the public sphere for de-

mocracy. There seems to be a great deal of room for improvement, in particular in the ICT equipment that is available to journalists.

The results of the TAB study show that the Internet, even for groups with »Internet affinity«, often only has a significant political benefit when combined with other means of communication. Given the wide dissemination of radio in sub-Saharan Africa and the rapidly increasing number of mobile phone users everywhere, it is natural to use the Internet, above all, in a complementary role. As regards the strategic use of ICTs for political campaigns and protests (»e-activism«), the use of text messaging is of particular interest in developing countries; there are also the first signs of and considerable potential for text message-based political activism south of the Sahara, e.g. for the purposes of civil society election monitoring. Particular potential is offered by the combination of text messaging and the Internet in e-activism campaigns where the Internet can be used to address an interested – even international – public and organise the campaign itself.

There are many reasons for assuming that considerable numbers of users in some countries take advantage of the Internet for political information and communication above and beyond the work that is done in NGOs. This is evident not only from the websites, mailing lists and online networks of professional providers in the field of journalism and transnationally-organised civil society networking organisations: even the political websites of individuals and small groups are already forming wider spheres of public awareness via the Internet, especially in populous countries with relatively high Internet penetration rates like Kenya, Nigeria and South Africa. A pan-African digital discourse that includes the diaspora is being created, at least potentially. One political advantage is that Africans in the diaspora, who tend to have greater resources and more international contacts at their disposal, can receive direct reports from their homeland. In an ideal situation, the online discussion forums of the diaspora itself can become a place of exchange between the followers of opposed groups, though they can also reflect and even deepen existing dividing lines. It is a testimony to the growing role played in Africa by the Internet-based political public sphere that the governments or individual politicians in some countries assign considerable value to this sphere and to their own Internet use.

ICT USE IN INDUSTRY AND TRADE

Networked computer applications in industry are relevant on the one hand to internal, business-oriented needs and, on the other, to cross-company, trade-oriented requirements. It is hardly surprising that these applications are not particularly widespread in Africa as compared with most of the countries in the northern hemisphere. Not only are the prerequisites for the deployment of ICTs

poor; even the fundamental conditions for business are not computer-friendly: in overall terms, the southern African economy is still largely agriculture-based, with the informal sector dominating both in the country and in large cities. Trade, transport and transaction infrastructures (financial payments, banks) are inadequate virtually everywhere. Given that this is the case, it would appear to make little sense to promote the deployment of ICTs solely in the business domain. Only if this is enshrined within a comprehensive policy of economic development with a long-term outlook can the potential be tapped that doubtless exists for the economy and only then is it conceivable that e-business and e-commerce could develop and catch up.

In small and medium-sized enterprises the telephone is more or less the standard means of business communication, with mobile phones predominating. All the same, there is relatively high demand for fixed network connections (that are as inexpensive as possible) for fax and Internet use. Computers and the Internet are available far less frequently, especially in the informal sector. There is immediate economic potential for small-scale rural businesswomen, for instance, if supported by micro-credits to pay for mobile phone services.

A widely discussed proposal focuses on mobile phone-based banking and payment services, as these could close an existing gap in the financial transactions infrastructure. The few systems that are available are not in widespread use and are operated either directly by banks or by mobile phone providers. However, they are run on a credit basis and are limited to small amounts, which means that they cannot be seen as a fully-fledged substitute for a bank account. Future development, especially of bank-independent mobile payment services, will depend on the attitude of policy-makers to this innovation (especially as regards its regulation) and on the influence of the banks. As a rule, banks have no interest in helping new rivals such as mobile phone companies that offer their own financial payment services to business and private customers.

Computers and the Internet are used widely in the formal sector of the economy. Internet use is dominated by information-, communication- and marketing-oriented transactions; business transactions carried out directly on the Internet are fairly rare. These are most likely to be encountered in the subsidiaries and branches of large international corporations or in the African suppliers of such multinationals. In these situations the need to use computers and the Internet is generally not in question, as it is regarded as a given in international business relations. However, by participating in international electronic business transactions, African firms enter into direct competition with many other companies from developed and developing countries. This generates opportunities, yet also considerably increases the economic pressure. Supplementary strategies and, for some companies, even alternative ones should thus be targeted towards local

markets within Africa or, on the level of international trade, should attempt to find niche markets for specialised African products.

Effectively, the problem of the African economy is not that the use of ICTs represents a major hurdle for internationally-oriented African businesses, but that there are too few such companies and the economic framework conditions are poor. Development aid should therefore be geared to promoting the use of ICTs as part of a long-term economic development policy whose central focus is on improving opportunities for African trade.

EDUCATION, RESEARCH AND TECHNOLOGICAL DEVELOPMENT

As far as the education of children and young people is concerned, the theory that modern ICTs can play a motivational role cannot be ignored. Despite the risk, which has been much in discussion again recently, of children and young people using computers and the Internet in a way that appears to have little educational value or is indeed detrimental, there is no doubt that independent use of new ICTs and access to the Internet also present opportunities. On the other hand, an ICT-based »opening up to the world« can contribute to the destruction of cultural traditions worthy of preservation. If this is borne in mind and if scope is created for people to put their new skills to good use in their professional lives on a local level (or at least within Africa), the positive effects can be expected to outweigh the negative ones.

Some evidence is already available in sub-Saharan Africa from projects aimed at supplying schools with computers and Internet access and using ICTs in teacher training. School projects would appear to benefit development if, on the one hand, ICT skills are specifically targeted and, on the other, the right framework conditions are put in place to ensure that the projects are sustainable (e.g. government capping of costs for school Internet use, establishment of inexpensive advisory and maintenance services for schools, exploitation of the potential offered by free and open-source software and solutions to the problems of disposal). Software and hardware solutions should be chosen such that even older computers can be used effectively, costs of ownership are not too high and the costs of maintenance and administration are as low as possible.

African e-leaning skills and content are noticeably gaining in strength, and this is likely to have a beneficial effect on development provided that the Internet infrastructure (including aspects of cost) in sub-Saharan Africa is significantly improved. Access to knowledge and information via the Internet can satisfy a basic demand among teachers at primary and secondary level, among self-study students and among the various participants in informal teaching (including the staff of development aid agencies). In teacher training and other areas of tertiary education, e-learning and Internet access already present numerous opportu-

nities, even if the content and courses on offer come from the »North«. Providing that those learning are sufficiently motivated and have enough spare time, the institutions or companies in which they work can also profit indirectly. Here too, the importance of additional motivation generated by enthusiasm for technology, together with generally improved individual opportunities on the labour market, should not be underestimated. In the case of teachers at primary and secondary level, however, one must ensure at the same time that tangible material incentives are provided to encourage them to put the skills they have acquired to use in the area of education.

The Internet is of the highest importance for academics in particular because their work situation in sub-Saharan Africa is for the most part problematic. Nowadays, the opportunities offered by the Internet for research, information, communication, networking and efficiency are not only an essential prerequisite for academic work, but have an even higher significance in sub-Saharan Africa than in developed countries. From a costs-benefit point of view, supplementing libraries with digitally available knowledge would appear to be a highly promising step, although areas such as the equipping of African university libraries, ICT qualifications and the development of appropriate models of open online access to knowledge still present considerable challenges. In any case, the political desire for greater co-operation and productivity within the African research community cannot possibly be fulfilled without major improvements in the area of ICT. This is particularly true of the declared objective not only of developing centres of excellence but also of promoting the broader research community. The benefits of ICTs, however, especially as regards time-consuming international co-operation, are in some cases severely limited on account of fundamental difficulties in the work and lives of African scientists. Nonetheless, universities can also push forward the use of ICTs by society as a whole and, what is more, can contribute in the area of software to developing home-grown African technology. Besides basic infrastructural deficiencies in sub-Saharan Africa and at the universities themselves, a lack of ICT-relevant skills and an often far from perfect style of governance (especially on the part of politicians and university authorities) have been the primary obstacles to development so far.

Generally speaking, African and »Northern« stakeholders appear to be justified in attributing a key role to ICTs when it comes to boosting education, research and technological development in sub-Saharan Africa. Developments and potentials in the area of ICT show that modern ICTs, if used in a way that reflects the requirements and is conducive to development, can be a central element in realising the ideals of a knowledge society and economy in sub-Saharan Africa.

POSSIBLE COURSES OF ACTION

What conclusions can be drawn from the results of the TAB project with respect to German development co-operation with Africa in the area of ICT? Possible courses of action will be outlined below for selected fields, the focus once again being on the three key areas of application which form the subject of the study.

INFRASTRUCTURE AND REGULATION

Support provided to help African states and pan-African and international players to improve ICT infrastructure and regulation should be continued and intensified, as it is here that the greatest positive effects are likely across all the different areas of action. The primary objectives in this context should be to reduce the costs of using ICTs, to ensure equal access for the landlocked developing countries of Africa, and to improve the situation considerably in rural areas and, more generally, in peripheral socioeconomic regions. A basic prerequisite for this infrastructure to be used in a way that will benefit development is to empower civil society stakeholders on all levels.

One prominent activity in this connection is the implementation of the East African submarine cable EASSy project; Germany should continue to provide support within the constructive role it is already playing. If this project is implemented and developed in a user-friendly way that takes the specific requirements of Africa's landlocked countries into account, the pressure of competition and the exemplary role played by EASSy could lead to an improvement in the generally unsatisfactory situation as regards the West African submarine cable.

AFRICA, OUR CONTINENTAL NEIGHBOUR

It is widely agreed that Africa, as Europe's continental neighbour, deserves greater political and public attention and should benefit from more intensive transcontinental communication and co-operation. The African diaspora in Europe, experts in African studies, non-governmental organisations in Africa and Europe, and journalists, among others, have a central part to play here, especially as regards the role of the Internet and new ICTs in general. A great deal of importance is also attached to exchanges between the citizens of African and European countries, for example contact between young people. Here too, Internet communication can play a significant role. Forums for exchange can be made available by creating appropriate government or government-funded online portals (e.g. under the banner »Neighbouring Africa«), which ideally should be multilingual. The Internet could thus also be increasingly used to help achieve a breakthrough by persuading the German public to adopt a more nuanced view of Africa. Better coordination of development co-operation and cultural policy would be helpful, as it is particularly in the area of culture that the

processes of globalisation can become processes of mutual learning. Partly thanks to the possibilities that the Internet has opened up for trade (e.g. music) and advertising, economic opportunities are also presented for African artists and the country's cultural economy.

GOOD GOVERNANCE, DEMOCRACY AND CIVIL SOCIETY

Good governance is a field of action that in many respects is well-suited to being a focus of the ICT-related activities of German development co-operation: for one thing, Germany's internationally recognised commitment in this area could profit if the country were additionally to make its mark in the area of ICT4D. For another thing, German co-operation is already pursuing a relatively large number of ICT4D activities. ICT, after all, can make it easier to achieve several particularly important development goals in this context, e.g. the fight against corruption, the strengthening of civil society and the media environment in Africa, the development of rural regions and the promotion of pan-African and regional integration.

Of particular importance in this context is the »African Peer Review Mechanism« (APRM). This good governance programme, conceived by NEPAD for the mutual support and control of African states, is regarded as a central element of pan-African aspirations towards further democratisation. To make this instrument even more efficient, increased support of the national APRM processes is needed. The ICT requirements of civil society stakeholders who are to play a key role in these processes and beyond are high. What is more, it would be highly desirable to use the Internet to improve co-operation between government players and organised civil society. A further priority of German Africa policy, namely the strengthening of parliamentarianism, suggests that it would likewise be valuable to promote more intensive co-operation and support of African partners in the area of ICT, such as the Pan-African Parliament (PAP) of the African Union (AU). Other fields are relevant to e-government on a national level, e.g. financial management in the civil service, healthcare and health management, access management through the establishment of one-stop shops and general improvement of service provision in rural areas. Particular importance should be attached to giving due consideration to local factors. This concerns, among other things, the infrastructural prerequisites, the ICT skills of political and civil service players, their work cultures and the language diversity in many African countries. In local governance structures, even greater emphasis could be placed on the integration of ICT components to strengthen civil society. Another obvious step would be to continue promoting geographical information systems, as there is considerable room for improvement in this area in sub-Saharan Africa. The use of ICTs also has great potential in the fight against corruption.

Given the relatively extensive use of IT that is already in place in civil society and journalism within sub-Saharan Africa, increased efforts in the realm of development co-operation are clearly worthwhile: besides bringing about an improvement (which would be virtually cost-free) in the networks linking development aid agencies and other German stakeholders to these groups (thereby enabling a more intensive exchange and the creation of new publication possibilities) and extending training activities in the media industry and for NGOs, it is essential above all to improve the infrastructure and reduce the costs of ICT use. In addition to upgrading media development co-operation and taking forward measures for ICT-based training and continuing education, greater support of democratic media stakeholders and non-governmental organisations in the form of ICT equipment would be sensible. Another initiative worth considering would be support for a longer-term »e-activism« pilot project based on a »technology mix« (e.g. Internet, radio and text messaging) with the aim of improving the scope for action by civil society players (e.g. women's organisations) and contributing to fair democratic elections. It is also conceivable that the installation of ICT-based warning systems for populations in war zones could be funded, systems that could be used during international support and protection activities. Relevant measures could also include a German initiative to set up an international ICT fund for non-governmental organisations in the poorest countries and, more generally, to stimulate and promote Public Private Partnerships to support NGOs with ICTs.

EDUCATION, SCIENCE AND ICT SKILLS

Even though there continues to be considerable need for evaluation and research as regards the use of ICT4D in education, certain fields of application can be regarded as particularly appropriate. Worthy of mention in this context is the training and further education of teachers, together with distance learning, which plays a very important role, particularly in Africa. Better levels of ICT equipment in schools, in conjunction with sustainable use concepts and generally improved equipment, likewise appear to make sense. Possible partners here are the e-Africa Commission of NEPAD and SchoolNet Africa. The goal of supplying all children with their own computers, on the other hand, is highly controversial. The vision pursued by the foundation »One Laptop per Child« (OLPC) with its »100 dollar laptop« initiative, invites objections, among other things, to its educational ideas and financing scheme. In view of the huge potential – both positive and negative – of this initiative, which was welcomed by Germany's Federal Minister for Economic Co-operation and Development as a step in the right direction, accompanying measures within the framework of development co-operation would seem wise. The same applies to competing projects and products. In this connection, as in many others, a reinforcement of African ca-

pabilities in information ethics, technology assessment and expertise on the ecological impact of ICT use would be a goal worthy of aspiration.

In sub-Saharan Africa, Internet use in higher education presents particular opportunities, which include the development of home-grown African technology. This would benefit science and research and their integration into the international community, and would strengthen the role of the Internet within national innovation systems. As a prerequisite for rapid success, together with improvements in the infrastructure and an appropriate setting of priorities by politicians and science managers in Africa, intensified activities would be needed on the part of the »Northern« actors in scientific and technical co-operation and German development co-operation. The European Union (EU) has recently stepped up its activities in this area. In this connection the sub-Saharan academic consortia which jointly purchase more bandwidth at lower prices (»bandwidth consortia«), as well as the national research and education networks (NREN) and other academic networks, should be further expanded as strategic partners. A key role in intensifying scientific co-operation, including Internet use, can be played by African studies and other disciplines directly concerned with Africa. Of particular importance also is the experience acquired in completed and ongoing ITC-related research projects on which African and European or German partners have already co-operated. The prioritisation of e-learning in Africa that has been undertaken by various German institutions appears reasonable, given the special potential that exists for such programmes in sub-Saharan Africa. Developments in free and open-source software also offer great opportunities, although this presupposes a considerable improvement in relevant expertise and greater popularity of this type of software in Africa.

AN OVERVIEW OF THE POSSIBLE COURSES OF ACTION

In light of the results of the TAB study, the following possible courses of action, relating in particular to Africa, appear particularly relevant to development policy:

> *Regulation*: Intensification of advice for and support of African partners for development-friendly telecommunications and media regulation. The German Federal Ministry for Economic Co-operation and Development (BMZ) has already signalled its intentions in this area.
> *Large-scale infrastructural projects*: Continuation of activities to support the development-friendly realisation of ICT infrastructural projects. The planned East African submarine cable EASSy is particularly relevant here.
> *Promotion of deprived areas*: Maintenance of the spotlight of ICT4D projects on rural and other peripheral areas. A more systematic exploitation of synergy effects for ICT4D during development co-operation projects in a particular area would appear to be desirable.

› *Reproduction of success stories*: Propagation and geographical expansion of successful ICT4D projects (»scaling up«), though without ignoring local specifics.

› *Mobile communication*: Greater exploitation of the diverse potential for mobile communication in fields such as industry and trade, and in democratic and civil society engagement, with special attention being given to the scope for combining mobile communication with the Internet and other ICTs.

› *e-Government*: Continuation and intensification of government use of ICTs for administrative reforms and development, and particularly for combating corruption. The focus could be placed on government partners (and especially parliaments) that already practise good governance, and on pan-African and regional actors.

› *Civil society*: Intensification of support for non-governmental organisations and other civil society actors in the area of ICT (particularly in view of the APRM process, women's organisations and civil society groups in trouble spots and endangered democracies). Possible activities in this domain could be the (co-) promotion of a cross-media e-activism pilot project and of ICT-based warning systems for populations in war zones.

› *Media and the political public sphere*: Increased activities in the area of media development co-operation, particularly in equipping editorial offices and improving the working conditions of journalists, as well as intensified appeals by the German government to governments that practise censorship and take reprisals against Internet public spheres.

› *The perception of Africa in Germany*: Promotion of a nuanced view of Africa, increasing the scope for action by the diaspora, and intensification of cultural exchange and cultural trade via the Internet.

› *ICTs for education and ICT skills*: Expansion of successful forms of ICT use for continuing education (especially e-learning) and expert support of African partners (e.g. in schools, small and medium-sized enterprises, the healthcare sector, non-governmental organisations and public administration).

› *Information and knowledge society:* Strengthening of the sub-Saharan higher education and research environment through more intensive activities in and for ICTs, greater co-operation with industry (e.g. on ICT services) and the intended closer coordination between scientific-technological co-operation and development co-operation.

THE STRATEGIC ORIENTATION OF GERMAN DEVELOPMENT CO-OPERATION

Deficits are evident in the strategic orientation of German development co-operation when it comes to the subject of ICT4D. To eliminate these deficits, the report proposes a broad dialogue, involving politicians, academics, business

leaders, civil society representatives and development co-operation actors, not to mention actors from the developing countries and the diaspora. A strategic response to the questions relevant to ICT4D needs to be worked out on the basis of a comprehensive analysis and discussion of the current situation. The following general principles should be particularly emphasised:

> Although the concentration on the Millennium Development Goals for the use of ICTs should continue, this focus should be widened to include the three other fields of action – besides »Development and Poverty Eradication« – laid down in the Millennium Declaration. These are: »Peace, Security and Disarmament«, »Protecting our Common Environment« and »Human Rights, Democracy and Good Governance«.

> The use of ICTs is subordinate to the strategic goals of eradicating poverty and of the Millennium Declaration, and must be justified by concrete demand. The interests of development policy target groups should be addressed in co-operation with these groups.

> In Africa, the prerequisites for the use of ICTs are often particularly problematic. It is of little use to establish these prerequisites artificially, so to speak, in selected pilot projects, if these cannot be guaranteed in the long term and elsewhere. When choosing technology, the advanced digital technologies are not always the best choice: a »technology mix« often seems the best way forward.

In other words, the question of the opportunities the Internet creates for developing countries is only one aspect of the more general question of the benefits offered by ICTs for specific development goals. Hitherto, Internet communication in the world's »South« has been relevant, above all, to established and alternative elites who, to varying extents, already benefit from development co-operation (e.g. e-government, journalists' training, funding of educational institutions and support of civil society organisations). In a world that is largely organised through communication based on electronic networks, however, the populations of developing countries also need access to the whole spectrum of modern ICTs. As a core element of this spectrum and the driver of globalisation processes, the Internet is thus becoming indispensable for a growing number of people and organisations in the global »South«. It can improve the opportunities for democracy and modernisation, help to bring about structural changes within society and drive forward integration in processes of cultural, economic and political globalisation. Social change and greater participation in globalisation processes, however, also involve new challenges. If the developing countries and their partners do not face up to these challenges, the spread of modern information and communication technologies and electronic networks threatens to contribute to a further intensification of social inequalities.

In a position paper issued by the German Federal Ministry for Economic Co-operation and Development (BMZ 2004), the causes cited for the »negative development paths« in many countries of sub-Saharan Africa include »colonial exploitation and the legacy of an economy oriented towards colonial interests (export of raw materials)«. However, a key additional line of explanation makes reference to the specific political constellation in the post-colonial African states (BMZ 2004, page 10): »Instead of promoting wide-ranging development – especially in rural regions – and civil society participation, the post-colonial state essentially limited its activities to siphoning off profits (exports of raw materials) or, through protectionism, nationalisation and other forms of regulation, to giving its clientele access to new sources of profit (employment in the public sector, duties, black market, overvalued currency, external debt).« Such profit-oriented rentier economies provide no incentives for investment and production, income creation and economic diversification.

Yet the position paper also mentions a »new political momentum in Africa«. This has continued in the intervening years, and now characterises current political discourse (e.g. BMZ 2007b). The global public is thereby being made aware of processes that do not fit the defeatist image of a »lost continent« defined mainly by civil war, famine, AIDS and corruption. Alongside a number of reform countries, it is above all vigorous civil societies that have made a major contribution to creating better political conditions for the continent's development. National democratisation processes south of the Sahara, the New Partnership for Africa's Development (NEPAD), the African Union (AU) and its parliament (Pan-African Parliament, PAP) express the new political momentum of this decade. An important element in the reorientation of African states towards democracy, co-operation and mutual control is the African Peer Review Mechanism (APRM), to which roughly half the member states of the AU have already committed themselves. A far-reaching optimism for the continent's development is particularly evident, for example, in South Africa's vision of an »African renaissance« and is nourished by the considerable economic growth in several African countries and other positive developments south of the Sahara.

One would be painting a one-sided picture of the continent, however, were one to ignore the fundamental problems. Throughout virtually the whole of sub-Saharan Africa, widespread corruption is among the deficits in terms of governance and economic development. Wars, famine, malnutrition, a shortage of drinking water, illiteracy, environmental destruction and other serious problems have long been an obstacle to African development and, in some cases, have even led to a deterioration of the situation. The devastating effects of HIV/AIDS

significantly compound the negative trends. Sub-Saharan Africa is the only region of the world which is at risk of failing to achieve all of the Millennium Development Goals by the 2015 target deadline.

These developments, both positive and negative, have resulted in Africa being placed high on the political agenda for some years now. In the Millennium Declaration, the United Nations (UN) gave special attention to the development of Africa. In connection with the NEPAD initiative and their own Africa strategies, the G8 states exhibit particular interest in the continent's efforts at reform. The EU has focused its new Strategy for Africa on the processes triggered by NEPAD and has launched or announced a variety of measures and initiatives for co-operation with the AU and other African players, some of them in the area of ICT. Various European governments and numerous non-governmental stakeholders from the »North« emphasise the importance of co-operation with Africa and are keen to support the continent's development and democratisation processes. In 2007, Germany made Africa the focus of its EU and G8 presidency; here too, NEPAD and the AU are key points of reference. Federal President Horst Köhler likewise gave Africa a central place in his programme. The postcolonial division into donor and recipient countries is regarded as outdated, and the new political and economic developments in Africa are being taken as an opportunity to promote the vision of an »eye-to-eye partnership« (e.g. CDU/CSU/SPD 2007b) between two democratically oriented and politically integrated regions of the world. In this context, the deep, but politically somewhat problematic, engagement of China in Africa and the increased activities of India and other »Southern« countries provide an additional motivation for distancing oneself from the still widespread »charitable and paternalistic« approaches and mindsets (Fues et al. 2006).

What can modern information and communication technologies (ICTs) and, in particular, the Internet do, then, to help support positive developments, achieve the UN Millennium Development Goals and solve the specific development problems south of the Sahara?

A common response to this question is scepticism, even incomprehension: does sub-Saharan Africa really need new ICTs? Would ICTs not be simply a luxury toy for them, given the child mortality, illiteracy, famines, HIV/AIDS and other serious problems they face? Are the hopes expressed by those who champion the use of information and communication technologies for development (ICT4D) in fact realistic? Is there any evidence that the use of ICT4D has brought about any significant successes in areas such as good governance, education, the economy and health?

Unless the fundamental prerequisites for human development, such as food, health, education and political freedom, are secured, increased efforts to pro-

mote ICTs may prove to be a waste of time. Yet even in countries affected by serious crises or dictatorships, ICTs present specific opportunities which can be used to good effect, e.g. in mobilising the global public and strengthening civil society. In other countries the spectrum of possibilities offered by ICT4D appears even broader, and includes, for example, Internet communication, which is the focus of this report.

Sub-Saharan Africa is characterised by great political, cultural and socioeconomic diversity. It is true that promoting the use of the Internet strengthens above all the elites. Yet, within the framework of a strategy geared towards existing strengths (e.g. CDU/CSU/SPD 2007b), both old and new ITC have the potential to help, in a targeted manner, to improve the scope for information and action on the part of development-oriented elites (e.g. in civil society and academia, and in democratic states). There are also examples of and considerable potential for greater involvement of the poorer sections of the population in the use of ICTs and for Internet-based empowerment of women and girls. The difficulty here is to find ways of disseminating ICTs to all levels of the population and to determine how it can contribute to overcoming poverty. Hitherto, however, ICTs, and the Internet in particular, have played no major role in the development policy debate outside the sphere of a specialised ICT4D community. The opportunities for countries south of the Sahara presented by their own research efforts and technology development have also only recently become the object of more intensive discussion.

It is largely recognised, nonetheless, that the Internet and other ICTs are closely related to the ongoing processes of globalisation and as such are also gaining in importance for Africa. A special discourse has emerged around ICT4D in development policy, centred on the extent to which ICTs could contribute globally to sustainable development. The two-phase World Summit on the Information Society (WSIS) staged by the United Nations (UN) in Geneva in 2003 and in Tunis in 2005, was widely regarded as an Internet and development summit. African stakeholders have played a prominent role in what has become known as the WSIS process. States and organised civil societies in Africa stress that they attach great importance to the integration of their region of the world into the global information society.

PROCEDURE, STRUCTURE AND THEMATIC FOCUS

In a project entitled »Internet communication in and with developing countries – the example of Africa and opportunities for development co-operation«, based on an initiative of the Committee on Economic Co-operation and Development (AWZ) of the German Bundestag (i.e. the German parliament), the TAB investigated, against the backdrop sketched out above, ways in which the Internet and

other ICTs can contribute to improving the situation in developing countries and specifically in sub-Saharan Africa.

The analyses in this report are based on a thorough appraisal of the research and development policy literature on the subject, online research, discussions with experts, surveys and field studies. In all the expert reports commissioned by the German Bundestag for the project (see below and Chapter VIII.1), the current state of research and of the political debate were reviewed, interviews and online research conducted and recommendations for action developed. Furthermore, quantitative investigations of the subject of ICT use were conducted by surveying African non-governmental organisations from Ethiopia, Kenya and South Africa (University of Bonn 2006) and the population (particularly school students) of two départements in Benin (Buttschardt 2006); an online discussion with African experts in Internet use at universities was organised and assessed (Newthinking/DIE 2006); and field studies into Internet and ICT use, both in urban and rural areas, were carried out, primarily in Benin (Buttschardt 2006; University of Hamburg 2006).

As its remit dictated, the central focus of the project was on the opportunities presented by Internet communication in and with developing countries south of the Sahara. However, in order to recognise the opportunities, it was necessary also to take into account the obstacles to Internet use and the results so far, in all areas, of using information and communication technologies for development (ICT4D). Internet use is thus analysed in this report in the context of other ICTs such as the radio and the mobile telephone. These are more widely diffused in sub-Saharan Africa and, due in part to processes of technical convergence and their joint role in development co-operation, are closely tied to Internet use.

Chapter II of this report, therefore, will explore research and controversies in connection with ICT4D, the chief points of reference being the UN's Millennium Development Goals. The central focus will be on the question of the extent to which ICTs can not only contribute to economic growth, but also promote sustainable development of a kind that will equally benefit the poorer sections of the population. The final remarks will be based on this examination of the results and controversial aspects of ICT4D use.

As a starting point, Chapter III outlines the basic overall situation in sub-Saharan Africa in order to highlight the prerequisites and framework conditions necessary for the use there of ICT4D. There follows a discussion of fundamental aspects of ICT use, namely African telecommunications and ICT policies, infrastructural issues and projects, and the current status of ICT use; this is based on a survey of the region as a whole, but also of individual countries within it.

The topics of Chapters IV to VI are the prerequisites for such use in three selected fields of application, its current extent and its potential for further de-

velopment. In line with the study remit as defined by the Bundestag's Committee on Education, Research and Technology Assessment and after consultation with the AWZ, the following broad fields of application were the focus of the study:

> Strengthening of democracy, civil societies and state and administrative action (Chapter IV);
> Industry and trade (Chapter V);
> Education, research and technological development (Chapter VI).

These focal areas widely reflect Germany's position on the relevance of ICTs for development, which gives priority, above all, to freedom of information and opinion, good governance, education and the development of peripheral regions (Federal Government 2005a). In addressing e-government (Chapter IV) and higher education (Chapter VI), the report also investigates areas that have only received greater attention in development co-operation research and discussion only in recent years and are of particular relevance to an »eye-to-eye partnership«.

Chapter VII draws conclusions, highlights possible courses of action specific to Africa and makes suggestions for the discussion and positioning of the subject of ICT4D within German development co-operation. In addition, examples of relevant German activities are discussed in more detail.

COMMISSIONED EXPERT REPORTS

> Räumliches Teilgutachten der Dreiländerregion Benin/Burkina Faso/Togo (Tillmann Buttschardt, Karlsruhe)
> eGovernment-Potenziale in Afrika südlich der Sahara (IfG.CC – The Institute for eGovernment – Competence Center, c/o University of Potsdam, Potsdam)
> Short report: eGovernment for Development (eGov4D) (IfG.CC – The Institute for eGovernment – Competence Center, c/o University of Potsdam, Potsdam)
> Internet-Governance im sub-saharischen Afrika: Das Management und die Verwaltung von Root Servern, IP-Adressen und Domainnamen auf regionaler Ebene (Wolfgang Kleinwächter, Leipzig)
> IKT-Nutzung für wirtschaftliche, politische und soziale Entwicklung in Afrika (Olaf Nielinger, Hamburg)
> Digitale Brücke oder digitale Kluft? Chancen und Herausforderungen für Wirtschaft und Handel durch IKT in Subsahara Afrika (Bettina Merlin, Fellbach, Burkhard Vielhaber, Bonn)
> Die Rolle des Internets in Hochschulbildung, Forschung, Wissenschaft und Technologieentwicklung in Subsahara-Afrika (newthinking communications GbR, Berlin, Deutsches Institut für Entwicklungspolitik, Bonn)

> Die Bedeutung von IKT für zivilgesellschaftliches Engagement am Beispiel von Nichtregierungsorganisationen in Sub-Sahara Afrika (University of Bonn, ZEFConsult, Zentrum für Entwicklungsforschung, Bonn)
> Einflüsse und Nutzungspotentiale des Internets für die Stärkung demokratischer und zivilgesellschaftlicher Strukturen im subsaharischen Afrika (University of Hamburg, Institut für Volkskunde, Forschungskolleg Kulturwissenschaftliche Technikforschung, Hamburg)

DO INFORMATION AND COMMUNICATION TECHNOLOGIES PROMOTE DEVELOPMENT? II.

Has the use of information and communication technologies (ICTs) proved itself beneficial to Africa's development, has it yet to prove itself, or has it already failed? Like many others, Calestous Juma, a Nigerian-born Harvard professor of international development, replies that ICTs *can* be a core component of the »growth machine« in developing countries (Juma 2005, p. 107). What he wishes to emphasise is that the concrete form this use takes will determine whether it is able to realise its development potential, and that this cannot be expected to happen automatically. In addition, Juma refers to the integration of ICT use into a framework of more general measures and other key elements of development policy, arguing that the use of ICTs must be weighed up against such measures, or placed within a strategic relationship with them. Given the very different initial conditions in the countries of Africa south of the Sahara (Chapter III), the variety of possible applications and technologies, the complex cause and effect relationships and the low level of scientifically grounded knowledge of the actual effects, however, it would be an error to propose simplistic strategies for the use of information and communication technologies for development (ICT4D).

Some central components of the debate in question are presented in what follows. To begin with, the influence of ICTs on economic growth, a subject widely discussed by economists (Chapter II.1), will be addressed. While a positive influence can be taken as proven, questions arise in the perspective of development policy about the fairness of distribution (Chapter II.2). Economic growth is not synonymous with social development. The UN Millennium Development Goals are an attempt, within a consensus of the international community of states, to define verifiable targets for development and to concentrate the efforts of development aid on achieving these by 2015 (Chapter II.3). The Millennium Development Goals have also acquired considerable – though not uncontroversial – importance for the development policy debate over the use of computers and the Internet in developing countries. This is reviewed in Chapter II.4.

ICT USE AND ECONOMIC GROWTH 1.

By the beginning of the new millennium, the brief dream of the New Economy in the late 1990s was already over. The New Economy promised – primarily on the strength of the new ICTs – a crisis-free economy characterised by continuous growth, falling unemployment and low inflation thanks to a marked increase in macroeconomic productivity. In an expert report for the German Bundestag by

Latzer/Schmitz (2001), which was commissioned as part of the Technology Assessment (TA) project »E-Commerce« (TAB 2003) and published separately in a revised version (Latzer/ Schmitz 2002), the authors summed up the position reached by the debate at that time as follows: increased growth in macroeconomic productivity, due primarily to investments in ICTs, could be demonstrated. There were varying responses to the question whether the acceleration in productivity growth could be seen as long-term and structural or rather as merely a short-term and cyclic phenomenon. Furthermore, no answer was given to the question whether the factors which could be identified for durable goods in particular can also be shown to exist outside the production sector, and especially in the service sector. An international comparison showed that the dynamic productivity and growth triggered by ICTs was valid primarily for the USA in the 1990s, and not for Canada or the countries of the Euro zone.

DEVELOPED COUNTRIES   1.1

Studies undertaken by the Organisation for Economic Co-operation and Development (OECD) have largely confirmed this picture (OECD 2004; cf. Kenny 2006, p. 29 ff.). Investments in ICTs contribute to a greater or lesser extent to gross domestic product (GDP) growth in most of the countries examined by the OECD (between 0.3 and 0.8 percentage points for the years 1995 to 2001). If a distinction is made between those sectors of the economy in which ICTs are primarily produced (hardware and software manufacturers) and those which use ICTs to a significant extent, it is clear that it is above all the ICT production sector that contributes to economic growth. In those sectors of the economy which can be mainly regarded as ICT users (the finance and insurance sectors, services, wholesale and retail trade), by contrast, the use of ICTs makes no major contribution to productivity growth (Pilat 2004, p. 14). Exceptions are the USA and Australia, where ICT use in the service industries brought about positive growth. These studies further point out that ICT investments should be interpreted as one constituent in the overall dynamic of innovation aspirations. On the macroeconomic level, for example, the degree of competition is an important contributing factor; on a company level it was demonstrated that rises in productivity are very closely connected to organisational changes and the appropriate deployment of qualified personnel (Pilat 2004, p. 13 and 15).

Similarly, Inklaar (2005) believes that Europe's weakness in exploiting the potential of ICT use lies in its insufficient focus on »soft savings«, market-oriented and organisational innovations that could eventually exploit the potential of ICT investments. However, he also points out that such »soft savings« cannot be achieved in the short term: they take time. A combination of structural problems (»a lack of innovation-friendly environment«) and the time factor is thus pre-

sented as the reason why Europe lags behind the USA in terms of ICT's contribution to productivity and economic growth.

DEVELOPING COUNTRIES   1.2

But can the criteria that are relevant to the developed countries also be applied to developing countries? India, with its advanced software industry, is an interesting example. There is hardly a single major German software company that does not either have a development division in India or work together with companies in India. Sales in the Indian IT industry have rocketed by at least 140 times from 150 million US dollars in 1991/1992 to over 21,500 million US dollars in 2003/2004. Nonetheless, the ICT sector has not contributed to a general rise in productivity and consequently to economic growth in society as a whole (Murthy 2006, p. 62). Murthy offers a number of explanations for this initially surprising observation: the software industry in India is largely export-oriented and the conditions for computer technologies to penetrate the Indian economy are extremely poor. According to the International Telecommunication Union (ITU), there were 4.5 fixed line telephones and 8.2 mobile telephones for every 100 inhabitants in India in 2005, while the corresponding figures in China were 26.6 (fixed line phones) and 29.9 (mobile phones). The several hundred US dollars that a »budget PC« costs represent 25 % of an average annual income and are thus far beyond the reach of normal households. To these factors must be added a low literacy level, a shortage of sufficiently qualified labour, serious infrastructural problems as regards the supply of power and water, traffic and roads, as well as political obstacles – all factors that are typical of less developed countries.

Joseph (2002) confirms this critical view of the success of the Indian software industry, noting that the other sectors of the Indian economy suffer particularly from the lack of skilled workers, these having been headhunted by the software industry. The productivity gains, he explains, have been achieved in other countries, but not in India. Both Joseph and Murthy call for a policy of ICT use aimed at promoting development rather than promoting exports.

In its Information Economy Report 2006, the United Nations Conference on Trade and Development (UNCTAD) addresses the question of the impact of ICTs on economic growth in developing countries (UNCTAD 2006a, p. 47 ff.; cf. Kenny 2006, p. 57 ff.). Though the report confirms the general correlations between ICTs and economic growth, a differentiated analysis by groups of countries reveals that African countries in particular profit hardly at all from the use of ICTs. The authors explain this by pointing to the lack of sufficient prerequisites allowing the potential of ICT use to be exploited – a theory shared by Kenny (2003) among others.

Overall, the link between ICT use (or the ICT production sector) and productivity and economic growth can be confirmed, though this varies in each case according to the specific prerequisites and framework conditions. The developed countries can gain more in economic terms from the use of ICTs than underdeveloped countries. Indeed, the example of India even indicates that the developed countries can derive greater benefits from export-oriented ICT capacities in the developing countries than these countries themselves. This raises the question of the distribution of productivity and growth gains on a global level as well as a regional and national one.

INEQUALITY AND SOCIAL DEVELOPMENT   2.

Economic growth is an important yet insufficient condition for social development, as economic growth can also entail increasing inequality, especially if policy-makers fail to create a social framework to counter this. A high and increasing level of economic inequality, moreover, poses an obstacle to social development. Bartholomäus Grill, the long-serving Africa correspondent of the German weekly newspaper »Die Zeit«, has described this contradiction using the example of Angola – a country blessed with oil and diamonds – in an article entitled »Steinreich, bettelarm« (»Filthy Rich, Desperately Poor«): while a construction boom has taken off in the Angolan capital of Luanda, development in rural areas is making no progress, despite the fact that public revenue has grown hugely in recent years. Two-thirds of Angolans still live on less than two US dollars a day. »The contrasts between poor and rich«, writes Grill (2006), »are obscene, and the oil rush is making them worse.«

In development policy discourse, the subject of »inequality« has moved further up the agenda, thanks in particular to the Human Development Report of the United Nations Development Programme (UNDP 2005a) and the World Development Report 2006 of the World Bank (World Bank 2005b).

According to the Human Development Report (HDR), reducing inequality (differences in income, varying life expectancy, different opportunities for training etc.) between states, regions and social groups is crucial. Although the Millennium Goals do not make express reference to inequality itself, reducing inequality would contribute directly to achieving the Millennium Goals. The report also claims that inherited disadvantages in the perception of development opportunities fundamentally contradict the idea of human rights and global and social justice. What is more, extreme differences in terms of wealth between regions, genders and ethnic groups are detrimental, according to the report, both to democracy and to social cohesion. Policies that seek to reduce extreme inequality are not an obstacle to economic growth; they promote it.

Especially for Africa south of the Sahara, which will not be able to achieve the Millennium Development Goals if current trends continue and the present economic and political conditions remain in place, the HDR (UNDP 2005a) proposes a policy aimed at achieving a moderate rise in economic growth coupled with a better-structured distribution of income. After all, targeting growth alone does not tell us whether this will benefit the poorest 20% of the population. It is not only a question of the quantity of economic growth, in other words, but also its quality. The UNDP calls this »progressive growth«, which is distinct from »pro-poor growth«. »Pro-poor growth« allows growth in the income of the poor even while income inequality is being exacerbated. »Progressive growth«, in contrast, aims to achieve general income growth, with above-average growth rates among the poor, thereby reducing extreme inequality.

The World Bank, with its »World Development Report 2006: Equity and Development«, is also placing the issue of inequality on the development policy agenda (World Bank 2005b). Arguing in even greater economic detail, the World Bank cites two main reasons why equity and prosperity are related: firstly, market failure is evident in key areas (credit, insurance, employment, land ownership) in developing countries, resulting in a distribution of power and wealth that causes economic inefficiencies. Correcting this market failure, the World Bank believes, would require political efforts to improve access to services, commodities and political influence in order to boost the efficiency of the economy. The second reason for a correlation between prosperity and equity is the fact that extreme economic and social inequality has a tendency to become entrenched and exacerbated in political and economic institutions. The result, in other words, is an »inequality trap« where unfavourable economic, social and political conditions are worsened.

> **WORLD BANK DEFINITION OF EQUITY**
>
> The World Bank stands for equal development opportunities: nobody should be disadvantaged in their development on account of their origins or on account of circumstances beyond their control. A minimum standard of living is required for these development opportunities to be exploited (World Bank 2005b).

For the World Bank, a policy aimed at equal opportunities is an important complement to a policy seeking to combat poverty. After all, the greater the inequality, the lower the effect of economic growth on reducing poverty and vice versa (World Bank 2005b, p. 17): »Greater equity can, over the long term, underpin faster growth.«

Let us summarise the line of argumentation followed so far: on a general level, a correlation has been demonstrated between ICT use and economic growth, al-

though the developed countries can profit more from this than the developing countries. Economic growth and social development are interrelated in a complex manner. On the one hand, economic growth can lead to increased social inequality, while on the other excessive inequality prevents further economic growth. The use of ICTs for development purposes cannot be justified solely on the basis of its contribution to economic growth. Explicit development goals must rather be defined and given consideration. Since the turn of the millennium, the United Nations Millennium Declaration and its Millennium Development Goals represent the key points of reference for international development policy. These will therefore now be presented and discussed in the following sections.

ICT AND THE UN MILLENNIUM DEVELOPMENT GOALS   3.

The Millennium Declaration of the United Nations (UN) of 8 September 2000 is regarded as one of the central UN documents of the new century. The Development Goals in particular, derived from the Millennium Declaration, play a key role in development policy discourse (see box below). A particular feature of the Millennium Development Goals (MDGs), and an improvement on previous development programmes, is their concentration on a few clearly defined and easily communicable goals whose achievement is continuously monitored.

THE UNITED NATIONS MILLENNIUM DECLARATION AND MILLENNIUM DEVELOPMENT GOALS

The UN's »Millennium Declaration« was adopted by its General Assembly on 8 September 2000. Following an introductory section on general values and principles (I), subsequent chapters deal with the following themes: peace, security and disarmament (II), development and poverty eradication (III), protecting our common environment (IV), human rights, democracy and good governance (V), protecting the vulnerable (VI), meeting the special needs of Africa (VII) and strengthening the United Nations (VIII).

The Millennium Development Goals relate only to Chapter III of the Millennium Declaration. They were negotiated between the UN Secretary-General and representatives of the International Monetary Fund, the Organisation for Economic Co-operation and Development (OECD) and the World Bank, and were included in the appendix to the UN Secretary-General's report to the 56th General Assembly in September 2001, entitled »Road map towards the implementation of the United Nations Millennium Declaration« (UN 2001).

They comprise eight goals, 18 targets and 48 indicators. The first priority is to eradicate extreme poverty and hunger (Goal 1), the targets being to reduce by half the proportion of people living on less than a dollar a day (Target 1) and to reduce by half the proportion of people who suffer from hunger (Target 2). The period envisaged for achieving these targets is from 1990 to 2015.

To achieve the goals, a partnership between developed and developing countries is postulated. Joint responsibility for reaching the goals lies with institutions on a regional, national and international level (UNECA 2005c, p. 3; Gerster/Zimmermann 2005, p. 11).

The most recent Millennium Development Goals report (UN 2006a) cites a number of advances. For example, the proportion of people in developing countries who are living on less than one dollar a day was reduced from 27.9 % in 1990 to 19.4 % in 2002, while the proportion of people suffering from hunger was reduced from 20 % (1992) to 17 % (2003). In sub-Saharan Africa, however, progress in this respect is marginal: in absolute terms, the number of people suffering from hunger is increasing; if current trends continue, the goals of eradicating poverty and hunger by 2015 will not be reached (UN 2006a, p. 4 f.).

The Millennium Development Goals have also been the subject of criticism, which has been directed at various points. Amin (2006) raises the objection that they are an initiative of the »North«, that is to say of the USA, Europe, Japan, and of the World Bank, the Monetary Fund and the Organisation for Economic Co-operation and Development (OECD): while there can be no objection to reducing poverty by half, the goal remains, Amin claims, merely a legitimation of free-market policies as long as the root causes of poverty, illiteracy, hunger, disease and under-development are not analysed and tackled.

Another criticism questions whether the global targets are feasible for many countries, especially those in Africa. They would require, in the space of just a few years, the sort of development that the developed countries often took 100 years and more to complete. According to Clemens/Moss 2005, p. 1: »Promising too much leads to disillusionment and can erode the constituency for long-term engagement with the developing world.« The rigorousness of the system of targets, they claim, turns developments that are making positive headway into failures »merely« because the set target is not reached. The differences in circumstances and starting conditions in the various countries, they say, are not given sufficient consideration. »Development is a marathon, not a sprint« (Clemens/Moss 2005, p. 4; Clemens et al. 2004).

Martens (2005, p. 4 f.), by contrast, objects that the Millennium Development Goals are »unambitious« and an inadequate reflection of the »more complex

problems of poverty and social exclusion«. Structural problems, such as the un-equal distribution of income and wealth, ownership of land, and political power, the global economic conditions and the influence of the »North«, remain largely neglected. A similar criticism is made by the Human Development Report 2005 (UNDP 2005a, p. 51), when it argues that the Millennium Development Goals factor out aspects of inequality: »The distributional blind spot of the MDGs is a weakness on two counts«. The Millennium Development Goals themselves, the report says, are based on assumptions about global justice and human rights, yet do not explicitly make these their subject. Development progress, it continues, normally does not affect the poorest 20% of the population, thus putting the achievement of the Millennium Goals as a whole into question.

Finally, the report discusses the problem of the supposed precision of the indicators used to monitor progress on achieving the Millennium Development Goals. For many countries, no data, or at least no reliable data, have been available for many years. Consequently, a pseudo-scientific facade is constructed in order not to jeopardise the overall system of the Millennium Development policy (Attaran 2005; Nature 2007; the reply to Attaran from the UN Millennium Project: McArthur et al. 2005).

Although the new millennium was characterised by great euphoria regarding the possibilities offered by the Internet, the subject of ICT was only addressed at a secondary level in the Millennium Declaration and in the Millennium Development Goals. The final bullet point in section 20 of the Millennium Declaration demands that the benefits of new technologies should be available to all, information and communication technologies being the only examples of these new technologies that are actually mentioned by name (UN 2000, p. 6).

This passage from the Millennium Declaration finds concrete expression in the (last) target of the Millennium Development Goals, target 18: in co-operation with the private sector, to make available the benefits of new technologies, especially information and communications technologies. It is noticeable that this target has already been toned down as compared to the statement in the Millennium Declaration: co-operation with the private sector is stressed here, with emphasis no longer being placed on availability for »all«. ICT target 18 appears – when compared to the other targets – to be relatively unspecific and difficult to verify. Target 1, for example, specifies that the proportion of people living on less than a dollar a day should be reduced by half between 1990 and 2015. Two indicators (of 48 indicators in all) are defined for target 18: the number of telephone lines and personal computers per 1,000 people (UN 2001, p. 58). These two ICT-related indicators are also criticised as being insufficient and as inadequately reflecting the potential offered by ICTs. They relate, it is claimed, primarily to the technical possibilities for use, but not to people's capacity for using

them (UNDP 2005b, p. 74, 77 f.). In addition, no account is taken of where ICT production actually takes place: in the developed or developing countries.

The aforementioned section 20 of the Millennium Declaration contains a reference to a Ministerial Declaration, adopted in the same year by the UN Economic and Social Council 2000, regarding the role of information technologies in the context of a knowledge-based global economy. This can thus be regarded as a kind of reference document with regard to ICTs for the Millennium Declaration and as such will be outlined briefly below.

The Ministerial Declaration first postulates a broad consensus with regard to the central importance of information and communication technologies to the creation of the emerging global knowledge-based economy. Four key hopes are associated with this view: accelerating economic growth, promoting sustainable development, eradicating poverty in the developing countries and integrating them effectively into the global economy. Nonetheless, the Ministerial Declaration notes that the majority of the world's population remains unaffected by the »ICT revolution« and that there is a real danger that the inequality between and within countries will be further exacerbated by the use of ICTs (the »digital divide«). There is therefore an urgent need for concerted action at national, regional and global level to bridge this digital divide and put ICTs at the service of development for all. In this context, the measures related to ICTs should not replace efforts to develop and modernise fundamental areas of the economy, but should supplement and expand them.

According to the Ministerial Declaration, it is particularly important to establish the prerequisites for handling information and knowledge. These include, among other things, appropriate education, transparent societies, the capacity to generate and utilise knowledge, connectivity, the availability of diverse content and applications, and an appropriate legal/regulatory framework. With respect to industry in a more narrow sense, it is hoped that there will be particular opportunities for small and medium-sized enterprises in the developing countries, with electronic commerce increasing their potential for accessing world markets.

The private sector and liberal markets are crucial for ICT use, but are not sufficient to put ICTs at the service of development. This would require effective attempts at co-operation, drawing in governments, multilateral development institutions, donors, the private sector, civil society and other stakeholders. The relevant national ICT programmes, the Ministerial Declaration believes, should be integrated into general development strategies. Such national ICT programmes could include establishing a transparent and consistent legal and regulatory framework, developing the necessary technical infrastructure, reducing access costs, relevant efforts at all levels of the education system, wider mass media offers in the digital area and their sensible combination with the Internet, and the creation of »incubators« at universities and research centres.

Although information and communication technologies would appear to play a relatively minor role in the Millennium Declaration and the Millennium Development Goals, as compared to aspects such as poverty, hunger, education and health, these documents nonetheless had an enormous influence on the discussions of ICT4D. Not least in the two World Summits on the Information Society, in Geneva in 2003 and in Tunis in 2005, a development-oriented perspective for the global dissemination of ICTs was called for. Similarly, this TAB project was designed to focus on the central question of assessing the contribution of the respective uses of ICTs and the Internet as a means of achieving the higher-level development policy objective of eradicating poverty as well as the other development policy objectives.

FOCUSING THE USE OF ICT ON THE
MILLENNIUM DEVELOPMENT GOALS   4.

The World Bank's 1999 World Development Report, »Knowledge for Development«, is regarded as one of the main reference documents in the debate on the use of information and communication technologies for development (ICT4D) (World Bank 1999; cf. GTZ 2006, p. 11; Nielinger 2006, p. 21). Although the report views global development problems from the perspective of knowledge generation, processing and communication – and thus explicitly does not see ICTs as the key solution – it nonetheless exudes the technologically optimistic spirit of the late 1990s, the years of the New Economy and the »Internet revolution«. Falling communication costs are seen as an opportunity, on the one hand, to make knowledge from the developing countries globally available and on the other to provide these countries with new knowledge from the countries of the »North«. The lives of people in developing countries might in this way be improved. The report also considered it possible that the developing countries would overtake the developed countries with new technologies (»leapfrogging«): by way of an example, the report cites the direct installation of digital and mobile telephone systems without first having an analogue (fixed line) telephone system. This would allow stages of technological development that took place in the developed countries to be skipped (World Bank 1999, p. 57). Politically, the report pursues the three objectives, in the telecommunications and ICT sector, of privatisation, competition and regulation (Nielinger 2006, p. 22).

This period of optimism did not last long, however. The crisis in the New Economy and increasingly frequent reports of failed ICT projects led to a certain disillusionment. At the same time, the emerging, politically charged discussion of the »digital divide« (Chapter III.4) restricted perception of the problem to access to information and communication technologies. Unequal access to these tech-

nologies became a major and politically controversial subject of the two-phase World Summit on the Information Society.

The objection was raised in regard to highly technology-oriented programmes that the conditions for the use of computers and the Internet first needed to be in place before they could be applied in a meaningful way. From this arose an »e-readiness assessment« (also known as a »digital opportunity assessment«), designed to ascertain whether the conditions in terms of technical infrastructure, education, regulatory framework, locally adapted content and applications are in place in order to introduce new information and communication technologies. Yet this approach also entails a technological paradigm (»technology push«). Justifiably, the NGO Bridges.org asks when checking the e-readiness procedures »E-ready for what?« - after all, from a development point of view, the answer »ready for the use of ICTs«, is insufficient.

The UN Millennium Declaration and the Millennium Development Goals (MDGs) saw a sharpening of the focus of the ICT4D discussion, calling for a shift from a broadly formulated concept of development to a verifiable contribution to the Millennium Development Goals. This contribution will be examined in greater detail below.

ICT'S CONTRIBUTION TO ACHIEVING THE MILLENNIUM DEVELOPMENT GOALS   4.1

The importance of ICT use for achieving the Millennium Development Goals can be shown by citing its direct or indirect effects.

The UNDP (2005b) concerned itself with prioritising and specifying the contribution of ICTs to the direct achievement of the Millennium Development Goals, attempting to identify in concrete terms how computers and the Internet contribute directly to social development. This approach is not entirely successful, however. The setting of priorities is not really convincing – particular priority is given to MDG 3 (education), with eradication of hunger (MDG 1) being accorded much lower weight. No clear priority setting is evident for the remaining goals. The individual proposals for the use of ICTs are also nothing more than a collection of examples of ICT application in the context of the relevant goal. Finally, there is no convincing suggestion of how to prove on a systematic level the direct contribution of ICT use to the achievement of the Millennium Development Goals.

One rather basic, indirect argument for ICT's contribution to the achievement of the Millennium Development Goals refers to the importance of information, knowledge and communication for any social development. »Put simply, infor-

mation provides opportunities for personal empowerment, which thereafter leads to development at an aggregate level« (Morawczynski/Ngwenyama 2007, p. 1).

A further line of argumentation relating to the indirect effects concerns »ICT as an enabler«. ICTs are counted as being among the basic technologies that can be used in all areas of society. They have strong networking potential, supporting and making more efficient the generation, processing and dissemination of information and knowledge (Digital Opportunity Initiative 2001, p. 9 f.). These »inherent« properties of information and communication technologies could be used to achieve the Millennium Development Goals, although to do this they would need to be suitably activated. As such, the use of ICTs becomes a question of the appropriate strategy and policy rather than one of the technology itself – this at least is the fundamental view of those who see ICTs as an »enabler« for development.[1]

In this connection, »success factors« for the use of ICTs are discussed. Although all leading institutions and authors assume that no standardised procedure exists (»no single best practice has yet been identified«, OECD 2005, p. 68), there are indications of general principles that are deemed important for the successful use of ICTs within the meaning of the Millennium Development Goals (Bridges.org 2005a, p. 91; Gerster/ Zimmermann 2005, p. 30 f.; GTZ 2006, p. 29; OECD 2005, p. 39):

> *Create a strategic framework for all ICT planning, geared to the higher-level Millennium Goals.* Bridges.org (2005a, p. 91) calls this: »Begin with the goals«. The first step is to identify the biggest obstacles to achieving the development policy goals, and to set up suitable programmes. Only then should one determine whether ICTs can contribute to these and, if so, what its specific contribution might be. Measures in which the use of technology plays a central part (»technology push«) are not compatible with this approach and are generally doomed to failure.
> *Take the relevant national conditions into account.* This point relates to the importance of individual Millennium Development Goals, the strategies that need to be implemented to achieve them, and, where applicable, the ICT configurations to be chosen. This is where the discussion of the use of adequate technologies comes in, the debate concerning the role of mobile phones versus PC and the Internet being one example of this.
> *Ensure the participation of the persons, organisations and institutions concerned, and insist that they assume responsibility (»ownership«).* Without such participation, the specific features of the situation in question cannot be established; unless responsibility is taken, the crucial shift from help to self-

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1   Gerster/Zimmermann (2005, p. 12) also attribute the catalytic role of ICT to this »enabler« function.

help is inconceivable. Participation and ownership require appropriate capacities that first have to be developed (capacity building).[2]

> *Ensure good coordination and co-operation between all participants.* The Millennium Declaration itself calls for a partnership between the developed and under-developed countries, and the World Summit on the Information Society acknowledged the need for good co-operation between government policy-makers, the private sector and civil society. A »multi-stakeholder approach«, however, makes good coordination and good governance essential. The often poorly coordinated work by a large number of government, international, private sector and civil society donors is something that has long been criticised, though with little success, and urgently needs to be redressed (e.g. UNDP 2005b, p. 91).

> *Focus on sustainable success.* Development co-operation is not a short-term measure, but one that requires patience. Isolated pilot projects run the risk of failure once initial subsidies have been exhausted, and must be embedded from the outset in programmes that are as comprehensive, broad-ranging and long-term as possible.

> *Continuously monitor and review progress.* Directing all the measures towards achievement of the Millennium Goals makes continuous monitoring and periodic evaluation necessary so that progress and setbacks can be identified and, where applicable, the initiated measures revised. Another key prerequisite for success is that these findings be made available to all participants (»knowledge sharing«).

> *Give consideration to possible undesired negative effects of ICT use.* The widespread use of electronic technology may result in a disposal problem (e-waste, already a major challenge in a number of African countries on account of waste exports from the »North«). High increases in productivity achieved with the aid of computers can contribute to a rise in unemployment, while international connectivity can, given the existing conditions, result in an (even greater) cultural dominance of the most developed countries. Technical innovations rarely have uniformly positive effects; possible negative effects and side effects are to be expected. These should be identified as early as possible, avoided or reduced wherever possible, and in any event included in the decision-making processes.

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2   However, even the often-invoked capacity building must be integrated into a comprehensive development strategy. Unless the conditions are created to ensure that the capacities are actually in demand and can be used (»capacity absorption«), IT qualifications only lead to unemployment or an increased brain drain to the developed countries (UNDP 2005b, p. 82, 90).

CRITICISM OF ICT USE FOR THE MILLENNIUM DEVELOPMENT GOALS   4.2

The Millennium Development Goals are the subject of criticism in their own right, independently of the question of how ICTs can be usefully deployed to achieve them (Chapter II.3.1). However, the use of ICTs for development purposes and the focusing of this use on the Millennium Development Goals is also criticised. Some of these criticisms will be discussed below.

DRAWING UNCLEAR OR EVEN NEGATIVE CONCLUSIONS   4.2.1

On the basis of studies on ICT use that are to a greater or lesser extent empirically grounded and aim to weigh up the advantages and disadvantages, some authors draw critical and even entirely negative conclusions. While Gerster/Zimmermann (2005, p. 20) refer to a handful of studies in which the use of ICTs was found under certain conditions to have a limited positive effect on individual Millennium Goals (e.g. poverty reduction, development partnership), overall they believe that no comprehensive evaluations for particular regions or countries exist, or only ones with extremely vague results.

The OECD concludes from its analyses of the contribution of ICTs to economic growth and poverty reduction (OECD 2005, p. 65): »There is a growing body of evidence linking investment in ICTs to economic growth, but little convincing evidence on the links to pro-poor growth in particular«.

The conclusion drawn by Heeks (2005, p. 11) is even more negative: »Most of these projects (on rural telecentres, e-government for the masses, telemedicine for remote regions, e-commerce for microenterprises) never properly work, and for those that might just get off the ground, go back two years later, and it's all crumbled to dust. Yes, there might be exceptions, but they are just that – exceptions; occasional minnows swimming against a rip tide of failure«. On the basis of meta-studies (e.g. on e-government projects in developing countries), Heeks estimates that a third of all projects fail completely, and that half fail in part. Accordingly, Bridges.org concludes (2005a, p. 14): »... evidence suggests that so far ICT has failed to deliver on its potential for social and economic development.«

ICT INTENSIFIES EXISTING INEQUALITIES   4.2.2

More specific is the criticism that ICT use in developing countries does indeed achieve some successes, but not necessarily of the kind envisaged by the Millennium Development Goals. The primary criticism here is that inequalities in these countries are, if anything, intensified by ICTs (OECD 2005, p. 16 f.; Shetty

2005, p. 15; UNCTAD 2006c, p. 14). In their review of the literature, Gerster/Zimmermann (2005, p. 20) conclude that it is above all the urban elites and large corporations that benefit from the direct, positive effects of ICT use. This comes as little surprise, given that the framework conditions for the appropriate use of ICTs exist in these groups, while this is often not the case among the poor, the rural populations and very small enterprises. »There is a natural tendency for technology to benefit the rich and the already well-endowed, as they are better equipped to assimilate and take advantage of the technologies« (Subbiah Arunchalam citing Gerster/Zimmermann 2005, p. 20).

EMBEDDING ICT USE WITHIN A COMPREHENSIVE DEVELOPMENT STRATEGY 4.2.3

Ngwenyama et al. (2006) analyse the impact of ICT investments on the Human Development Index. Their analysis encompasses five West African states (Benin, Côte d'Ivoire , Cameroon, Niger and Senegal) over the years 1993 to 2003, and is based on data compiled by ITU and UNDP. It takes into account both independent variables, namely investments in ICTs, education and health, and dependent variables, i.e. the Human Development Index (HDI) compiled by UNDP and its subcomponents.

The result shows that investments in ICTs alone, if investments in education and health remain at a constant level, have virtually no measurable influence on the HDI. If investments in all three areas are considered jointly, however, they can account for 25 % and more of the increase in the HDI. The conclusion drawn by the authors is as follows (Ngwenyama et al. 2006, p. 7): »It is clear from our analysis that the central focus on ICT as a solution to stagnated development will not bring the results that the promoters of ›ICT as an engine of development‹ are expecting. ... To funnel large sums of investments into ICT initiatives without complementary investments in building health and education infrastructure is likely to be a recipe for the failure of development and could further frustrate millions of people in the developing world«.

INTERNET – MOBILE TELEPHONY – RADIO 4.2.4

Information and communication technologies are generally understood to mean both conventional electronic (and analogue) media such as radio, television and telephone and modern digital, networked and computer-based technologies, essentially digital mobile telephony, computers and the Internet (as defined, for example, by Gerster/Zimmermann 2005, p. 11; OECD 2005, p. 11). According to a narrower definition, it is first and foremost digital computer technologies and the Internet which, partly as a result of the UN World Summit on the Information Society (WSIS), are the subject of the greatest interest and the greatest

hopes. Kenny (2002a and 2000b) analyses the conditions of use for and the initial outlay and running expenses of radio, mobile telephones and the Internet in the least developed countries. He concludes that Internet use in these countries will fail, either because they lack the necessary infrastructure, education and general social development or because the costs of the Internet (investment and running costs) are, in comparison to radio and mobile telephony, disproportionate to its potential benefits. In the interests of an efficient use of resources, in other words, an »Internet strategy« designed to promote development cannot be recommended in the least developed countries (Kenny 2002a, p. 142 and 2002b). Such a strategy would, at best, benefit the elites in the developing countries, thereby widening rather than reducing the »digital divide« and social inequality.

Of course, radio, mobile telephony and the Internet can only be compared directly to one another to a limited extent; though their functions overlap, their capabilities can differ significantly and, in some cases, can complement one another. The Internet, and to some extent the mobile telephone, have, moreover, the potential to integrate all the other media. Provided certain basic conditions are in place (e.g. availability of broadband connections), it is possible to listen to the radio via the Internet or a mobile phone, and to use Internet access for telephoning or mobile phones to access e-mails and the World Wide Web.

WIDENING THE USE OF ICT   4.2.5

Heeks (2005) directly criticises the focusing of ICT use on the Millennium Development Goals. This, he claims, results only in the positive potential of ICT use not being fully exploited in developing countries and ICT applications being pursued that are, to the most part, doomed to failure. He criticises the focus on consumer-oriented Internet applications (e.g. websites for e-Government and price information on the Internet), which may have public impact and political effect but have little relevance to development, and the fact that, at the same time, the ICT production sector is neglected (that is to say the production of hardware and software, and ICT services). He objects that the »North's« structural dominance, which comprehensively dictates development policy in the individual countries, will not be overcome by this latest about-turn in development policy, following the failure of statism in the 1960s and neo-liberalism in the 1980s. Unless well-adapted, flexible strategies, tailored to the needs of the individual countries, are evolved both at a general level and with regard to ICT use in particular, no successful development can be achieved.

The tremendous structural adjustments and development processes that took decades or even centuries in the countries of the »North«, are not feasible without social disruptions – this is what the history of industrialisation and moderni-

sation in the 19th and 20th centuries teaches. Heeks (2005, p. 11) warns, however, against underestimating the role of new technologies, especially ICTs: »It is technology that generates the wealth of enterprise, which in turn, pays for all social development«. He pins his hopes primarily on expanding the ICT sector in the developing countries (i.e. production of hardware and software, and services), as this is what generates jobs and promotes growth. Moreover, in line with the ideas of Kenny (2006), he suggests investing more in mobile telephony than in computers and the Internet.

Heeks' criticism points to some of the weaknesses of an ICT strategy that is closely focused on the Millennium Development Goals: blanket specifications for development goals and strategies, inappropriate prioritising of ICT use, illusions about the social costs of modernisation. On the other hand, Heeks must concede that his theory of development remains unclear and that his ICT-sector-oriented strategy relies on a questionable »trickle-down effect«, with increasing standards of living cascading down from the rich to the poorer sections of the population, and exhibits an astonishing technological optimism. The key characteristic of such a strategy is that, while it can promote economic growth, it does not automatically trigger the sort of social development that reduces poverty.

CONCLUSION 5.

On a general level, this study is concerned with the importance that information and communication technologies can have in development co-operation. Subsequent chapters will address the actual subject of the study, namely sub-Saharan Africa: the central focus of the present chapter was a general discussion of ICT4D. The first question raised was whether, irrespective of any development considerations, the use of ICTs has a (positive) bearing on the economy – something which was questioned in the 1980s and 1990s in connection with the so-called productivity paradox. Current studies point to this positive effect on productivity and economic growth, albeit not at the same level for all industries and countries. A comparison of the developed countries with the developing countries shows that ICT use has a greater impact on economic growth in the former than in the latter. Some even believe that it is the developed countries that really benefit from the use of ICTs in the developing countries.

Economic and social development do not necessarily go hand in hand; positive economic development can actually be accompanied by an increase in social inequality. Such discrepancies can be typically observed in developing countries, though this line of argumentation can also be reversed, as social inequality, particularly when it is extreme, can prevent economic growth in the longer term, while greater social equality – that is to say equal development opportunities for

all – promotes it. Where strategies for development policy are concerned, this means that it is not enough simply to pin one's hopes on economic growth: one also needs a policy aimed at social development and improving the quality of life equally for everyone.

In principle, the diffusion of mobile telephones, computers and the Internet follows the same pattern, i.e. general growth accompanied by increased differentiation. Though developing countries are making increasing use of these technologies, they are not catching up with the developed countries.

If one adopts a development perspective, then, the first question is how to measure progress in development. Since the United Nations Millennium Declaration, there has been a broad, though not uncontroversial, consensus that the yardstick should be the Millennium Development Goals which are to be achieved by 2015 and whose progress in terms of target achievement is to be regularly reviewed. The first goal is to reduce poverty by half. The Millennium Development Goals require new technologies to be made available to all, yet only make express reference to information and communication technologies. The indicator of progress on the path towards this goal is the diffusion of telephone lines and computers in the population, though no specific target to be achieved by 2015 is named, an omission that is often criticised. The cautious approach to the potential of ICTs in this document, which is central to current development policy, is presumably due to uncertainties about how to estimate its relevance to development policy. Incontestably, ICT projects have brought about positive effects in the developing countries, as the following chapters show. Overall, however, the progress achieved hitherto is somewhat sobering, for a number of reasons: because many projects failed or could not be established on a sustainable basis; because the desired effects in terms of development policy did not materialise; because the use of ICTs was not embedded within a framework of wide-ranging development strategies; because investments were made in the wrong technologies, i.e. ones not adapted to the local circumstances; and because no comprehensive, well-founded evaluations were carried out. Some even opine that basing the use of ICTs on the Millennium Development Goals is a mistake because this does not allow their true potential for economic growth to be exploited. This is not a position that one can share, however, as it would mean, to a greater or lesser extent, abandoning one central development policy objective of the use of ICTs.

The discussion as a whole indicates that there is no universal formula for the use of information and communication technologies for development. Prerequisites for the successful use of ICTs include the following: a strategic focus on the higher-level Millennium Development Goals, due consideration of the local circumstances and conditions, active participation of the persons and institutions

directly involved, coordinated collaboration between development co-operation organisations, long-term and sustainable planning, continuous monitoring of project progress, and consideration of negative effects and side-effects. Chapters IV to VI explore further the concrete conditions for ICT use in the areas of civil society, media and government action, industry and trade, and education, research and technological development. As a first step, however, Chapter III, which follows this introduction, outlines the basic overall social conditions and the situation of ICT diffusion in sub-Saharan Africa in particular.

THE STARTING SITUATION IN
SUB-SAHARAN AFRICA   III.

Chapter III.1 below will initially examine some historical premises, together with a number of general infrastructural problems and economic and social developments. The following chapter (Chapter III.2) deals specifically with the current state of ICT application in sub-Saharan Africa, focusing first on ICT policies (Chapter III.2.1), then on ICT infrastructure (Chapter III.2.2) and ICT use (Chapter III.2.3) and, finally, on the discussion of the »digital divide« (Chapter III.2.4). For the purposes of this report, information and communication technologies encompass both radio and television, as well as telephone, PC and Internet. The situation regarding use of these media will be described as it applies in different cases.

HISTORICAL PREMISES AND GENERAL SOCIO-ECONOMIC
PRECONDITIONS   1.

Sub-Saharan Africa is regarded as the region of the world with the greatest problems. From an historical perspective, the slave trade practised by Western, Arab and native traders, and indeed European colonialism, left deep scars and destroyed or corrupted what in some cases were highly developed communities. Through the various different strategies pursued by the colonial powers, colonialism laid the foundations for the underdevelopment of the region, then ensured that it was perpetuated. African people and cultures were believed to be inferior or worthless, and many Africans died attempting to resist colonial rule or as a result of the conditions of repression and exploitation that existed because of it. Tens of thousands died in the German colonies alone in the early 20th century, through the direct military crushing of revolts and through a scorched earth strategy. Racism against blacks continues to be a widespread and serious problem even today.

As far as development policy is concerned, it is important to note that almost half of all landlocked developing countries (LLDCs) and roughly two-thirds of all least-developed countries (LDCs) are to be found in sub-Saharan Africa. The great majority of African LLDCs and the majority of small island developing states (SIDSs) in Africa are also classed as LDCs.

The natural conditions are extremely varied. One of sub-Saharan Africa's problems is the fact that its countries either have very few natural resources or the national economies of countries rich (in some cases very rich) in natural re-

sources are geared to the mining and export of raw materials to such an extent that there is no noticeable impact on, or only negative consequences for, overall social development. Examples of countries in which income from mineral resources has had a largely beneficial effect on development (as in Botswana) are few and far between, and are set against several important examples (such as Nigeria; see Chapter IV.3.3.4) in which mining brings virtually no improvements for the country as a whole (and for the mining regions in particular) or even serves to worsen the situation (Chapter V.1). Partly to blame are the governance structures in these countries, as they are riddled with corruption (Chapter IV). Disadvantages also flow from the historical legacy of colonialism (which was often interested only in exploiting a country's natural resources) and the lack of social and ecological responsibility on the part of »Northern« (and, increasingly, also Chinese and other Asian) enterprises. A further characteristic of post-colonial African states is their pronounced centralism.

Apart from wars, civil wars (often in multiethnic post-colonial states) and famine, the population of sub-Saharan Africa suffers above all from the HIV/AIDS pandemic and other infectious diseases. This is something that receives special attention in the UN Millennium Process and in the diverse activities pursued in development co-operation. ICTs are perceived as offering opportunities in areas such as conflict management, early warning and management of natural disasters, and healthcare applications.

Religious fundamentalism and fanaticism also pose an increasing threat to sub-Saharan Africa. Problems of this kind have become evident recently, particularly in countries like Nigeria which have relatively close cultural ties with the continent's Islamic north. Religious dividing lines have also served to exacerbate and brutalise political and ethnic conflicts in countries further south, however. A particularly striking example is the genocide in Rwanda in the 1990s, where Christian fanatics used religious authority, in some cases via the radio, as an ideological weapon.

The rate of population growth in Sub-Saharan Africa is high, and a lack of forward planning to deal with the consequences of this growth poses one of the central threats to the continent's future. The three focal areas of this study also face particular challenges as a result: as populations become larger and younger, the labour market and education systems are subjected to huge additional burdens. Without an appropriate response, there is a risk of growing dissatisfaction – particularly among young people – with unpredictable consequences for the acceptance of political systems.

At the same time, however, the rapidly increasing populations in developing countries also constitute one of the prerequisites for the often-invoked creation of attractive new markets. Great interest is shown by the industrialised nations

in the »emerging markets«, though the involvement of German corporations in sub-Saharan Africa and the ICT sector is low, at least as compared with companies from the USA, Great Britain, France and other industrialised nations, as well as from newly industrialised countries like China and India. Some observers warn that, if German companies focus too much on short-term gains, that could result in their having little long-term influence in sub-Saharan Africa in comparison with European and other competitors. This applies in particular, no doubt, to small and medium-sized firms, as well as also to export-oriented ones. Good working relations with key government actors and a positive public image on the local level would appear to have an important bearing on the opportunities for foreign businesses.

Other fundamental problems in sub-Saharan Africa include the low qualifications of many people (human resources), and poorly developed or non-existent infrastructures. If, for example, transport, traffic and logistic infrastructures are insufficiently developed, technological improvements in the areas of information and communication can often not be used economically. An inadequate or non-existent power supply is one of the main obstacles in many ICT4D programmes and often causes visionary projects to fail in reality.

To talk in blanket terms of sub-Saharan Africa is to ignore the great differences between and within the continent's countries, and between the urban and rural regions. Differences of a factor of 10 are not at all uncommon. For this reason, differences between individual countries and regions will always be taken into account in the following analysis, or will be borne in mind as a differentiating or relativising factor.

If compared over many years with other regions of the world, the state of development in sub-Saharan Africa is extremely unfavourable. If development is measured using the UNDP Human Development Index (HDI), for example, development has been stagnant at an extremely low level after a period of considerable progress between 1975 and 1985 (Fig. 1).

Table 1 shows sub-Saharan Africa's position as compared with the global average and the countries of the Organisation for Economic Co-operation and Development (OECD) with respect to selected indicators of social development. The picture is additionally supplemented by the figures for four sample countries in order to allow an assessment of the spectrum of development within Africa. These are the countries of sub-Saharan Africa that scored worst and best in the HDI (Niger and the Republic of South Africa respectively), Nigeria, which is the country with the highest population, and Uganda, a country in the middle range of the HDI ranking. Niger and Uganda are landlocked countries in French-influenced West Africa and in English-influenced East Africa, while the Republic of South Africa and Nigeria are coastal countries.

FIG. 1   SUB-SAHARAN AFRICA SHOWS STAGNANT SOCIAL DEVELOPMENT
                                                     IN A GLOBAL COMPARISON

Human Development Index
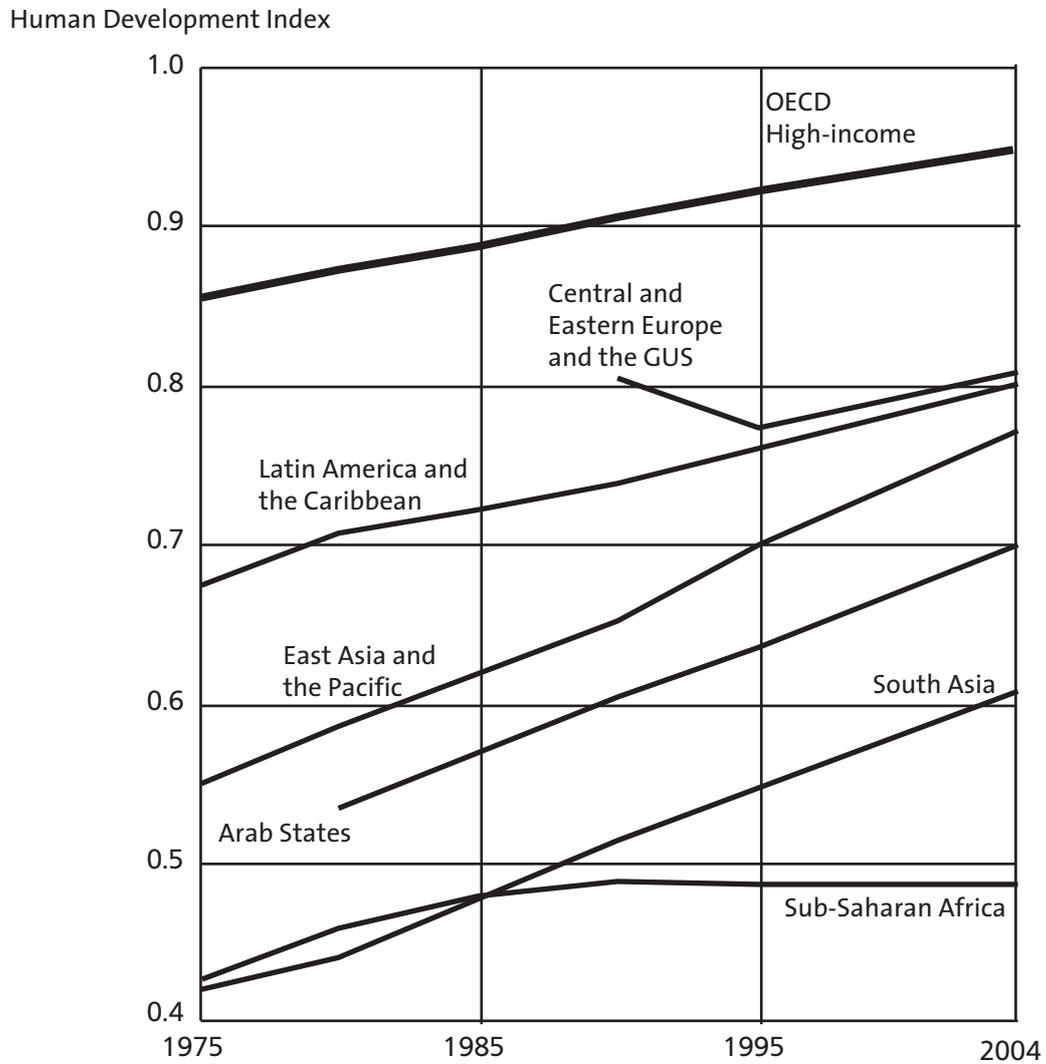
The graph shows the UNDP Human Development Index (HDI), which can encompass scores of between 0 and 1.

Source: TAB, own calculations based on UNDP 2006, p. 265

TABLE 1   DEVELOPMENT INDICATORS FOR WORLD, OECD, SUB-SAHARAN AFRICA AND FOR SOUTH AFRICA, UGANDA, NIGERIA AND NIGER 2004

	World	OECD	SSA	South Africa	Uganda	Nigeria	Niger
HDI rank	–	–	–	121	145	159	177
HDI value	0.741	0.923	0.472	0.653	0.502	0.448	0.311
GDP per capita in US dollars (PPP)	8,833	27,571	1,946	11,192	1,478	1,154	779
Annual growth rate in GDP per capita from 1990–2004 in %	1.4	1.8	0.3	0.6	3.5	0.8	-0.7
Life expectancy at birth in years	67.3	77.8	46.1	47.0	48.4	43.4	44.6
Annual population growth rate 1975–2004 in %	1.6	0.8	2.7	2.1	3.3	2.7	3.2
Urban population in % of total population	48.3	75.4	34.3	58.8	12.5	47.3	16.7
Population under age 15 in % of total population	28.5	19.6	43.9	32.8	50.4	44.5	49.0
Adult literacy rate ages 15 and over in %	–	–	63.3	82.4	66.8	–	28.7
Female adult literacy rate ages 15 and over in %	74.4	–	53.2	80.9	57.7	–	15.1
Electricity consumption per capita in kilowatt-hours (2003)	–	–	–	4,595	59	162	40

Source: UNDP 2006, p. 283 ff., all scores relate to 2004, unless otherwise specified. See UNDP 2006 for notes on the quality of the data.

ICT USE: FRAMEWORK CONDITIONS AND APPLICATIONS   2.

Looking back at the development in Africa over a period of at least 50 years, a long period of stagnation in the areas of telecommunications and of information and communication technologies is evident. Africa would appear to have woken from its long sleep at around the turn of the millennium. According to the International Telecommunication Union (ITU), Africa (as a whole) has been the world region with the highest annual growth rates in mobile telephony over the past five years, at 60%. Growth in Internet use has been impressive, too: within five years, the number of users in Africa rose from 4.6 million in 2000 to 33 million in 2005.

The following sections will examine selected aspects of ICT policy, infrastructure and use in sub-Saharan Africa, concluding with a brief assessment of the discussion of the »digital divide« in the African context. This chapter aims to give the reader a basic understanding of the fundamental conditions that need to be borne in mind when later sections (Chapters IV to VI) report in detail on ICT applications in the public sector, industry and education.

TELECOMMUNICATIONS REFORM AND ICT POLICY   2.1

An important condition for an African »revolution« in mobile telephony and the Internet was, and still is, political reform in the telecommunications sector. An overview compiled by the ITU of the extent of competition in individual segments of the telecommunications market shows that competitive structures were established in the mobile phone and Internet sector in the majority of cases, while the area of fixed telephony is characterised to a much lesser extent by competition.

Since the end of the 1980s, the International Monetary Fund (IMF) and the World Bank have made far-reaching macro-economic adjustments and extensive liberalisation measures a condition for the continued provision of external aid (the following is based on Nielinger 2006, p. 37 ff.). From the outset, one special goal of the structural adjustment programmes was the telecommunications sector. In addition, a liberalising agenda was pursued in the GATT negotiations (1986–1994) which, from 1995, continued in the then newly-founded World Trade Organization (WTO). A general agreement on trade in services (GATS) that was adopted by the WTO also contained an agreement on basic services in the area of telecommunications which, following many years of negotiations, entered into force in 1998, committing its signatories to a progressive liberalisation strategy. Despite scepticism on the part of some developing countries, a group of African advocates of reform from Côte d'Ivoire, Ghana, Mauritius, Sene-

gal and South Africa set itself up, committing itself to opening its markets in line with WTO regulations if transitional rules applied.

The African countries felt themselves under great pressure from the World Bank, the IMF and the WTO to introduce liberalising regimes: this pressure was increased by internal factors, in particular the high level of dissatisfaction with the current services on offer due to the long phase of stagnation. The existing structures were unable to satisfy the obvious demand. Nonetheless, conflicts arose between those in favour of reform and their opponents. The latter feared both a loss of control in the strategically important telecommunications sector and the loss of key sources of state income from international telephone traffic. Only once the pressure exerted by the international organisations increased and, at the same time, programmes to fund the implementation of the liberalisation agenda were announced, did a number of African trailblazing countries – the WTO advocates of reform already mentioned, plus Tanzania and Uganda – set in motion initial steps towards reform which, after the new strategy began to show initial successes, generated a growing number of imitators.

The outcome (so far) of the telecommunications reforms is utterly paradoxical, however (with criticism expressed, for example, by Gillwald 2005, p. 11). Following the abolition of state monopolies in the fixed network sector, for instance, the prices of local and national calls rose in some instances, while international calls became cheaper. This price structure offers no incentive to broad sections of the population to use the telephone (Van Audenhove et al. 2001, p. 38 f.). The serious deficiencies in the provision of rural areas with a fixed network infrastructure could in these cases not be eliminated by market-oriented telecommunications legislation alone.

The idea that an optimum telecommunications policy exists that can be applied to all regions of the world and to all countries is in any case questionable. Competent regulatory authorities and appropriate, made-to-measure regulations are key framework conditions that have yet to be established in many countries of sub-Saharan Africa (Nielinger 2006, p. 43 ff.).

The »Regional Symposium on Access to Telematics«, which was held in Addis Ababa in 1995 by the United Nations Economic Commission for Africa (UNECA), finally placed ICTs on the African policy agenda. In 1995, UNECA adopted the resolution »Towards an African Information Superhighway«, in which the African countries could identify the outlines of an ICT-friendly framework. A year later, the UNECA Conference of Ministers adopted the action plan for the »African Information Society Initiative« (AISI), which can be seen as a milestone in African political ICT history.

Through the agency of the New Partnership for Africa's Development (NEPAD) and the African Union, the new technologies acquired an institutional focus (see

box). Within the area of infrastructural development prioritised by NEPAD, the ICT promotion activities constitute a separate field of operation which, since 2002, has been part of the »e-Africa Commission«.

NEW PARTNERSHIP FOR AFRICA'S DEVELOPMENT (NEPAD) AND THE 2001 ACTION PLAN

The NEPAD action plan of 2001 describes a global economic revolution for which, it claims, ICT development is a prerequisite. Infrastructure in general is regarded as a particularly relevant sphere of action, and within this sphere, ICTs are accorded the highest priority: bridging the digital divide by investing more in ICTs is even listed ahead of energy in the infrastructure sector. The action plan hopes to achieve significant contributions to the development of knowledge-based economies and to the regional integration of the continent and its incorporation into the global economy; impetus to processes of democratisation and good governance; integration into the worldwide information society through the contribution of African cultural diversity; and a large number of useful applications in the planning sector (environment, agriculture, infrastructure) and in crisis monitoring (conflicts and pandemics). Particular emphasis is given to opportunities in education, research and science, with reference to possible continent-wide centres for distance learning and health education, as well as to cross-border African research projects and technology exchange programmes.

The specified goals, besides improving the infrastructural prerequisites, political framework conditions and ICT access, also include generating a critical mass of individuals with ICT skills, developing African software, developing local content and preserving the African cultural heritage. The action plan hopes that improving African capabilities in the area of ICT will also help achieve the goal of developing African »science and technology platforms« and combating the brain drain (Chapter VI).

In March 2003, six priority ICT projects of NEPAD were approved:

> the Eastern Africa Submarine Cable System project (EASSy),
> the associated cable project for African landlocked developing countries,
> a project on e-policies and e-strategies,
> the »e-Schools Initiative« (Chapter VI),
> a project aimed at providing inexpensive satellite access for the »e-schools«
> a project for capacity building in the area of e-learning in Africa (Chapter VI), based on the African Virtual University (AVU).

These priorities remain of key importance in the political discourse on ICTs in and for sub-Saharan Africa to the present day. The majority of African countries

today also have programmes in place for a national information and communications policy. One example of a highly ambitious government programme is Rwanda's »Vision 2020« (see box).

RWANDA'S »VISION 2020«

The Rwandan government programme »Vision 2020« (Nsengiyumva/Stork 2005), adopted in 2000, sets out the ambitious goal of completing the transition from a poor, crisis-stricken and war-torn agricultural society to a knowledge-based economy by the year 2020, by which time at most 50% of the population should still be employed in agriculture. Rwanda intends to serve as a regional telecommunications hub and be in a position to offer ICT services worldwide. The huge investments in education and in infrastructure development required to achieve this goal were earmarked in a first document on the National Information and Communication Infrastructure (NICI) 2001–2005 and have since been renewed for the period 2006–2010.

Following a decade of political and economic reform and intensified cooperation within Africa, the international community is now taking Africa more seriously as an actor in the global information society. This was noticeable not least in the discussions at the UN World Summit on the Information Society (WSIS) in Geneva and Tunis (2003 and 2005).

Improving the infrastructural prerequisites for ICT use and broadening its scope, however, must be accompanied by efforts in the domain of network management. The Internet Corporation for Assigned Names and Numbers (ICANN), which is based in the USA, administers the Internet's »core resources« at the highest hierarchical level, with other organisations responsible for similar tasks on a regional and national level. In past years, Africa was neither represented in the relevant international bodies nor active with institutions of its own. This also is changing: AfriNIC, for example, was recognised by ICANN in March 2005 as the fifth Regional Internet Registry (RIP): it is responsible for assigning IP addresses in Africa (Kleinwächter 2006). A specifically African »Internet policy«, which had already been prepared some considerable time ago, has now taken shape on an international level and is seeing dynamic development (Kleinwächter 2006 and 2007; cf. Coenen/ Riehm 2006).

ICT INFRASTRUCTURE IN SUB-SAHARAN AFRICA   2.2

The existing infrastructure for ICT in sub-Saharan Africa is clearly inadequate. Some fundamental problems and relevant proposals for solutions in this area

will be discussed below in the context of the major cable projects and the theme of telecommunications.

BROADBAND CABLE FOR SUB-SAHARAN AFRICA   2.2.1

The African telecommunications and data infrastructure is extremely poor. One of the key large-scale projects in this area is the submarine broadband cable that is to encompass the entire continent, linking the countries of Africa more effectively and inexpensively to international data networks (Fig. 2). The commissioning in 2002 of the South Atlantic Telecommunications cable no.3/West African Submarine Cable/South Africa Far East (SAT-3/WASC/SAFE), comprising in total 28,000 km of fibre-optic cable, was a major step forward. Today, these submarine cables handle approximately 80% of all international telephone, fax, data and Internet traffic. The cables offer greater reliability, quality and security than satellite data transport. The cable connecting Sesimbra in Portugal to Melkbosstrand in South Africa has a capacity of 120 gigabits/s, enough to handle, for example, 5.8 million telephone calls, 1.45 million data connections at 64 kb/s or 2,304 television channels. On Africa's Atlantic coast there are land connections in Senegal (Dakar), Côte d'Ivoire (Abidjan), Ghana (Accra), Benin (Cotonou), Nigeria (Lagos), Cameroon (Douala), Gabon (Libraville) and Angola (Cacuaco). On the Indian Ocean side, SAFE links South Africa to India (Cochin) and Malaysia (Penang) via the islands of La Reunion (St. Paul) and Mauritius (Baie Jacotet).

In East Africa, the long-planned Eastern Africa Submarine Cable System (EASSy), to connect Mtunzini in the Republic of South Africa to Port Sudan in Sudan and East Africa to the international networks, has still not been completed. Six other land connections along Africa's east coast are planned: in Somalia (Mogadishu), Kenya (Mombasa), Tanzania (Dar es Salam), Madagascar (Toliary) and Mozambique (Maputo). In addition, the following landlocked countries are also to be connected to EASSy under the World Bank's Regional Communications Infrastructure Program (RCIP): Lesotho, Swaziland, Botswana, Zimbabwe, Zambia, Malawi, Burundi, Rwanda, Uganda, Ethiopia. This fibre-optic cable, which is around 10,000 km long, will have an initial data capacity of 20 gigabits/s, to be increased subsequently to 320 gigabits/s. Following long delays in the planning and financing phase, commissioning of the submarine cable is now scheduled for the end of 2008. EASSy has in any event set in motion a dynamic series of initiatives and projects to better equip sub-Saharan Africa with broadband cables.

FIG. 2   SCHEMATIC VIEW OF AFRICA'S SUBMARINE BROADBAND CABLES
                                         SHOWING THE PLANNED EASTERN AFRICAN CABLE (EASSY)

Source: TAB, based on http://upload.wikimedia.org/wikipedia/commons/7/74/SAFE-SAT3-
        WASC-route. png
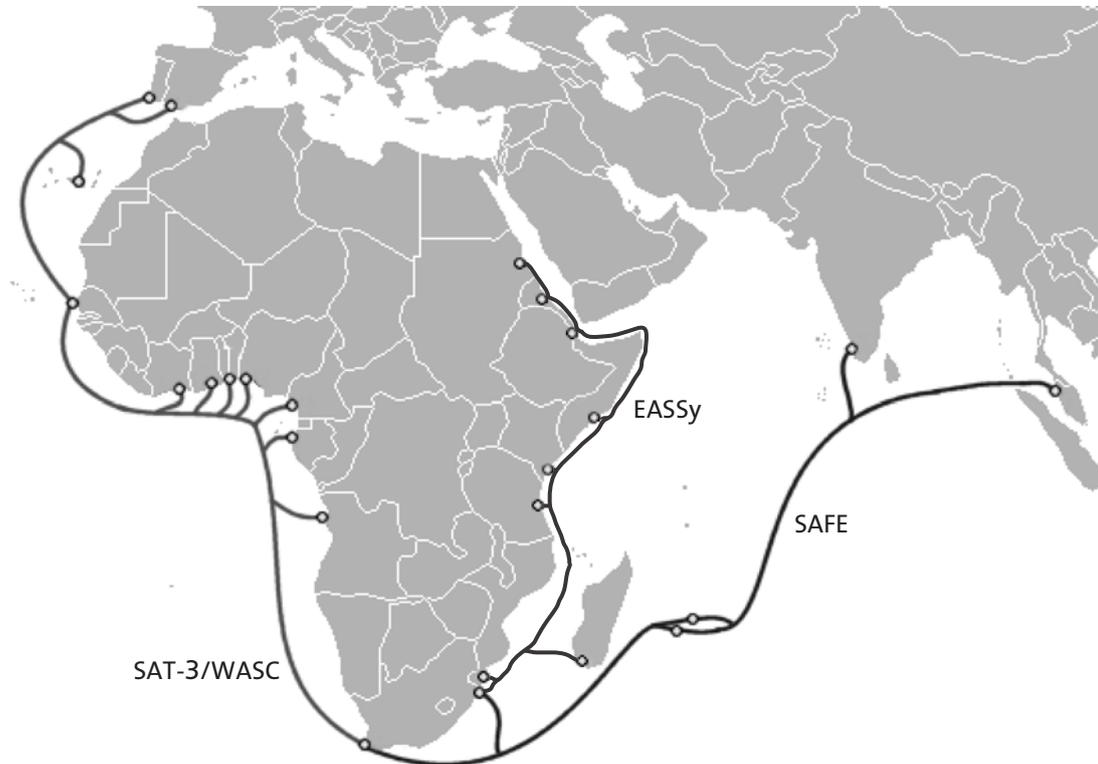
It was not least the controversy-ridden discussion about operator, financing, access and price models that delayed EASSy planning. The SAT-3/WASC/SAFE consortium is accused of allowing only the (semi-) nationalised telecom companies of the coastal countries to acquire a stake in the project alongside European investors, thereby securing for themselves exclusive access to the fibre-optic cable. At the same time, existing monopolistic structures were extended into this area of activity and thus consolidated. Accordingly, the prices of using SAT-3/WASC/ SAFE were and remain very high, resulting in poor utilisation of capacities. A more open investment approach is intended for EASSy (Merlin/Vielhaber 2006, p. 20 ff.).

Important as the submarine cables along the African coasts are, they do not resolve an even bigger problem, namely the situation of the inland broadband data and telephone connections in Africa, especially the connections within and to the continent's many landlocked countries. To date, roughly 75 % of inner-African Internet traffic is routed by satellite via Europe or America – a very costly »luxury«. Even Internet communication within a country must be routed via Europe

or the USA in cases where no »Internet Exchange Point« (IXP) is available to connect the various network operators (Mutume 2006, cf. IDRC 2005a, p. 30 ff.).

Laying telecommunication cables on land entails a significantly higher volume of investment and, in some cases, involves dealing with extremely difficult geographical and geological conditions. It is also hard to protect land cables from being illegally dug up and then sold or used for other purposes. Following a number of years in which public ICT infrastructure funding provided by the donor countries and their institutions was significantly reduced (Chapter VII.1.1), a certain reversal of this trend would appear to be taking place. The World Bank, for instance, is making available no less than 164 million US dollars, under its Regional Communications Infrastructure Program (RCIP), to connect Kenya, Burundi and Madagascar to the global broadband infrastructure. Zambia, Botswana, Ethiopia, Djibouti, Malawi, Uganda, Rwanda, Lesotho, Zimbabwe and Somalia are to follow in a second phase (Kleinwächter 2007; World Bank 2007). The EU has likewise announced that it will be stepping up its activities in this area (cf. Chapter VII.1.1).

TELEPHONY   2.2.2

In the context of the discussion of ICT for development in sub-Saharan Africa, the question of the relation between fixed line and mobile telephony, and the subject of Internet telephony, are particularly important, and will therefore be dealt with separately below.

MOBILE TELEPHONE BOOM AND FIXED NETWORK CRISIS

There is no single answer to questions of the necessity and design of a fixed network strategy given the diverse possibilities offered by wireless methods of transmission (Merlin/Vielhaber 2006). These include, for example, satellite-based telecommunications and data services, often on a VSAT (Very Small Aperture Terminal) basis, as well as local and regional wireless technologies for the transfer of data (Wireless Local Area Network, WLAN; Worldwide Interoperability for Microwave Access, WiMax).

Merlin/Vielhaber (2006, p. 22) believe that an ICT infrastructure dominated by mobile networks is still a long way off in sub-Saharan Africa, yet consider such a scenario to be perfectly conceivable in ten to fifteen years. Newthinking/ DIE (2006, p. 35 f.), in contrast, believe that the long-term future (relating in this case to broadband connections for African universities) lies in terrestrial fibre-optic cables, as these offer advantages in terms of performance and price-benefits ratio over the VSAT solutions that predominate today (Chapter VI). For Nielinger (2006), Africa's most pressing infrastructural problem is the avail-

ability of broadband (Kleinwächter 2007), a problem that has just become more acute due to the success of mobile telephones. The boom in mobile telephones has exacerbated the »fixed network crisis« because the increased demand for mobile phones has been satisfied, with the result that the necessary investments have not been made in the fixed networks. Nielinger calls this the »growth blockade« of the fixed network. The principal benefits of the fixed network, however – namely inexpensive broadband telecommunication services – remain unchanged. Nielinger's vision of the future is a mixed scenario: mobile telephony will dominate for voice services and for the »last mile«, while only fibre-optic cables will be able to achieve standards equivalent to those in developed countries for broadband data transmission, the »backbone« and long-distance connections. Ultimately, it is more likely that the boundaries between fixed and mobile networks will become blurred than that the two technologies will stand opposed as distinct alternatives (Nielinger 2006, p. 54, 70 f.).

INTERNET TELEPHONY

Internet telephony deserves separate and somewhat more detailed treatment in this context, as Africa badly needs improvements in telecommunications and this use of the Internet is often regarded as especially relevant for developing countries (for the presentation that follows, see Escudero-Pascual/Berthilson 2006; Southwood 2007).

»Voice over Internet Protocol« (VoIP) is the term most commonly used to describe the use of the Internet for making telephone calls. The Internet Protocol (IP) is the central element of the first »layer« of protocols that are fundamental to the Internet above the level of network access hardware. The Internet Protocol thus also serves as the basis for those protocols that enable Internet applications like the World Wide Web, e-mail and indeed VoIP. There are various ways of making telephone calls over the Internet: VoIP became popular through Skype® software, which is in widespread use around the world. Using Skype® or similar software, two Internet users can telephone one another via their PCs. It is also possible to reach fixed or mobile phones, however, if the providers have a »gateway«. The technical options available for Internet telephony also include Internet-capable telephones. Either cable-based systems or terrestrial and satellite-based mobile systems, or a combination of the two, can be used to physically transmit the data. Because of the efficiency gains that can be achieved, in principle, by using integrated IP networks for the various radio and telecommunications services, the entire telephone system is likely to use IP in the near future. This process is a gradual one in the developed countries and tends to go unnoticed by the end consumer.

In developing countries which lack an established fixed line telephone system, essentially two applications for the use of VoIP are currently under discussion:

Internet telephony for international telephone traffic and for poorly connected rural regions.

The economic advantages that VoIP offers over conventional telephone systems are of particular interest in developing countries. International telephone calls in Africa often remain subject to the monopoly of public or formerly public telephone companies and, as such, are expensive. Because of the large number of African migrants, however, there is considerable demand for low-cost international telephone calls, especially in the urban centres of African countries where a more or less satisfactory fixed network and Internet infrastructure is available. Trends in recent years show that the costs of international telephone calls have fallen thanks to the influence of grey and legal VoIP use (Southwood 2007, p. 3). In other words, VoIP has so far become attractive to end consumers primarily because it allows international calls to be made inexpensively, ideally incurring only the costs of Internet use. Cyber cafés and other providers of Internet access play an important part in satisfying this demand. Southwood (2007, p. 2) estimates that 20% to 30% of international call revenues in Africa are generated in the non-legalised or incompletely legalised »grey markets« for VoIP.

The other scenario for VoIP application that is likewise widely discussed relates to access to communications technologies in remote rural regions where not only are there no fixed line telephones but mobile phone coverage is also poor or indeed non-existent on account of the poor geographical conditions and the lack of people able to afford mobile phones. The ITU (2007) estimates that only 45% of the approximately 400,000 villages in sub-Saharan Africa have access to a mobile telephone network (as of 2006). Only 2.6% of these communities are connected to a fixed network, while only 0.38% of them have public Internet access. Particular demand for telephone lines is seen in these regions for key services such as municipal offices, the police, emergency centres, doctors, hospitals, commercial enterprises, markets, editorial offices, organisations, associations, political parties, schools and cyber cafés. In this context it is primarily local and regional telephone links that are needed rather than supra-regional and international ones. However, these regions, in contrast to the urban centres in Africa, tend also to have very little access to the Internet. The glaring deficiencies in the telecommunications infrastructure, after all, are precisely the problem faced by these rural, under-developed regions. VoIP only represents a possible solution to this problem in combination with other mobile-based technologies. Primarily, these would be mobile-based data transmission technologies that are cheap to install (e.g. WLAN); although they are able to cover only local areas, their transmission capacities are sufficient for voice services. Suitable PCs equipped with wireless antennae and signal amplifiers, together with solar power modules, can be purchased and installed for just a few thousand euros. Supplementary, though more expensive, satellite-based technologies (especially VSAT) could be

used to link the local Internet and VoIP island to the global Internet and supraregional and international telephone lines.

VoIP is still illegal in most African countries, though there is a trend towards legalisation that prompts Southwood (2007) to predict that it will in the medium term only be a question of how and not whether VoIP is legalised in all of the continent's countries. Essentially, the reasons for the prohibitive laws are to be found in the strong position of telecommunication companies which were formerly public companies, or still are, and which enjoy some kind of monopoly. The excessive profit margins in markets serving only the wealthy elites are defended when necessary by government policy; after all, the state also profits from the corresponding telecom revenues and, in principle, can use them to improve the infrastructure. In the medium term such foreclosure of the market will no longer be viable, as is already indicated by the development of grey telecommunications markets in Africa and initiatives to legalise VoIP in various sub-Saharan countries. In the area of PC-to-PC telephony, moreover, effective control is only possible to a limited extent in any case. In all likelihood, the increasing competition the monopolistic providers have to contend with will in most cases result sooner or later in general price cuts and more liberal market structures.

A number of regulatory issues need to be resolved in this process, however. These are similar to the issues faced by developed countries, but need to be tackled in line with the specific circumstances that exist in the developing countries. These regulatory issues include access for (small) voice service providers to international gateways and to national and regional networks; fair price and invoicing agreements; access to national and international telephone number systems; telephone number portability; and participation of VoIP providers in the emergency number system. Other issues involve ensuring sufficient voice quality, protecting (voice) data, and ensuring (voice) data security and consumer protection. As far as Africa is concerned, an obvious step in addressing these regulatory issues would be to examine the experience of legalisation already gained in countries like Kenya (Rawson 2007; Southwood 2007).

One must assume that the paradigm of decentralised and open Internet-based networks will replace the monopolistic, vertically integrated telecommunications structures worldwide. In developing countries such as those in Africa, these old structures have hitherto not been able to achieve adequate provision of telecommunications services. Opening these markets to allow the new applications promises not only better telephone and Internet provision but also the creation of a multitude of small, medium-sized and large telecom service providers, which would be helpful for developing countries in particular. The investment costs for end consumer-oriented voice service providers over the Internet, assuming an adequate basic infrastructure is in place, are low and can encourage the estab-

lishment of small service companies. The focus on voice telephony on an Internet infrastructure basis also reflects the widely observable fact that in these countries greater importance is attached to the telephone than to other forms of Internet use. All the same, VoIP is no panacea for deficiencies in the telecommunications infrastructure, nor any protection against monopolistic markets, but presupposes an existing basic infrastructure. Further efforts in this area on the part of development co-operation, particularly in providing advice on regulation, would appear appropriate. VoIP also provides a pertinent example of how mistaken it would be simply to treat Internet and telephones as two separate issues in development co-operation.

ICT USE IN SUB-SAHARAN AFRICA   2.3

Information and communication technologies can be more widely understood to encompass both the old, predominantly analogue, electronic media such as radio and television, and the new digital and interactive media (Gerster/Zimmermann 2005, p. 10; OECD 2005, p. 11). This report will look first at the use of radio and television (cf. Chapter IV.3.1.2), then at the use of telephone and Internet, and in conclusion will explore the discussion of the »digital divide«.

RADIO AND TELEVISION   2.3.1

Radio is the medium most commonly used by the majority of people in Africa. It was used as early as the mid-1950s in countries like Ghana, Mali and Nigeria as a means of providing the rural population with agricultural information (Ilboudo 2003; Merlin/Vielhaber 2006, p. 63 ff.). By the end of the 1960s at the latest, radio stations (mostly state-run) were operating in all African countries: they were used to provide agricultural information, among other things, and also for the purposes of political propaganda to serve the interests of the government in power at the time. From the beginning of the 1980s, international development organisations like the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Food and Agriculture Organization (FAO) funded individual stations or rented airtime that they filled with their own development policy-motivated programmes. However, it was not until the processes of democratisation, economic privatisation and deregulation got underway in Africa in the early 1990s that private, local, regional and national radio stations began to proliferate. In 1997 there were still only ten private radio stations in the whole of sub-Saharan Africa: today there are several thousand, broadcasting their programmes in around 200 local languages (Girard 2003). These local stations are better placed than the large national stations to address the local population's information needs and allow local people to have their say.

This diverse radio landscape is financed partly on a purely commercial basis through advertising, but partly by support programmes run by international development organisations. The new short-range FM broadcasting method involves relatively low investment costs. Because they do not require much power, such stations can be operated using small generators or solar cells, making it possible to use them in remote and rural regions.

Radio in sub-Saharan Africa is thus regarded as a suitable, widespread and low-cost medium for giving the rural population access to information on topics such as the following:

> crop growing and irrigation methods,
> weather forecasts,
> markets and prices, product information,
> advertising possibilities,
> healthcare, especially for combating HIV/AIDS, tuberculosis and malaria,
> conservation
> language learning and other educational programmes.

However, many private radio stations are inadequately equipped, and advertising revenues are often not sufficient to replace or modernise obsolete or defective equipment. Many lack computers, Internet access, recording equipment, high quality microphones and an adequate power supply. A trend towards smaller stations merging to form larger ones is likely. The one-off financing of the broadcasting infrastructure by international organisations is regarded as inadequate (Merlin/Vielhaber 2006, p. 64): it is said to have less media impact and could have a distorting effect on the market.

Accordingly, the European Parliament, in a resolution on »The Media and Development« of 26 September 2006, called for training of radio and print media journalists and the support of all government policies that provide support for broadcasting public radio, commercial radio, community radio and rural radio, arguing that it is widely seen as the most appropriate and cost-effective tool for promoting information and communication for development (European Parliament 2006).

In sub-Saharan Africa, television use still lags considerably behind radio use. According to a survey conducted in 2004 of adults in rural areas with access to a telephone, 73.6% of respondents in Mozambique owned a radio and 92.4% used one. In Tanzania, these figures were even somewhat higher, with 85.3% of respondents owning a radio and 95.6% using one. Television use among this rural section of the population was considerably lower, at 57.9% (Mozambique) and 45.6% (Tanzania) (Souter et al. 2005).

Buttschardt (2006, p. 17 f.) confirms that radio is dominant among the available electronic media in the countries of West Africa that he studied, which once again are primarily rural regions. Radio, he says, continues to be the number one information medium, despite the fact that television is becoming noticeably more popular and is preferred by 60% of people. Radio can be received everywhere, even in the remote regions of West Africa; the sets themselves are very inexpensive and can be battery-operated, making them independent of a mains power supply. He goes on to explain that a large number of national, regional and local stations, the latter broadcasting in as many as 13 local languages, ensures that the entire population is served. In northern Togo, for example, there are more than ten stations that can be received simultaneously. Programmes generally comprise local reports and broadcasts offering practical advice for everyday life. In comparison to radio in the countries under review, namely Benin, Togo and Burkina Faso, Buttschardt says, terrestrial television reception in rural regions is generally limited to one state channel, other channels being available only via satellite and parabolic antennae.

Table 2 shows the distribution of radio and television sets in selected countries of sub-Saharan Africa, illustrating the clear lead radio has over television and the overall low level in comparison to developed countries.

TABLE 2					DIFFUSION OF RADIO AND TELEVISION SETS		
	Benin	Burkina Faso	Togo	South Africa	Nigeria	Uganda	Niger
Radio sets per 100 inhabitants	35.8	10.6	41.0	24.2	23.5	15.5	6.6
Television sets per 100 inhabitants	10.7	1.2	13.0	19.5	6.8	1.9	1.2

Source: ITU's ICT Eye (www.itu.int/ITU-D/icteye/Default.aspx); figures stated according to availability for the years 2002 to 2005

MOBILE AND FIXED TELEPHONES   2.3.2

Use of the telephone in Africa is essentially focused on mobile phones. According to ITU, the number of mobile phone subscribers already overtook the number of fixed line subscribers in 2001. Since the starting level at the end of the 1990s was still very low, the rates of growth are in many cases impressive: there was an increase of 5,000 % between 1998 and 2003, for example (BBC 2005).

Nonetheless, Africa still remains in last place in terms of mobile phone use in comparison with the rest of the world.

Based on the figures published by ITU, as shown in Table 3 (the most recent relate to 2005[3]), the following picture appears:

> The mobile phone density (number of mobile phone subscribers per 100 inhabitants) in Africa is 15. The figure for the world as a whole is higher by a factor of 2.2, while the European figure is higher by a factor of 5.6.

TABLE 3   INTERNATIONAL COMPARISON OF MOBILE AND
                                                   FIXED LINE SUBSCRIBERS IN 2005

	World	Europe	Africa	South Africa	Nigeria	Uganda	Niger
Mobile phone subscribers in 000s	2,184,366	684,224	137,661	33,960	18,587	1,315	300
Mobile phone subscribers per 100 inhabitants	33.9	85.5	15.4	71.6	14.3	4.6	2.2
Average annual increase in number of mobile phone subscribers 2000–2005 in %	24.2	18.6	54.4	32.4	261.8	59.6	170.9
Fixed line subscribers in 000s	1,253,915	322,457	27,356	4,729	1,223	88	24
Fixed line subscribers per 100 inhabitants	19.4	40.3	3.1	10.0	0.9	0.3	0.2
Average annual increase in number of fixed line subscribers 2000–2005 in %	5.1	0.3	6.8	-1.0	17.2	7.2	3.7

Source: ITU online database (www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx, accessed on 7 May 2007; minor differences can be noted as compared to the statistics section of the World Information Society Report 2006 [ITU 2006])

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3 As a rule, ITU does not publish figures for sub-Saharan Africa, but only for Africa as a whole. We supplement these with selected figures for individual African states.

> Extreme differences can be found within sub-Saharan Africa: South Africa has a mobile phone density of 71.6, an almost European level, while the same figure for Ethiopia (not listed in Table 3) is 0.5.
> In all regions of the world and all countries of sub-Saharan Africa reviewed here, mobile telephony has overtaken fixed line telephony.
> In Africa, only 3.1% of the population have a fixed line telephone. The fixed line telephone density differs from the global level by a factor of 6.3 and from the European level by a factor of 13.
> The rates of growth in terms of mobile telephone diffusion (taking the last five years into account) are highest in those countries with a very low mobile phone density (Nigeria, Niger, Uganda).
> This pattern is less clear when it comes to the increases in fixed line telephony. Generally speaking, the rates of growth are considerably lower than in the area of mobile telephony, and there is no correlation between a high fixed line telephone density and low growth rates or between a low fixed line telephone density and a high growth rate. The »fixed network crisis« in Africa (a crisis due to shortage rather than saturation) is expressed in these figures.

The quite widespread view of Africa being a continent in which a large proportion of the population owns a mobile phone is in any event not tenable, especially not as far as rural regions are concerned.

However, it should be borne in mind that the actual user figures are likely to be higher than those stated by ITU, whose data relate to subscribers on contracts from mobile phone providers. Because a mobile phone tends to be used by several people, and because telephone shops and telecentres are widespread, giving the surrounding population access to a telephone, the rate of telephone use is presumably much higher, although no estimates are available.

When estimating the extent of mobile phone use, it must be remembered that many mobile phones in sub-Saharan Africa are used only passively. This is the case when phone owners are no longer able to afford the costs of the calls: they can receive calls, but cannot make calls themselves. For reasons of cost, using telephones for text messaging (SMS) is also popular in Africa. One particular cost-saving way to use a mobile phone is to let the phone ring without picking up (»flashing«). Between people who know each other well, this can have a specific meaning, depending on the situation, and does not incur any costs (Slater/Kwami 2005).

GRAMEEN PHONE: MOBILE PHONES IN RURAL AREAS

The findings of the Grameen Foundation (www.grameenfoundation.org) with respect to village telephones in Bangladesh, Rwanda and Uganda are interesting. Evaluations are already available for Bangladesh, showing that at least three times as much profit was made per mobile phone in rural regions as compared to urban areas. The Foundation states that village telephone operators in Uganda sold on average five times more time units than a typical urban mobile phone user consumes. Key forms of use are business-related calls, including calls to obtain information about prices at nearby markets, and calls to friends and family members living far away from the village (in Bangladesh, these are often guest workers in other countries). The telephone calls can make time-consuming and expensive journeys to other villages or cities superfluous.

According to ITU (2006), the costs per minute of mobile phone calls in Africa are approximately 0.30 US dollars, and thus hardly differ from the costs in America and Europe. If one remembers, however, that 44% of the population in sub-Saharan Africa was living on less than one dollar a day in 2002 (UN 2006a, p. 4), it is clear that mobile phones are still unaffordable for the majority of the population. Mobile phones are thus also important status symbols, indicating that a person is up-to-date, successful and cosmopolitan. Like the Internet, they are also useful for communicating with friends and family members who live far away, in developed countries for example.

Finally, mention should be made of the poor coverage in remote and sparsely populated rural areas: this is not only the case for fixed line telephones – one would hardly expect otherwise – but also for mobile phones. South Africa, with an almost nationwide mobile network coverage of 96%, stands out in this respect; in Uganda too, 80% of the population in 2005 was covered in principle, according to ITU. In contrast, network coverage in Nigeria is just 58 % and only 15% in Niger (www.itu.int/ITU-D/icteye/Default.aspx). Installing transmitters to improve network coverage in these vast and sparsely populated regions would incur considerable costs, yet is likely to generate low revenues. In liberalised, competitive markets, as can be found in the area of mobile telephony in many African countries, network operators would need to be forced by the regulatory authorities to serve these regions, as there is insufficient incentive to invest on purely economic grounds. Generally speaking, revenues per mobile phone subscriber in Africa are lower than in other regions of the world, and have actually fallen in recent years. This further restricts the scope for investments (Cronin 2005; White 2006).

INTERNET   2.3.3

According to ITU (some of whose data are based on estimates), there were around 30 million Internet users in Africa in 2005, of whom the Republic of South Africa and Nigeria accounted for approximately five million each (and, outside sub-Saharan Africa, a further five million each for Egypt and Morocco). PC and Internet use in 2005 can be characterised as follows (Table 4):

TABLE 4   **INTERNET USE IN 2005**

	World	Europe	Africa	South Africa	Nigeria	Uganda	Niger
Internet users in 000s	785,397	259,224	33,133	5,100	5,000	500	29
Internet users per 100 inhabitants	12.2	32.4	3.7	10.8	3.8	1.7	0.2
Total cost of 20 hours of Internet access in US dollars	32.67	18.69	47.09	63.21	50.42	99.59	101.82
PCs in 000s	588,274	239,833	17,726	3,966	1,200	300	10
PCs per 100 inhabitants	9.7	30.7	2.2	8.4	0.9	1.0	0.1

Source: ITU online database (www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx, accessed on 7 May 2007; minor differences can be noted as compared to the statistics section of the World Information Society Report 2006 [ITU 2006])

> In a worldwide comparison, Africa comes bottom of the list, with 3.7 Internet users per 100 inhabitants. This figure differs from the global level by a factor of 3.3 and from the European level by a factor of 8.8.

> The differences within Africa in terms of Internet use are striking. The Republic of South Africa leads the field with 10.8 Internet users per 100 inhabitants; the populous country of Nigeria has 3.8. Internet use is even more marginal in less-developed and poorly developed countries like Uganda (17) or indeed Niger (0.2). Only Sierra Leone (not listed in Table 4) records an even lower figure, with 0.19 Internet users per 100 inhabitants.

> The availability of PCs per 100 inhabitants follows a similar pattern, both in a global and inner-African comparison, although there are considerably more Internet users than PCs, particularly in sub-Saharan Africa (and, to a lesser extent, in the Republic of South Africa). In Uganda, for example, there are just 60 PCs for every 100 Internet users; the figure is 35 in Niger and only 24 in Nigeria (compared with 77 in South Africa). In Europe and the USA, by

contrast, it was common for many years to see Internet diffusion lagging behind PC diffusion. It is true that there are now more Internet users than PCs in Europe, too, but the difference is much smaller (93 PCs for every 100 Internet users). The major differences in Africa are an indication that the Internet there is often accessed in schools, universities, companies, offices, libraries and Internet cafés. This is confirmed by a large-scale study on ICT use in eleven sub-Saharan countries (Gillwald/Esselaar 2005, p. 23 f.).

> Mobile phone costs in Africa are similar to those in other regions of the world, yet incomes are considerably lower. The costs of using the Internet, on the other hand, are significantly higher than in other countries. According to calculations of ITU, 20 hours of Internet use in Africa (at 47.09 US dollars) costs more than twice as much as in Europe (18.69 US dollars). In some African countries these costs are far higher still: the league table of countries with the highest costs of Internet access is headed (at 147.80 US dollars) by the Central African Republic (not listed in Table 4), followed by Niger (101 US dollars). The total costs of 20 hours of Internet use are lowest in Egypt (4.97 US dollars) and Algeria (9.41 US dollars). Thus not only is the provision of Internet access poor, narrowband and unreliable, but the costs disadvantage Africa in two respects: they are higher in absolute terms as compared with other regions of the world, and the discrepancy is exacerbated by the low level of disposable income. The majority of the population cannot afford their own Internet connection.

DIGITAL DIVIDE 2.3.4

Obvious differences in the diffusion of digital media between social groups or indeed countries and regions are interpreted as symbolising a »digital divide«. Academic discourse, following on from older discussions in the realm of media science about the diffusion patterns of new media, is concerned with comparing the temporal and the social dimension. It is claimed that disadvantaged social groups or countries and regions not only use the new digital media less (or have less access to them), but that this disadvantage is becoming greater over time and that the divide is widening (Riehm/Krings 2006).

What is the situation in this respect in Africa? In many cases, as proof of Africa's positive development, the fact is cited that the growth rates are now greater than in the developed countries. This is not surprising, however, given the low initial level in Africa. With usage rates of around 70% in individual European countries and in the USA, increases of 50% and more are no longer objectively possible. At the beginning of a trend of this kind, however, and assuming a low starting level, it is perfectly plausible for such high growth rates to be observed.

The yardstick for evaluating the digital divide has therefore become the difference in usage percentage figures between social groups and/or countries, compared at two different points in time. This comparison, based once again on figures provided by ITU, was undertaken for mobile phone and Internet use in Africa and Europe between 1999 and 2005. Figures 3 and 4 show the results, according to which the difference between Africa and Europe in 1999 in terms of mobile phone use was 22 %, although this figure had risen to approximately 70% by 2005. This is because development in Europe took place on a quite different scale, rising from 23 to 85 %, while Africa »only« achieved an increase from 1% to 15 %. A growing rift is also evident in the development of Internet use: the percentage rate difference between Europe and Africa was approximately 9% in 1999, and rose to 30% in 2005.

FIG. 3   MOBILE PHONE USERS IN AFRICA AND EUROPE (1999 TO 2005)
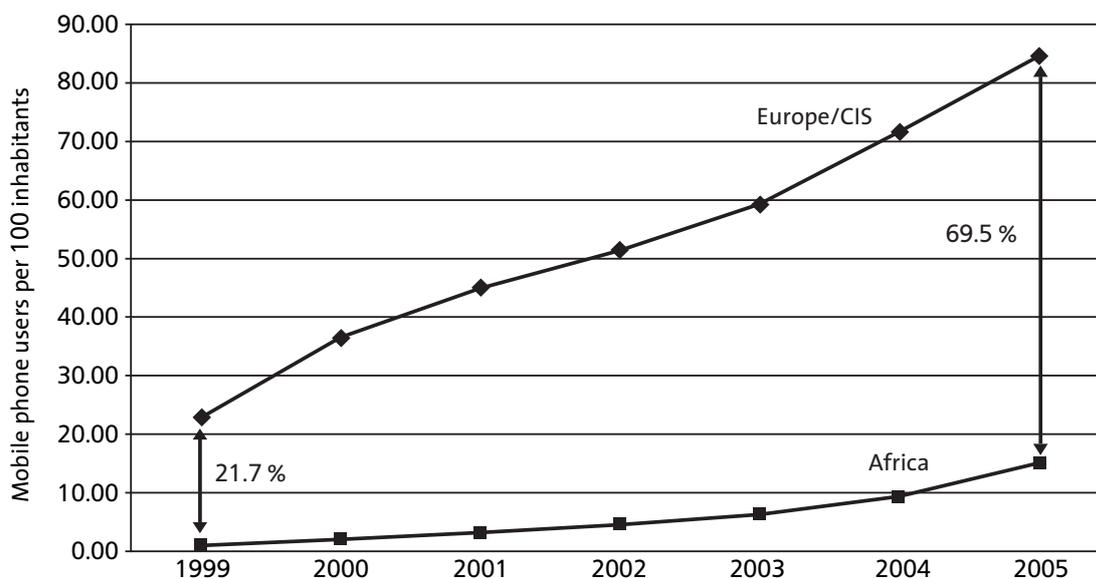
Source: TAB based on ITU 2006 (On its website, www.itu.int, the International Telecommunication Union provides extensive statistics and documentation which were used to compile this graph.)

Africa is thus making up ground as regards mobile phone and Internet use, but is in no way catching up with other regions of the world. The global »digital divide« between Africa and the rest of the world is widening.

How to assess the digital divide from a development perspective is quite a different matter. Ultimately, it is not only access to ICTs that counts, but above all the likely or demonstrable negative consequences on development arising from a lack of access to computers and the Internet. »The bottom line is that the digital divide is not the point, progress towards socio-economic development is«

(Bridges.org 2005a, p. 90; cf. Gerster/Zimmernann 2005, p. 31 f.; Riehm/Krings 2006).

FIG. 4   INTERNET USERS IN AFRICA AND EUROPE (1999 TO 2005)
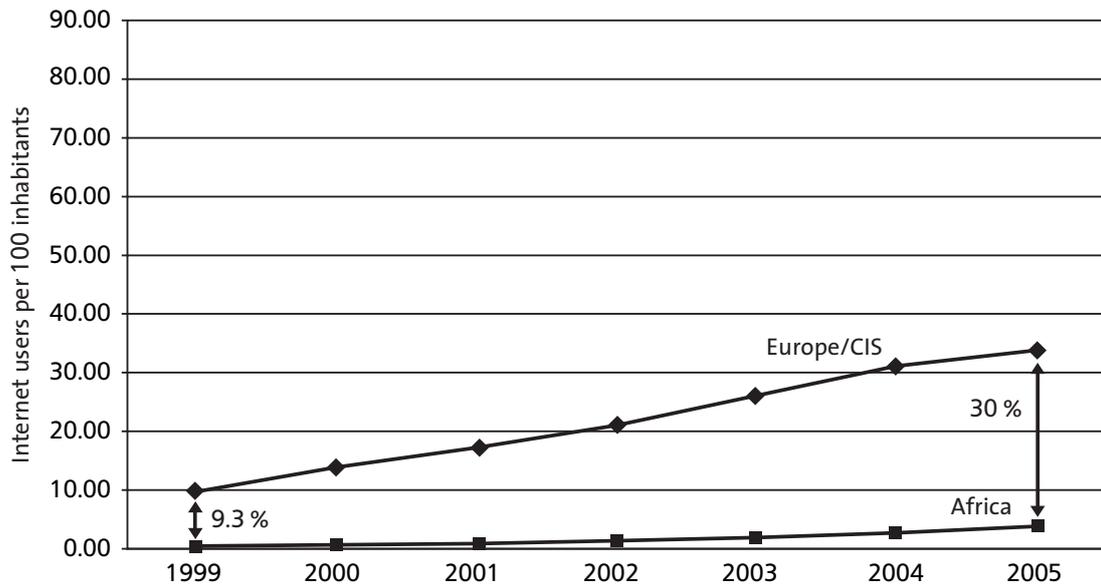
Source: TAB based on ITU 2006

CONCLUSION 3.

Despite all the progress at the micro level, e.g. with respect to democratic forms of government, debt reduction and economic growth, Africa is the continent that in recent decades has lagged furthest behind in development terms. This paradoxical picture – progress without ever catching up – is equally evident in the domain of ICT. Following a prolonged period of stagnation, recent years have seen considerable growth, particularly in the area of mobile telephony. This is linked, among other things, to the privatisation and liberalisation reforms of the telecommunications sector in the 1990s that led to the successful introduction of competition in the mobile phone sector in almost all African countries. Both pan-African institutions and national governments have presented ICT action plans aimed, for example, at expanding the African information infrastructure, improving IT education at all levels, from primary school to university, and creating export-oriented ICT service centres

Africa's ICT infrastructure, especially its links to the World Wide Web, together with the creation of networks within the African continent, continues to be poor. Possible advances through the creation of an undersea broadband cable

along Africa's Atlantic coast cannot be adequately realised due to restrictive access regulations. For political and financial reasons, the long-planned extension of the submarine cable on the east coast has been repeatedly delayed. The much wider use of mobile telephones has exacerbated the »fixed network crisis«, with essential investments in this area still failing to keep up with demand

As far as use of ICTs is concerned, radio is still the most popular, remaining far more widespread than television, the second mass medium. Political reforms have been one factor in the emergence of a diverse radio landscape, one that is partly commercial, partly state-funded, and partly financed by development organisations. In many African countries this radio network offers programmes that are tailored to the information needs of the local population. Mobile telephones have not only far outstripped fixed line telephones in terms of usage, but continue to exhibit high rates of growth. Nevertheless, Africa still ranks bottom as compared with other continents. First and foremost, it is the urban middle classes who are able to afford their own mobile phones. In rural areas, however, there is great scope for community use of mobile telephones, as demonstrated by the Grameen Foundation's »Village Phone« initiative in Uganda that targets women with very small businesses. The picture as regards use of the Internet is rather similar to that for mobile telephony, albeit on an even lower level. The growth rates are relatively high, yet the level lags well behind that of other regions of the world. The costs of using the Internet are still extremely high as compared with other countries, and therefore unaffordable for the majority of the impoverished population of sub-Saharan Africa. In view of the special relevance of telephony in Africa, increased activities in the area of »Voice over IP« (VoIP) would appear appropriate: even if VoIP is no panacea for deficiencies in the telecommunications infrastructure, nor any protection against monopolistic markets, its use presupposes improvements in the underlying infrastructure and further efforts at regulation.

Any such statements, it should be borne in mind, are subject to the proviso that the differences between and within the countries of sub-Saharan Africa are in some cases extremely great. The situation in the Republic of South Africa in terms of economic and social development and the availability and use of ICTs cannot be compared to the situation in the poorest countries such as Niger. By global standards, Africa has in overall terms made considerable progress but has not caught up: the digital divide remains, and is in fact becoming wider.

DEMOCRACY, GOOD GOVERNANCE AND CIVIL SOCIETY IV.

Supporting processes of democratisation and strengthening existing democratic civil society structures based on the rule of law are key aspects of development policy. This applies in particular to German development co-operation, for which this is one of the focal areas, and in relation to Africa. Government actors – assuming they are democratic in orientation – and non-governmental organisations are therefore among the key partners in the area of development co-operation. In the international discussion of the use of ICT4D, great hopes are harboured for precisely this area of action: in the context of activities to reinforce good governance, the use of ICTs is expected to make democratic institutions more efficient and productive. At the same time, there is an expectation that the Internet and other modern ICTs will enable civil society actors – especially non-governmental organisations (NGOs) – to contribute more to the overall development of society, drive forward processes of democratisation, and control or criticise government actors (even in dictatorships). Moreover, government and civil society actors are in many places seen as pioneers of ICT use in developing countries. In addition, international and African NGOs who specialise in ICT issues, and governments, administrations and other political and administrative actors who are committed to this field, are helping to heighten awareness (including international awareness) of the relevance of ICTs for development, thus acting as promoters of ICT4D.

Against the backdrop of the numerous obstacles to democracy, civil society engagement and public criticism that exist in many countries south of the Sahara, this chapter will highlight the current state, diversity and potential of ICT use in the political and civil society domains in these countries. To this end, a brief examination of central aspects of »Democracy and Civil Society in Developing Countries« (Chapter IV.1.1) and of the current situation in this connection in Africa (Chapter IV.1.2) will be followed by a discussion of the ways in which ICTs are used in different spheres of state action (Chapter IV.2). The central focus will be on the potential for, obstacles to, risks posed by and successes of ICT use by national executives (Chapter IV.2.1). Use of the Internet for exchange with citizens and civil society actors, the web presence of state institutions, and the use of ICTs by parliaments, will be discussed separately (Chapter IV.2.2), as will the use of ICTs on a local level (Chapter IV.2.3). Chapter IV.2 ends with an overall assessment, summarising state use of ICTs in sub-Saharan Africa (Chapter IV.2.4).

The focus of Chapter IV.3, in contrast, is the use of ICTs by civil society actors and the importance of the Internet and other ICTs for the public sphere, first

examining the current situation in sub-Saharan Africa (Chapter IV.3.1). This is followed by a discussion of NGOs and other civil society actors (Chapter IV.3.2), and of the subject of the public sphere (Chapter IV.3.3). Chapter IV.3 concludes with an overall assessment of the importance of the Internet for sub-Saharan civil society actors and the political public sphere (Chapter IV.3.4).

STARTING SITUATION   1.

Many people have come to believe, particularly as a result of the two-phase UN World Summit on the Information Society (WSIS), that ICTs can contribute to promoting democracy and good governance. In activities following up on the WSIS (www.itu.int/wsis/implementation/events_calendar.html), and even before the summit, new ICTs were already playing an important role in programmes of this kind, for example in discussions and activities relating to issues such as the »right to communicate« (Mueller et al. 2007); e-government as a tool for development and good governance; the importance for development of information, communication and knowledge (e.g. World Bank 1998); the »digital divide«; and media development co-operation. A number of actors in the area of development policy have high hopes for e-governance (e.g. Italy, Canada, OECD, World Bank) (IfG.CC 2006b), while various ICT companies have highlighted the topic's relevance to development policy. However, there is often a considerable discrepancy – not only in development policy (Grunwald et al. 2006) – between political agendas and rhetoric on the one hand and concrete activities on the other; this will need to be examined in more detail later on. First, however, a number of central aspects of the topic require some clarification and explanation.

KEY CONCEPTS AND CENTRAL ISSUES   1.1

Since issuing its Millennium Declaration, the UN has designated the area of »human rights, democracy and good governance« as one of four interrelated and mutually dependent fields of action on its international policy agenda. The political challenges to be overcome, in Africa in particular, were discussed separately and quite thoroughly in the Declaration and the activities that followed it. The subject likewise moved to the foreground of debate in Africa itself, and especially in Africa south of the Sahara, thanks above all to NEPAD. Germany declared that strengthening democratic structures and good governance is one of the priorities of its reform partnership with Africa, emphasising from the outset the new political momentum and the importance of civil society in the continent.

In international debate, the concepts of »democracy«, »civil society« and »governance« are brought into mutual relation under the umbrella term »good governance«. This term is often left untranslated by speakers of German, because translations (e.g. »gute Regierungsführung«) inadequately reflect the sense of the English term. One element common to all concepts of governance is that they refer to the regulation of social issues as a whole, not only by government institutions but also by non-government actors (above all NGOs). In development policy discourse, »governance« is already a »term with a latently normative emphasis« (Mayntz 2004, n.p.) while the term »good governance« is largely synonymous with »democracy«.

The word »democracy« as used in this study refers to political systems in which a) human and basic rights are granted; b) there is freedom of opinion and the press, and a vigorous and pluralistic public sphere; c) all sections of the population (and especially the poor) have legally enshrined and actual opportunities for political participation and co-determination; d) political dominance is limited by the separation of powers and legitimised by means of regular, free, equal and secret elections for limited terms, and e) state action is transparent, governed by the rule of law, efficient, effective and not corrupt. A free and plural media landscape is regarded as a fundamental prerequisite for this kind of representative democracy. In many countries, however, representative democracy has in recent years been considered to be in need of improvement. Among the measures suggested, besides the not unproblematic integration of elements of »direct democracy«, are those aimed at intensifying communication between politicians and citizens (»deliberative« or »participative democracy«; Coenen 2006; Grunwald et al. 2006). In the »South«, too, the model of representative democracy occasionally meets with criticism, especially when it is regarded as inseparable from a market economy and economic liberalisation. It is precisely the political and intellectual elites in the developing countries who at times describe it as an instrument oriented towards the interests of »Western« rule: they argue that its use is hegemonial, ignoring, or even, in an intolerant and imperialistic fashion, devaluing questions of social justice or indeed the cultural particularities of non-Western countries. In sub-Saharan Africa, however, there is currently, in principle, a high level of consent to democracy and, above all, to civil liberties, though the values of a culture's own traditions are frequently emphasised (Chapter IV.1.2.2). In 2005, in the wake of particularly serious cases of undemocratic governance (such as genocide), UN Secretary-General Kofi Annan spoke out in favour of the principle of a »responsibility to protect« on the part of governments. Pan-African activities aim in this direction, but in some cases go even further in terms of reciprocal state surveillance (Chapter IV.1.2.1). When it comes to co-operation to prevent genocide, however, pan-African and international efforts have not proved particularly successful, as is evidenced above all by the crimes committed in Sudanese Darfur.

The concept of »civil society« relates at its core to the political role of non-government actors. In the context of development policy in particular, the term is often limited to NGOs. It can designate either, as it were, the »collective counterpart« of government, or a group of actors consisting above all of NGOs. An example of the latter was the WSIS process, in which the UN operated on the basis of a stakeholder model comprising three pillars: government, business and civil society. Above and beyond this, e.g. at EU level and also in Africa, additional scope has been created in recent years for NGOs to become accredited and registered, and to co-operate on a more or less formalised level with national and international governments. The increased importance of NGOs is evident particularly in the area of development co-operation, for example in the total financial resources that are invested in co-operation with them. The present report uses the term civil society in a relatively broad sense, not including business enterprises, but regarding them rather as a group of actors in its own right. However, it is also taken to include other democratic political organisations and »non-political« actors (e.g. in the domain of traditional culture), besides the NGOs that co-operate with »Northern« partners. Terrorist organisations, traditional groups of actors hostile to democracy, and militias, gangs and criminal structures, on the other hand, partly because of their ties with corrupt elites, often appear in developing countries as diametrically opposed to civil society, and for the purposes of this report are not counted as belonging to it (in contrast to Zinecker 2005). There has also been criticism of the boom in the concept of »civil society« and the growing importance of NGOs, however. The spectrum of criticism ranges from concerns driven by self-interest, especially on the part of authoritarian governments, via objections in principle (such as the lack of democratic legitimisation of NGOs and the danger of weakening representative democracy) to the view that NGOs in developing countries are often not civil society organisations at all, but rather the instruments of governments, political and economic elites or »Northern« actors. Indeed, if the definitions of the term NGO are too unclear, if registration and accreditation processes are too open, and if there is a lack of verification, government-controlled organisations or profit-oriented companies could, for example, disguise themselves as NGOs. The term civil society chosen here, sensitive as it is to the problems under discussion, can be used to encompass central aspects of development policy, such as the »participation« of disadvantaged groups (especially the poor and women) in political decision-making and the strengthening of democratic culture and so-called »ownership« (identification with a project and the assumption of responsibility) on the part of development co-operation partners.

The normative term »good governance«, moreover, encompasses not only social participation but also the rule of law (including protection of human rights, an independent and fair legal system, and non-corrupt government actors); transparency and responsiveness of state action (including freedom of information

and the fair and swift addressing of civil concerns); accountability and responsibility of government and other actors (towards those affected by their decisions and actions); and efficiency and effectiveness of state action. It is true that all of these aspects are prerequisites for or elements of stable democratic governance, yet democratic governance is not entirely synonymous with good governance: improving a government's ability to act by increasing its effectiveness is not a value in itself. In certain situations it may make sense to help improve the efficiency even of undemocratic states, in order to fight poverty, for example, or to establish the fundamental prerequisites for democratic development. Yet there is no doubt that giving government actors in authoritarian political systems greater scope to implement their policies and control the population is also fraught with problems. The stance of anti-democratic governments can have consequences for the behaviour of states and businesses that co-operate with them, and can also have an impact on an international level. The concept of good governance is also criticised at times on the grounds that its propagation is a new »missionary« version of the »North's« patronising treatment of the »South«, especially when it goes hand in hand with calls for economic liberalisation (e.g. The Left Party parliamentary group 2007). Another line of criticism is that warring states, or those that violate human rights, occasionally benefit from development aid. Critics attribute this to double standards when it comes to assessing states. Companies active in developing countries have a direct interest in various aspects of good governance, such as legal stability and regulation. Moreover, some »Northern« businesses believe that there are special opportunities to be derived from co-operating with NGOs. Socially integrative corporate policies that take into account the specific social conditions of the countries in question can, among other things, help companies to give themselves a positive local profile, and reflect the stance of the UN and the EU on corporate governance and corporate social responsibility.

The key concepts explained above are complemented by terms with the prefix »e-« (»e-governance«, »e-government«, »e-democracy« etc.), which has now been in fashion for some time as a way of denoting the use of ICTs or, in particular, the Internet. These likewise lack clear definition in many cases because of the different ways in which the terms are used, the varying conceptual hierarchies that are imposed on them, or their normative connotations. This report uses the terms presented and defined in the box below.

> **CENTRAL TERMS RELATING TO INTERNET AND ICT USE IN THE POLITICAL SPHERE**
>
> *e-governance*: political use of ICTs by government and non-government actors
>
> *digital democracy*: use of ICTs or e-governance by any kind of actors to strengthen democracy
>
> *Internet public sphere*: political information, reporting, discussion, mobilisation and image cultivation publicised via the Internet (possibly in combination with other ICTs)
>
> e-*government*: use of ICTs internally and between institutions by government actors, and e-services provided to citizens and non-government actors by governments
>
> *e-parliament*: use of ICTs internally and between institutions via parliament, as well as via discussion and participation opportunities made available to non-government actors
>
> e-*participation*: use of ICTs for governmental, supra-national and international discussion and participation opportunities made available to non-government actors
>
> e-*activism*: use of ICTs as a means of improving the ability of civil society actors to intervene in the political domain (especially to effect rapid, goal-oriented change, e.g. in campaigns and during demonstrations)

STARTING SITUATION IN AFRICA   1.2

It is widely acknowledged that a new and in many respects very promising political dynamic emerged in the 1990s in Africa, especially south of the Sahara. Discussions of this phenomenon continue to fluctuate between two extremes, however: »Afro pessimism« (especially prevalent in the European mass media) on the one hand, and, on the other, general democratisation euphoria and proclamations, often seemingly premature, of an »African Renaissance«. (The latter, a vision for the future popularised by South African president Thabo Mbeki in the 1990s has so far remained, as Mbeki himself stresses, only a vision.) Public perception of Africa »in the North« is still largely shaped by the catastrophic developments in some countries and by the continent's grave fundamental problems (above all in the areas of food, health and peace-keeping). At the same time, however, Africa also appears to be a continent that in many respects is setting off on a path towards stable democracy and continental co-operation, a

new dawn that will allow Africa to become a player in the global political arena. Furthermore, the development of South Africa, although it also faces considerable problems, and the processes of democratic and civil society renewal expressed in the terms »African renaissance« and »second independence«, are seen as signs of hope. One must not ignore the fact, however, that there are still huge obstacles to African statehood, dramatically evident in the continent's »failed states« and, on a structural level, in a strong tendency towards corruption and neopatrimonial power relationships (Chapter IV.3.2.1). Neopatrimonialism, in conjunction with the profits reaped internationally from the »milking« of natural resources and in large-scale projects, is a central element of the corruption problem. One feature of neopatrimonialism is that informal relationships penetrate government institutions and contribute to the retention of power (by serving their own clientele) (Buttschardt 2006): this is how it comes about that work and income levels are in many cases not mutually dependent, that is to say people with a high income often work little while those who work hard do not receive an appropriate wage because many posts are filled not according to specialist knowledge and skills but according to family background.

To a large extent, the wave of national democratisation processes that have taken place south of the Sahara since the 1990s (precisely, too, in key countries) is driven forward by civil society actors. Besides those elements that are generally considered to be central to democracy (protection of human rights, civil liberties, elections etc.), initial deliberative and participative measures designed to increase the scope for political co-determination on the part of citizens and NGOs are receiving attention. Among human rights organisations, for example, and NGOs concerned with matters of social justice, there has been widespread endorsement in principle, despite some criticism at a more detailed level, of pan-African activities to strengthen democracy, activities that have been furthered by NEPAD in particular. It is important to point out, however, that there are also radical critics, for example those who criticise globalisation and capitalism in general, who see the »second wave« of democratisation above all as the expression of a new form of neocolonial dominance on the part of industrialised countries. Provided that these critics are not arguing in favour of authoritarian political systems (such as the »development dictatorship« model), however, the pronounced interest in democratisation that is likewise evident among African populations and civil society actors is normally highlighted as a positive aspect.

In addition, Africa's intellectual and political elites often point out that pre- and post-colonial political traditions exist in sub-Saharan Africa that could deliver important contributions to the continent's democratisation. The spectrum of such ideas and cultural traditions ranges from consensual negotiation and resolution of political issues at village level or by traditional authorities (kings or chiefs), via the traditions of originally acephalous African societies (such as the

Igbo in Nigeria), to various post-colonial attempts at socialism or national liberation that mostly make at least symbolic gestures towards older traditions. The »Ubuntu« concept is a striking example of the latter. One of the primary goals of this and other similar concepts is to put forward a different understanding of democracy as an alternative to the highly individualistic »Western« model that is particularly popular in the Anglo-Saxon world. In this concept of democracy, greater emphasis is placed on solidarity, the sustainability of certain traditional social structures, social cohesion and processes of basic and direct democracy. In various states (e.g. in Ghana and South Africa), traditional authorities have constitutionally defined duties, in their discharge of which they receive support at times from development aid actors, or they may be brought into the political process in special cases when crises arise on the local level (Akhilomen 2006). Even those in favour of endorsing traditional governance structures, however, stress that cultural traditions must be capable of reform, especially in cases where undemocratic structures with a low level of participation were established under the influence of the colonial rulers. In British colonies in particular, traditions were »invented«, authorities based on negotiation being transformed, for example, into absolute authorities in line with the colonialist interest in »indirect rule«. Another criticism is that African elites, when they invoke an allegedly traditional culture, are pursuing their own specific interests, thereby consolidating under-development and destroying genuine African culture (Wa Goro 2006).

CROSS-BORDER AND PAN-AFRICAN ACTIVITIES   1.2.1

Since its launch at the beginning of this decade, the NEPAD initiative has seen good governance as a basic prerequisite for sustainable development; the African states have likewise committed themselves to strengthening democracy within this framework. New collective actors have emerged in the form of the African Union (AU) and its parliament (Pan-African Parliament, PAP).

In the NEPAD context, the African Peer Review Mechanism (APRM) was introduced as a means of monitoring the progress achieved for each of the various development goals. This is a voluntary instrument whereby participating states are to have themselves assessed by other African states and actors (particularly from civil society). Responsibility initially lay with UNECA, but has now been transferred to the AU, resulting in the criticism that self-assessments of dubious worth might arise. The APRM process was marked from the outset by teething troubles (Heubaum 2005; Jakobeit 2006; Kajee 2003/2004) and faces various challenges. The group of states that signed up initially (in 2003 and 2004), accounting for nearly half of all African countries, has not grown significantly to the present day. There are also indications that administrations with limited resources are overburdened by the APRM process, as well as rumours of

manipulation attempts by governments. Finally, African and »Northern« NGOs, observers and indeed APRM officials complain of a suboptimal participation of civil society actors despite their involvement being widely regarded as crucial to the success and sustainability of the APRM process (Jakobeit 2006; Kajee 2003/2004). The current development of the process, however, is generally positive: following Ghana, Kenya and Rwanda, other important states (e.g. Nigeria and South Africa) will undergo the process. The measures deployed by Ghana in implementing the APRM outcomes, measures in which good governance played a central role, were described as exemplary by the governments of South Africa, Nigeria and Uganda. Various NGOs and academic observers praised the way in which civil society was drawn into the process (e.g. Oduro 2005). Other countries are likewise expressing considerable interest in the APRM process at the level of civil society, a fact that is welcomed, at least politically. One problem, however, is that press freedom has yet to be included among the criteria for good governance.

Although the pan-African idea has a longer tradition and even made a political impact in previous decades, the AU, its parliament and NEPAD can be seen as marking a potentially decisive turning point: in much the same way as large parts of Europe did via the EU, Africa too has now (begun to) position itself as a supranational actor on a global level. Steps are to be taken to further strengthen the institutions of the Regional Economic Communities (REC) of the African Economic Community so that they can serve, so to speak, as the pillars of a pan-African union. Civil society engagement is to be improved by means of a dedicated institution (the Economic, Social and Cultural Council, ECOSOCC). Actors within civil society are themselves becoming organised on an increasingly cross-border and pan-African level, Internet use playing an important role in this context. Noteworthy also is the AU's definition of the African »diaspora«: the term is used to refer to all people of African origin who are willing to support the development of the continent and the consolidation of the AU. In the view of the AU, the diaspora is an important part of the continent. It has indeed long played a significant role in the African and Africa-related Internet public sphere as well as in the ICT sector and ICT policy in Africa.

NATION STATES 1.2.2

Many large-scale comparisons of states based on criteria for democratic statehood and good governance have been undertaken over the years. They are controversial in terms of their methods and politics (e.g. Kaufmann et al. 2007; Michel 2006), but nonetheless present a relatively uniform picture of the situation in sub-Saharan Africa. This picture emerges in sharper focus when one also takes into account the views of the African populations themselves.

INTERNATIONAL COMPARISON

Overall, Africa south of the Sahara receives a poor assessment (for the presentation that follows, see Schmidt 2006; www.bertelsmann-transformation-index.de, www.worldaudit.org; www.worldbank.org/wbi/governance). Unlike regions such as North Africa, the Middle East and Central Asia, however, where all countries show considerable deficits in terms of democracy and almost all are considered »unfree«, there are a few examples of relatively democratic political systems in sub-Saharan Africa.

If one compares the different regions of sub-Saharan Africa, it is above all the states of Southern and West Africa that score well on democracy and good governance. By contrast, large parts of Central Africa and the troubled states of East and West Africa in particular receive very poor assessments. Among the more populous states, Ghana, South Africa and Mali can be seen as trailblazers in the area of democratic governance. A comparative assessment conducted in 2006 (www.worldaudit.org) found Mauritius and Ghana (both only slightly behind Japan and South Korea), Botswana, South Africa, Namibia, Mali and Benin to be among the top third worldwide. Senegal is rated as being considerably better than the global average, while Niger and Kenya achieve roughly average scores. Good scores for press freedom are achieved by Benin, Botswana, Ghana, Mali, Namibia and South Africa, as well as some small island states (Reporters Without Borders 2006). In addition, there are numerous states, primarily in West and East Africa, that are assessed as being partially free in political terms (www.worldaudit.org). Generally speaking, however, the actual room for manoeuvre granted to critical media and political opposition still depends to a large extent on the government's good will, even in countries that enjoy relative political freedom. In many places, reprisals by security forces, influence exerted by informal power structures and indirect forms of information control (e.g. libel and security laws, or expensive licences for media providers) are commonplace. It is true that positive examples of efficient state action also exist in sub-Saharan Africa, among them Ghana and South Africa. Overall, however, the situation is less favourable precisely in comparison to regions in North Africa, the Middle East and Central Asia that are characterised by authoritarian regimes. Even in those states that score relatively well in terms of their democratic structures, it is usually noticeable that corruption is a key problem of postcolonial African statehood. One central challenge, particularly for states with a large surface area, is to establish an efficient democratic system on the subnational level.

Generally speaking, wholesale Afro-pessimism with respect to political development is inappropriate. Thinking of Africa as a »lost continent« appears plausible primarily when one focuses on the troubled states of Central, West and East Africa. The problems of those states are admittedly extremely serious and also

appear particularly dramatic (as compared with many authoritarian states in other regions of the world) because they result to a high degree from extreme political instability, wars, civil wars and mass murders.

THE AFROBAROMETER SURVEYS IN REFORM-ORIENTED COUNTRIES

Although the results of the comparative analyses referred to in this report are based on consultations with civil society actors, it is worth taking an additional look at the latest findings of the »Afrobarometer« surveys to obtain a deeper understanding of the development trends. The Afrobarometer network is an independent, academic, civil society research project that has carried out representative surveys in sub-Saharan states since the end of the 1990s, its focus being reform-oriented or democratic countries (like Benin, Ghana, Kenya, Mali, Nigeria, Senegal, South Africa and Tanzania). For the years 2005 and 2006 (Afrobarometer Network 2006), the Afrobarometer surveys found

> a level of assent to democratic principles and, above all, to civil liberties that is slowly and continually falling, yet remains high (the level is lower for elections and other forms of participation),
> a majority perception that individual rights to freedom are becoming wider, state corruption is on the decline and government social policy and, in particular, health policy is improving (in contrast to economic policy),
> growing assent to political competition and elections (accompanied by a high level of dissatisfaction with the relationships between representatives and those they represent, especially with respect to parliamentarians),
> a sharp rise in dissatisfaction with the current state and achievements of democratic statehood, although considerable differences are evident between the countries in this respect.

The researchers consider it noteworthy that the majority of the population believe that their own socioeconomic situation is deteriorating and that the action taken by the state in the area of economic policy is ineffective; at the same time, however, hopes of future economic improvements remain, together with widespread assent to the idea of democracy in principle. A clear majority of respondents, it appears, believe democracy to be desirable in itself, largely irrespective of the criteria for socioeconomic success, although the researchers believe that the specific political circumstances of the countries need to be taken into account (Chapter IV.3.3.4). As far as freedom of the press and opinion is concerned, African civil society actors and experts sometimes make relatively negative assessments of states which are internationally rated, in comparison with others, in positive terms (Schellschmidt 2007).

E-GOVERNANCE IN AFRICA: ITS STATUS AND REQUIREMENTS   1.2.3

Although ICT use in overall terms remains at a low level in comparison with other countries around the world, many African actors have far-reaching expectations of the new media and ICTs, which are already being put to political use in many remarkable ways. Both during and as a result of the WSIS process and the World Social Forum 2007, Kenya has made great strides in the area of networking via the Internet and ICT4D. Digital democracy and e-governance have been moved up the political agenda by many government actors and by regional and pan-African institutions. These developments are occurring against a background that includes an early emphasis on a right to communication (Mandela 1995) and the continuous upward revaluation of science and technology (especially ICTs) by central actors in African politics (Chapter VI). In the WSIS process devoted to ICTs and Internet topics, despite results that have been far from perfect from an African point of view, Africa's latest efforts at unity have brought about certain successes (Coenen/Riehm 2006): among these are the continent's greater political visibility as a whole, its relatively strong influence on the political agenda and debate, the more prominent role of Africa among developing countries, and a number of measures that have at least symbolic value (e.g. the establishment of the Digital Solidarity Fund).

It is not yet clear whether this new setting of priorities will have consequences for development co-operation and for the activities of government actors in Africa, e.g. in connection with the WSIS follow-up activities (www.itu.int/wsis/implementation/events_calendar.html). Given Africa's central problems as outlined above, however, there are in any event fundamental arguments in favour of the view that good e-governance and a comprehensive strengthening of digital democracy are of special relevance to development. These are, first and foremost,

> the fact that African states, the regional and pan-African institutions and African NGOs need modern ICTs and the Internet in order to be able to carry out the duties entrusted to them and act on an »eye-to-eye level« with their »Northern« partners;
> the obvious relevance of the Internet as a medium for public criticism of the government, for mobilising campaigns against human rights violations (including genocides), for national and pan-African civil society networking and for the transnational and global articulation of African interests.

Accordingly, while African actors do not regard the promotion of ICTs as an end in itself or as being entirely without risk, they do emphasise their relevance and advocate intensive engagement on the part of their »Northern« partners.

STATE ACTION   2.

The following section will focus primarily on those aspects of e-governance that relate to the efficiency of state action, particularly of the executive and its administrative bodies (»e-government«), and on ICT use by parliaments (»e-parliament«), both in terms of »e-administration« (ICT use in internal and inter-institutional work processes) and »e-services« (electronic provision of information and handling of government services for citizens and businesses). Opportunities provided by the state for electronic communication on political topics (online forums, chatrooms, weblogs with a commentary function etc.), for civil society participation and for citizens to contact political decision-makers (generally termed »e-participation«) will likewise be considered. In the present study, these questions were investigated in the light of our own research and discussions with experts while also drawing on expert reports based on field research in Benin and its neighbouring countries (Buttschardt 2006; University of Hamburg 2006). In addition, two expert reports on the subject of e-government were specially commissioned (IfG.CC 2006a and 2006b); their findings form the main basis of the comments below.

E-GOVERNMENT: POTENTIAL AND SUCCESSES   2.1

A fundamental distinction must be made between the »front office« and the »back office« in e-government: processes relevant to citizens or clients are carried out in the »front office«, while the »back office«, which may be physically distant, deals with decision-making processes and is also responsible for handling IT-related functions such as databases, applications and signature infrastructure. Public services are not only accessible via websites. New physical points of access involving new intermediaries can also be set up: architects, for example, can apply online for planning permission on behalf of their clients, or car dealers can register a car online for their customers. Since mobile phones are often in widespread use, the possibilities of access they offer should also not be ignored: they provide another means of obtaining information or performing certain functions (e.g. payment or identification). This domain is seen as having particular potential precisely for developing countries (e.g. www.mgovworld.org). Nowadays, e-government tends to follow a multi-channel approach, offering a variety of access routes to reflect the needs, capabilities and technical equipment of the target group (e.g. businesses, senior citizens).

E-GOVERNMENT IN DEVELOPMENT POLICY DEBATE   2.1.1

It is true that e-government has become popular because it allows administrative processes to be dealt with via the Internet. When one is speaking of developing countries in particular, however, it is above all the modernisation of administrative structures and activities in the »back office« that offers the greatest potential. The days of general Internet euphoria when e-government was seen as a kind of cure-all for existing problems in the area of state action are doubtless over. At the same time, criticism of the use of e-government in developing countries has become more concrete and less fundamental, thus making a rational debate easier.

In the WSIS follow-up process (www.itu.int/wsis/implementation/events_calen dar. html), the subject of e-government is one of the »action lines«, and a number of international and »Northern« actors are setting priorities for work in this area. Two key hopes remain:

> the expectation that state and administrative action will become more efficient thanks to modern ICTs (with beneficial effects on the scope for action of institutions and advantages for both businesses and private individuals);
> the hope that e-government will pave the way for reforms of the state and its administrative apparatus (e.g. reducing bureaucracy and combating corruption) or, where modern administrative structures are only just beginning to emerge, can be as it were organically incorporated into them.

The main practical objections from a development perspective are that promoting e-government is not efficient due to its high costs and the high-level qualifications it requires (UNECA 2005a), and that the basic prerequisites for the kind of e-government that would promote development are often not in place due to the post-colonial »administrative cultures« that have grown up over time. To counter these objections, on the other hand, it can be argued that

> it is of paramount importance to create projects in each case where the gap between »project design« and reality is not too great (IfG.CC 2006a);
> modern states and administrations are simply not able to act without advanced ICT use;
> there is a considerable need for African political institutions (especially in comparison with civil society actors) to catch up with their international counterparts;
> state action in the area of ICT can serve strategically as an ICT4D »carthorse«.

It is also pointed out that development co-operation in »Northern« states must respond to the declared needs of their African partner states, who often regard this area as highly relevant to the overriding objective of combating poverty.

Here too, the fundamental prerequisites for an »eye-to-eye partnership« must be established. The pan-African and regional institutions and initiatives also have the task of international coordination (Chapter VII); in the view of civil society actors, there is an urgent need to make all relevant institution documents quickly available to the public online (Kane/Mbelle 2007).

CHALLENGES AND RISKS IN SUB-SAHARAN AFRICA   2.1.2

To identify the potential for and existing state of e-government in sub-Saharan Africa, its challenges and risks must also be considered (IfG.CC 2006a):

> Focusing specifically on e-services delivered via the Internet in developing countries could result in a systematic exclusion of poor sections of the population, and of women in particular, thus reinforcing or even intensifying inequalities. Given the relatively high rate of mobile phone penetration, »mobile government« is the logical way forward for developing countries. Current discussion of e-government, however, is still only concerned in many cases with the advantages of offering online services.

> Large-scale projects generally run an increased risk of failure because they need to involve a large number of actors with interests of their own, making it more difficult for the project to achieve its goals. These projects often lose sight of their organisational objectives, which means that the ICTs cannot produce their desired effects. At times, precisely in developing countries, there is an unthinking technological euphoria: this has been further intensified by the increased recruitment in recent years of personnel from the engineering professions and the military. In developing countries, the idea that e-government can solve all administrative problems often goes hand in hand with the expectation of being able to skip certain stages of technological development (»leapfrogging«).

> In general, it is true that e-government, through new forms of co-operation in networks, can support the process of decentralisation that is given priority ranking in German development co-operation. However, greater central control of subordinate entities is also possible. What is more, individual tasks may be decentralised while decision-making processes remain centralised, which would run contrary to the goals of decentralisation. Introducing e-government would in this way make administration and the workings of the state more efficient, yet more ineffective and less democratic in terms of overall social development.

> e-government can also compromise the goal of combating corruption: while process transparency and the removal of government officials at the government-citizen interface generally reduce the scope for corruption, transferring front office functions to intermediaries and bundling private and public services also have the potential to create new channels and incentives for corrup-

tion. At the same time, many physically separated »back offices« can generate a bureaucratic life of their own, where responsibility for decisions is unclear. New corruption risks also arise from the fact that e-government, as a rule, results in closer proximity to the private sector. Co-operation with companies in the area of ICT and process outsourcing is especially prone to corruption.

> Staff cuts made possible by ICTs can result in a less efficient administrative apparatus, especially in developing countries. It is not even possible to achieve cost savings in all cases, as the initial investment outlay and subsequent running costs of the ICT infrastructure are often relatively high in comparison to personnel costs. In extreme cases, massive cutbacks can threaten political stability.

In view of the administrative conditions that exist in the region, which any project must subject to a precise and predictive analysis, a straightforward transfer of the e-government concept to sub-Saharan Africa does not make sense (cf. Zell 2005). If this were attempted, one of the principal risks is that new ICT-based working methods would not penetrate through to personnel, or that they would be abused by actors in the sphere of administration and government for their own ends. To this extent, e-government can result in more centralism, hierarchy and also corruption.

RESULTS OF A CROSS-BORDER COMPARATIVE STUDY   2.1.3

For the purposes of the TAB project, four states in which e-government is already relatively advanced (in comparison to other large states south of the Sahara) were examined in a comparative overview (IfG.CC 2006a): South Africa, Ghana, Kenya and Uganda. The comparison focused on the framework conditions, e-government strategies and individual projects existing in these countries. Though some of the individual projects were presented in detail, no evaluation (in the form of more detailed analyses of trends and results) took place. Special consideration was given to German and other activities in development co-operation (for details of the actors involved, see IfG.CC 2006b).

Despite considerable differences between the four countries (and with South Africa playing the role of trailblazer), their e-government strategies largely resemble those in industrialised countries. The African states under review also tend to use online services, multi-channel strategies being rather the exception. Furthermore, the focus is on improving the technical infrastructure and integrating ICT systems. The example of Ghana is of particular interest, showing that a relatively efficient administrative apparatus and existing good governance structures can play a more important role in the development of e-government than a country's framework conditions in terms of ICT and other aspects. Even if in some cases, Ghana once again being a striking example, e-government projects can be expected to contribute directly to good governance and to economic de-

velopment, there is a widespread absence of any strategic interlinking of good governance, e-government and poverty eradication. What is more, some of the strategies are over-ambitious: insufficient consideration is given in many cases to the framework conditions crucially needed for the implementation of e-government and to the existing administrative situation (above all organisation, »administrative culture« and qualifications). At the project level, many activities concentrate on establishing infrastructures and competencies, primarily in the ministerial authorities and to a lesser extent on the local level. However, in all countries there are already projects that show signs of contributing directly to good governance and poverty reduction. In some cases there are plans to integrate local and regional levels of administration into the e-government strategies; signs that this process is beginning to be implemented are particularly evident, once again, in Ghana, where qualifications are highly valued both within and outside administrative structures.

It is true that a great deal of what is going on in the states under review, which in terms of e-government are relatively advanced (IfG.CC 2006a), belongs to the realm of rhetorical »spin«. It is noticeable, in particular, that the local level of administration is being neglected (Chapter IV.2.3). Examples can be found, however, of projects relating to several types of process in which e-government offers great modernisation potential for sub-Saharan Africa: while ICT use apparently plays no role yet in approval and procurement processes, projects relating to registration, qualification, statistics, planning, online information, online services and tax and financial processes can be found, besides infrastructure projects. Examples of ICT use to increase tax revenues, to improve financial administration and to promote cross-border trade will be examined briefly below.

PUBLIC REVENUE (THE EXAMPLE OF CUSTOMS DUTIES) 2.1.4

One benefit of ICTs with especially great potential for sub-Saharan Africa is improved financial management, as most countries in the region so far lack a properly functioning system of tax and financial administration. By introducing integrated financial systems with the relevant databases, it is possible to better control flows of finance and thus to keep better track of the outflow of funds. This also allows spending by decentralised administrative entities to be supervised, thereby potentially reducing the scope for corruption. In addition, tax payers can be more easily monitored in order to safeguard tax revenues. This is crucial given that tax revenues are often low, especially in sub-Saharan Africa, due to an insufficient ability to enforce existing tax laws; consequently, the provision of basic state functions is inadequate or non-existent. German development cooperation, for example, has been implementing a project in this area in Tanzania since the end of the 1990s (Integrated Tax Administration System in Tanzania, ITAX; Zell 2005). Even if one takes into account the fact that neopatrimonial-

ism and corruption may mean that the additional revenues thereby generated will not be put to use in a way that is beneficial to development, successful examples in this area are of particular interest because they allow democratic states with good governance to be fostered in a targeted manner. Additional tax revenues can also be achieved by using ICTs to modernise customs administration systems, as illustrated below.

GHANA COMMUNITY NETWORK

One example of the successful use of ICTs in sub-Saharan Africa is the Ghana Community Network (GCNet; www.ghanatradenet.com/home; IfG.CC 2006a). The background to the project is the government's goal of making Ghana an important transit country for the landlocked developing countries of West Africa. Before the reform, bureaucratic processes meant that it took up to four weeks to import and export goods. This situation encouraged corruption, with »sweeteners« being paid to speed up the process.

The introduction of the new GCNet system means that customs procedures are handled largely electronically. The first component of the system (TradeNet) is a data exchange platform that allows messages and information about trade to be sent to the relevant organisations, and provides access to the second system component (Customs Management System), by means of which customs declarations and import/export licences are issued and administered automatically. Integrated into the system are ministries, the Bank of Ghana, the customs authority, the shipowners' association, shipping companies, freight companies and banks. Data sharing and communication between GCNet and the customs authority takes place via the broadband network specially set up for this purpose. The fact that the system had been implemented in Mauritius, thus serving as a successful example of south-south co-operation, had a positive impact on the acceptance and introduction of the system in Ghana, even though at times it met with political and administrative resistance there. The system was implemented and operated as a public-private partnership (PPP) in 2000, comprising a Swiss investor (60 %), the Ghanaian customs authority (20 %), the Ghana Shippers' Council (10 %) and two local banks (5 % each). A total of seven million US dollars was invested to implement and operate the system. For each customs declaration handled by the system, the PPP receives a fixed amount from the Ministry of Trade and Industry. An import licence for a shipload is issued by the new system as follows: first, the importer applies to the Ministry of Trade and Industry for an import permit; this part of the process is not yet electronic. In step two of the process, the importer applies on this basis for the goods to be checked. Step three involves the importer using a form to enter into the electronic system the data relating to the goods to be imported (for the statistics office), after which an automated check is carried out. In step four, the importer prints out the declaration and pays the customs duties via one of the affiliated banks, whereupon an

automatic notification is sent to the customs authority. In step five, it is determined whether the papers need to be subjected to a special check or whether a physical check needs to be carried out in the relevant freight station by an inspector (chosen at random by the system).

The system allowed the import and export of goods to be greatly accelerated because the interfaces between the authorities and points of contacts for importers were not only modernised in technical terms, but also reduced in number. In the customs authority, for example, the time spent on checking paperwork was reduced from one whole day to fifteen minutes. Considerable improvements were also achieved at airports, while customs clearance times in port were cut from four weeks to between one and three days. This has also reduced the time spent in port (and thus the associated port fees) for shipping companies. Public revenues have grown thanks to a considerable rise in customs duties and taxes (of up to 50%).

One must remember, however, that the Ghanaian model can only be transferred to other states to a limited extent due to the fact that many countries do not have a comparable importance as trans-shipment points. Furthermore, Ghana received the support of international and bilateral donors in implementing extensive administrative reforms that can be seen as the prerequisites for the successful use of ICTs. It would not be right to assume, therefore, that an isolated ICT-based solution for a single administrative area would produce a similarly successful outcome in countries that have not implemented wide-ranging reforms.

CORRUPTION   2.1.5

Combating corruption, which tends to be a serious problem even in states that score relatively well on democracy and rule of law (Chapter IV.1.2.2), is high on the international and pan-African good governance agenda. One key opportunity here would appear to arise from the fact that public discussion of corruption, in states under authoritarian rule and in highly deficient democracies, can lead to democratisation, strengthening of civil society and a change in mentality among the elites (Heberer 2005 and 2006). In sub-Saharan Africa there are indeed numerous examples of organised civil society and transnational NGOs using this issue as the basis for developing more broad-ranging activities (University of Hamburg 2006). In development co-operation, it is argued that there are, in principle, three objectives that should be prioritised as far as external support for the fight against corruption is concerned in those sub-Saharan states with a neopatrimonial character in which (besides human rights violations and ethnically-based rivalries) dissatisfaction with corrupt elites provided strong impetus for the wave of democratisation (Berg-Schlosser 2005). First, the relevant pan-African activities of NEPAD and the AU (especially the APRM processes; Chap-

ter IV.1.2.1) should be supported, as should those states participating in them. Second, non-democratic states should be more strongly encouraged to embark on the road to change by lending support to civil society. Last but not least, in highly neopatrimonial and corruption-ridden democracies trust should be placed in society's ability to purge itself of its ills and also in the vigilance of the mass media, in parts of the legal system and in the security forces as potential partners. One criticism raised in objection to this approach is that even where the population overwhelmingly rejects corruption and the subject is given a high profile in the mass media, the legitimacy of neopatrimonial dominance is not annulled even in democracies (e.g. Bako Arifari 2006). Citizens resign themselves, as it were, to their fate, and go along with corruption as far as is necessary. The mass media do not act so much as critical authorities, choosing instead to publish accusations of corruption directed against their political opponents, either because of the political convictions of the journalists or because they themselves are being bribed (University of Hamburg 2006; Uslaner 2007).

Opportunities for combating corruption are presented by e-government to the extent that digitalisation can make business processes easier to trace and reproduce, and thus generally more transparent. What is more, the digitalisation of business processes also requires a minimum level of formalisation; this allows at least some degree of regularity, continuity and objectivity to be achieved in administrative activities. Public e-procurement (PEP) is expected to offer great potential for reducing corruption by bundling administrative purchases, thereby reducing expenditure and limiting the scope for manipulation. Finally, centres that are set up, funded or at least accepted by the state for collecting complaints about corruption can be made efficient through the use of ICTs and, in particular, the Internet. In contrast to PEP, there is relatively widespread experience of this in sub-Saharan Africa.

Examples have already been cited of e-government projects in which measures to combat corruption have been integrated: in Ghana's customs information system GCNet (Chapter IV.2.1.4), the inspectors responsible for physically checking paperwork are randomly selected by the system itself. In the Integrated Tax Administration System in Tanzania (ITAX), which is funded by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), tax audits are now carried out, following introduction of the ITAX software, by two or three members of the tax department's staff rather than just one (as was previously the case). In addition, one-stop shops have been set up to deal with tax questions, with the result that citizens no longer have to contact the member of staff responsible for them directly.

Established behavioural patterns can also be encountered among the populations of post-colonial states, however. There is a risk, for example, that people will reject electronic public services because they no longer offer any scope for

negotiation. A participant in an e-government workshop in Cairo provided an illuminating description of this problem (IfG.CC 2006a, p. 22): »If I have to pay a fine for speeding or illegal parking, I don't pay it over the Internet but go in person because I can then negotiate the fine down by at least half«. It has furthermore already been pointed out (Chapter IV.2.1.2.) that e-government can generate new sources of corruption; it would appear essential not only to focus on corrupt politicians and administrative staff, but also for the »North« to take stronger and more concerted steps to tackle misdemeanours on the part of multinational companies. In this connection, too, African and transnational NGOs regard the Internet as a means of increasing transparency. There are calls, for example, for companies to be forced to disclose their payments to government actors worldwide and to be given severe penalties if there is evidence that they have failed to do so.

Transparency International, an NGO that operates worldwide, is also a central actor in the fight against corruption in sub-Saharan Africa. It has branch offices there in several countries, and also offers the opportunity for confidential online communication (e.g. www.forumcivil.sn). Probably the most frequently cited example of an African anti-corruption project involving the Internet, however, is based in Kenya and was implemented with considerable German support.

FIGHTING CORRUPTION IN KENYA WITH AN ONLINE REPORTING SYSTEM

In Kenya, the state-run Kenya Anti-Corruption Commission (KACC) allows anonymous online reporting of corruption cases. Developed in Germany, the Business Keeper Monitoring System® (BKMS®) was introduced to guarantee anonymity (www. business-keeper.com/index.html). BKMS® is used on the one hand by whistleblowers (staff in companies or administrative departments, or private individuals) as an Internet-based communication platform. On the other, a responsible official receives the report and can use the communication platform to enter into an anonymous dialogue with the whistleblower. The system was implemented in Kenya by the GTZ. The background to the Kenyan project is the active fight against the country's widespread corruption (for the presentation that follows, see IfG.CC 2006a). The KACC, an independent commission under the administrative authority of the German Federal Ministry of Justice and answerable only to the parliament, investigates cases of corruption on its own initiative and on the basis of reports from private individuals and government authorities. An attempt by influential parliamentarians in March 2007 to curtail the powers of the KACC is an indication that the commission's work is not without effect (Mugonyi 2007). This attempt was criticised in discussions in various weblogs and online editions of daily newspapers.

As well as using the online facility, corruption can also be reported in person to the KACC offices, or by post, telephone or fax. The online service is directed, in

other words, at staff of authorities and private companies, and at other people familiar with Internet use. Online reports can either be sent via the Kenyan government portal (www.kenya.go.ke) or directly to the KACC portal (www.kacc.go.ke) that was established in March 2006 with the financial aid of the Swiss government. In neither of these online notification channels is the anonymity of the whistleblower guaranteed, however: if the government portal is used, the report is sent via the e-mail program installed on the PC, thus using the sender's own e-mail address; the sender can therefore be traced from the e-mail header. Although the sender is not required to give their own name when sending notifications of corruption via the KACC portal, it is possible nonetheless to establish who sent the notification. The KACC portal regularly publishes cases of proven corruption, citing the name of the perpetrator and the authority involved.

The introduction of the Internet-based BKMS® facility thus considerably improved this e-government application. A similar approach would also appear sensible in other sub-Saharan anti-corruption projects, some of which still do not even use the Internet (University of Hamburg 2006; Chapter VII).

E-PARTICIPATION AND E-PARLIAMENTS   2.2

The following section will initially take a brief look at the situation as regards the websites and opportunities for e-participation offered by government institutions (Chapter IV.2.2.1). Next, the importance of the subject of »e-parliament« will be discussed, with special attention given to internal use (Chapter IV.2.2.2).

GOVERNMENT INSTITUTIONS AND ONLINE PARTICIPATION   2.2.1

As far as the websites of government institutions are concerned, the picture for Africa as a whole is, at best, a mixed one. In comparison with other countries around the world, the continent achieves the poorest scores, even if North Africa (with trailblazers like Egypt) is factored in (UNDESA/UNPAN 2005). Although the TAB project found some examples of government institutions (some of them below the national level) that have functional websites offering diverse content, these would appear to be funded to an overwhelming degree by development co-operation actors, except in South Africa. Even a glance at the national governments, however, reveals considerable shortcomings in their websites. In many cases, ministries lack a web presence or, as in the case of the government of Burkina Faso, which is well-covered in this respect (Buttschardt 2006), offer inadequate content. Even some of the websites of pan-African and regional institutions appear in need of improvement. Many of the websites of national institutions, when visited for the purposes of the project, were also

found to have serious functional deficiencies, such as numerous website sections apparently marked for years as »under construction« and a lack of search functions. Often, websites were not even online for months at a time. Finally, some of the websites make it difficult for people to contact them by failing to provide e-mail addresses or telephone numbers, while others offer very few contacts and no direct access through a central address or telephone number.

E-PARTICIPATION

ICTs, and the Internet in particular, can also help make administrative and state action more participative and deliberative through new forms of participation (e-participation), and possibly better legitimised in overall terms as a result (Grunwald et al. 2006; IfG.CC 2006a). In Africa too, development in this direction does not appear out of the question, as political actors, at least in some countries, have a relatively strong affinity for Internet communication: even at the beginning of this decade, a number of government actors showed themselves to be open to online consultations (e.g. on the subject of corruption; Planmo 2002) and online discussions (e.g. a chat with the Senegalese president in 2001). Recently, politicians have also emerged – both in government and in opposition – who have their own websites (e.g. University of Hamburg 2006).

The scope for e-participation and discussion offered to citizens on the websites of government institutions, however, appears on the whole to be limited (IfG.CC 2006a). Given the small number of Internet users and the high level of illiteracy, this does not initially appear to present a problem, as such opportunities are in any case open only to an elite. The situation is quite different, however, when it comes to the ICT-based political involvement of organised civil society, which is regarded as a key actor in the area of development policy.

The relatively low number of online discussions on the websites of government institutions is in any case only one facet of the sub-Saharan Internet public sphere, which has in some parts of sub-Saharan Africa reached dimensions that make possible lively and wide-ranging debate, even though it is still limited to small sections of the population as a whole (Chapter IV.3.3). It appears that a basis exists for more intensive use of online government services in the future; when this happens, greater attention would need to be paid to the relevant success criteria (such as target group orientation, links to political processes etc.; Grunwald et al. 2006). Role models can also be provided by international activities in which the poor and women are drawn into political discussion processes through the Internet, improving their ICT skills at the same time. The costs of such projects, however, are generally likely to exceed by far the sums that states south of the Sahara are willing to invest. Online discussion forums offer some potential as tools used by international actors and development co-operation

(e.g. www.un.org/womenwatch/daw/forum/forum-daw-politicalparticipation2007.htm).

Finally, one important aspect of the use of ICTs, and of the Internet in particular, for social participation is the new scope they offer for registering and interlinking NGOs: lists of NGOs wishing to co-operate with the state can be compiled and, ideally, made publicly available online. This practice is already common in a number of sub-Saharan states (University of Bonn 2006). Databases of this type are an important aid to information dissemination and can also be used for consultations. Improvements are urgently needed in this area, particularly in states like Nigeria (AMDI 2006b) where a large number of NGOs are active.

E-PARLIAMENT 2.2.2

Strengthening African parliamentarianism has been declared a high priority by the UN, the G8, the EU and Germany, and indeed by African actors themselves. Additionally, ever since the WSIS 2005 in Tunis, the topic of »ICT in parliaments«, comprising many African and Africa-related activities, has been the focus of a WSIS follow-up activity pursued by the UN Department of Economic and Social Affairs. UNDESA's partner here is the Inter-Parliamentary Union (IPU), by far the most active »Northern« actor being Italy. Among German activities in this sphere, the strong support provided to the AU's Pan-African Parliament (PAP) by the BMZ and GTZ stands out (Chapter VII). In addition, German development co-operation has made important contributions to the German-African and European-African parliamentary dialogue, involving the parliamentary or parliament-like assemblies of Africa's Regional Economic Communities.

AFRICAN PARLIAMENTS

The few studies (e.g. Salih 2005) of the role played by parliaments in political systems and democratisation processes south of the Sahara agree that the overall picture in this respect is a mixed one. On the one hand, parliaments in Africa tend to be weak in terms of their position vis-à-vis the executive. Especially in poorly established democracies with one dominant party, in »façade democracies« and in countries under authoritarian rule, parliaments mostly serve merely as rubber-stamping organs, used primarily to supply the followers of the government or governing party with official positions. On the other hand, it is noticeable in the continent's more vigorous democracies that parliaments can contribute significantly to a strengthening of political interest and an increase in the involvement of the population and organised civil society. Particularly noteworthy is the relatively high proportion of women in parliaments, the result in many cases of quota regulations, which serves as a positive contrast to the otherwise

low representation of women in public life (Bauer/Britton 2006). The AU's Pan-African Parliament (PAP) and the parliamentary and parliament-like assemblies and forums of the Regional Economic Communities attract a great deal of political attention in the »North«, as well as in sub-Saharan Africa itself. The primary objective of these institutions at present is generally to establish effective, well-informed consultancy institutions and efficient interfaces with organised civil society and the population as a whole. As far as the PAP in particular is concerned, however, it is frequently emphasised that the goal in the near future is to achieve a genuine legislative function. This is strongly supported by Germany and other »Northern« actors.

As with e-government by the executive, a distinction can be made between two fundamental aspects of parliamentary ICT use: improvement of internal, inter-institutional and international scope for information and communication on the one hand, and changes in the relationships with citizens, organised civil society and other non-government actors on the other. What is different about parliaments in the first instance is the very significant opportunities they have at their disposal for action and control in their relation with the executive, together with the demands made by their need to communicate with citizens as the representative body of the people. Additional aspects specific to sub-Saharan Africa are the fact that constituencies are often situated in areas far away from the capital city and that parliaments tend to be in a very weak position as compared to the government. Co-operation with organised civil society and with other parliaments can therefore present particular opportunities. With the support, among others, of the UN, Italy and Anglophone states of the »North«, African parliaments already started focusing on their own use of ICTs in the first half of the decade (and in some cases even earlier).

PARLIAMENTARY WEBSITES AND E-PARTICIPATION

The use of ICTs by parliaments in sub-Saharan Africa confirms the belief (IfG.CC 2006a) that projects that focus on the creation of websites should be viewed critically. This is the case both from a cost-benefits point of view, and with regard to the sustainability of development co-operation projects: just a few years after completion of the project, several African parliament websites that were set up with international support are no longer accessible online or are in a poor state (e.g. they are no longer updated or lack search functions). It is true that websites are important for an »eye-to-eye partnership« with the »North« and for the parliament's position vis-à-vis the executive; in countries with very low levels of Internet penetration, however, and in façade democracies with no independent parliament, advanced interactive websites appear to have little relevance. As regards African democracies, too, the question arises whether establishing internal information systems should not be given initial priority over information for citizens and e-participation. Because non-government actors are actively pioneering

digital democracy (see box), however, bodies representing the people will in the long term have no choice but to make their work transparent online. At present, it would appear to make sense for development co-operation to support such non-government initiatives, given the often difficult budgetary situation faced by African parliaments, and to consolidate a culture of democracy. The same applies to the website of the Pan-African Parliament (PAP), which likewise lacks certain functions (e.g. search functions) and delivers only rudimentary content. According to GTZ experts involved in this domain, improvements are being urgently targeted.

MZALENDO: EYE ON KENYAN PARLIAMENT

A young Kenyan woman and a young Kenyan man from the country's very active blogger scene have made it their job to improve the transparency of parliamentary work and the general state of knowledge about the political system and its protagonists. Their website (www.mzalendo.com) makes available minutes of plenary proceedings, documentation of other parliamentary processes (e.g. parliamentary questions), information about members of parliament and election candidates, and other political information. Parliamentarians have the chance to send in information, while citizens can comment on and evaluate the work of the parliament and of individual members of parliament, an opportunity that people certainly take advantage of. This experiment in parliamentary e-participation is remarkable even by international standards (for details of similar initiatives in Germany and Great Britain, see Grunwald et al. 2006).

PARLIAMENTARIAN INFORMATION SYSTEMS AND ICT SKILLS

There are doubtless areas of e-participation that are important for parliaments in less-developed countries, in the longer term at least, e.g. for co-operation with organised civil society in APRM processes (Chapter IV.1.2.1) and for inter-parliamentary networks. Improving the ICT skills and information systems of these countries, however, would appear an even more urgent priority at present. Various studies (e.g. Wang 2005) conclude that weaknesses in this area considerably impair the ability of parliaments in general and of their individual members to take effective action. It is particularly important, too, to improve communication with constituencies, which are often situated in remote areas. Various African parliamentarians and parliaments have noted a significant need for appropriate action, which has already led to the first UN activities of this kind.

As far as it is possible to tell, given the poor information basis, the current situation and requirements for internal and inter-institutional ICT use and for ICT skills among members of parliament and administrative staff are as follows: despite exemplary developments in some African countries, with the support, first

and foremost, of Canada and UNDP, the ICT skills of members of parliament are still weak, resources are insufficient and the number of ICT experts in administrative departments is low. One project that could possibly serve as a model is the Canadian-South African Legislative Cooperation Program, although it is true that the conditions in South Africa are comparatively favourable. There are still very few African parliaments who have directly asked »Northern« actors for support, however. There is particular need to ensure that parliamentarians are supplied in time with the documents they vitally need for their parliamentary work, that information is internally available and archived, and that communication is possible with other government bodies and partners on an international level.

There is international acknowledgement of the need for action in this area. The AU's Pan-African Parliament (PAP), whose tone in relation to the development co-operation and other policies of »Northern« actors can be highly critical at times, has stressed, for example, how much it values »Northern« support in this case, highlighting in particular the role of the GTZ (Mongella 2006). A number of international and regional conferences on parliamentary use of ICTs in Africa have taken place recently. One WSIS follow-up activity organised by UNDESA would appear to be particularly important for the future use of ICTs by African parliaments. While parliaments were initially virtually ignored in the WSIS process, the »Global Centre for ICT in Parliament« was established at the WSIS 2005 in Tunis by UNDESA and the Inter-Parliamentary Union (IPU), and has played an important role ever since in the WSIS follow-up activities on »ICT and Parliaments« agreed in Tunis. Among the »Northern« states, Italy, which enjoys a high profile in the area of e-government, plays the most prominent role. The EU is one of the key actors, especially with respect to Africa. At conferences in Kenya in 2005 and in Nigeria in 2007, representatives of the parliaments of various African states, the Regional Economic Communities and the PAP met with scientific experts, EU representatives and »Northern« parliamentarians, as well as with representatives of the UN and the private sector. Admittedly, the number of national parliaments participating in both events accounted for less than a fifth of the continent's states; there was also a noticeable lack of representatives from very poorly developed yet relatively democratic states. Nonetheless, some of the activities that are taking place within the overall framework of UNDESA's Africa i-Parliaments Action Plan (www.parliaments.info) appear promising: the participating national parliaments have been equipped with the necessary hardware. A parliamentary information system (»Bungeni«) and an interoperability framework (»Akoma Ntoso«) have also been developed, particular importance having been attached to the scope for non-proprietary software use, technological neutrality, ease of updating and adaptation, together with the requirements for multilingual use. The EU, for its part, made available its own multilingual thesaurus, among other things. The interoperability framework is

based on a system that was developed in Italy and is already in use by the country's parliament and other actors (Vitali/Zeni 2006 and 2007). At the 2007 conference, representatives of twelve African national parliaments, the PAP and several regional institutions issued the Abuja Declaration. It announces the founding of an African parliamentary knowledge network, which is to hold a further conference (at the invitation of the AU parliament) in early 2008 and which will be put on a solid financial basis. In the longer term at least, the overriding objective of these activities is to make parliamentary work more transparent to those citizens interested in it. The current short-term goal, however, is not only to generally improve the information and communication systems of national parliaments, but above all to create a pan-African parliamentary network. Admittedly, it remains to be seen whether funding will be sufficient to integrate additional partner parliaments and whether the process of institutionalisation will succeed (Vitali/Zeni 2006). A continuation of close co-operation with regional expert networks (such as the IT Managers Network of the Southern African Development Community) is planned.

ICT AND LOCAL GOVERNANCE   2.3

Focusing on the involvement of local and regional administrative levels and thus ensuring that administrators are properly qualified would appear to be the best way forward for sub-Saharan Africa (IfG.CC 2006a). In view of the limited use of files and other paper-based information media in the region's administrative bodies, digital storage media offer special potential. Above all, they make possible new ways of fighting under-development and poverty, as has already been demonstrated in practice by various ICT-based »pro-poor-governance« projects. However, success stories are limited to India, other Asian countries and one project in developing Pacific island states, at least as far as examples frequently cited in the international political and scientific discussion are concerned (e.g. Bestle 2007). What then is the state of affairs in this respect in sub-Saharan Africa?

Various expert reports commissioned for the TAB project (Buttschardt 2006; IfG.CC 2006a; University of Hamburg 2006) and other studies (e.g. Misuraca 2006) agree that the starting position for e-government at the local level, especially a long way from big cities, generally presents serious difficulties. The problems of implementing e-government in rural administrative bodies are especially serious: even if sufficient investments are made in infrastructure, it is virtually impossible to find and retain skilled personnel (IfG.CC 2006a). Besides the generally problematic situation in such regions (high rates of illiteracy, dominance of local languages, infrastructural problems etc.), one key reason why the overall success rate for development co-operation in this area has been so low is doubtless the fact that little attention has been paid to building up the necessary skill-

sets and motivation levels in administrative bodies. It is true that the staff of government institutions are among those groups that exhibit relatively high levels of Internet use by national standards (Buttschardt 2006; Misuraca 2006); in many cases, however, it is noticeable that Internet-related development projects are not continued once the people driving them forward have departed. Often, there is a lack of qualifications in the area of media literacy (e.g. with computers being used solely as typewriters) and equipment maintenance. In some cases, the intended provincial users are not even aware that their institutions have (centrally run) websites (Buttschardt 2006). In one case, where funding was even provided by a highly experienced actor (from Canadian development co-operation), it was found that the software and hardware that had been made available had not, over a period of ten years, actually been used for its intended purpose by a single one of the administrative offices that were supposed to use it (Misuraca 2006). The effectiveness of a GTZ-supported national administrative reform programme in Benin (including a major e-government component) is likewise suffering from the lack of ICT skills in rural communities (Buttschardt 2006). The decisive issue here is not merely ICT equipment and qualifications, but measures to upgrade local administrative organs (IfG.CC 2006a): because they offer little in the way of career opportunities, regional administrative jobs in particular do not have much appeal for skilled personnel. Staff who acquire skills in local projects and thus have the necessary knowledge are often headhunted by administrative departments in the capital or in ministries. This is virtually impossible to prevent unless the administrative framework conditions are fundamentally changed. One possible approach (IfG.CC 2006a) would be greater decentralisation, which would open up better career opportunities to local administrative staff, or an increase in salaries, although that is likely to take a great deal of time.

In remote rural regions, moreover, as well as in socioeconomically disadvantaged urban areas, staff often have no personal access, or no reliable personal access, to the Internet. The consequence of this is that motivated staff may resort to using nearby cyber centres and cyber cafés, or share the Internet connections of businesses (Buttschardt 2006; University of Hamburg 2006). Given this situation, the multimedia community telecentres that receive strong support from UNESCO in particular can also play an important role in local e-government (Creech o. J.). Such telecentres use both a combination of different ICTs (including the Internet) and non-technology-based means of communication and information, such as reading and writing services for illiterates; this is of particular interest in the area of pro-poor e-governance. As a counterweight to the enthusiasm displayed by promoters of telecentres, who often view themselves as a global »movement«, observers have noted that although the centres are the most important providers of ICT access and offer great potential for pro-poor e-governance, they are still few and far between, and in some cases not viable in the long term (Gerster/Zimmermann 2005).

When ICTs are used within the framework of national poverty eradication strategies to collect basic data about the situation in peripheral areas, local administrative staff can be found at times to be exposed to an additional workload that may overburden them (e.g. Booth/Nsabagasani 2005). Here too, it is evident that gearing state action and development co-operation to a greater extent to sustainable development, although desirable in principle, can cause the day-to-day work of government administration actors to suffer. If one does not wish to be faced with a dilemma as a result of this promotion of information systems, funded mainly by the World Bank and focusing on intranets and the Internet (Bitwayiki 2003; IfG.CC 2006a), resources and personnel capacities need to be expanded in local administrative bodies.

The spread of radio in peripheral rural regions is generally seen as one area of ICT4D use that has produced many good results. Community media projects, funded first and foremost by development aid, but also by a number of states (above all South Africa), have helped enrich the African media landscape and are now widespread in many countries (AMDI 2007). There are also examples of e-participation in which radio and other media have been used by rural populations to discuss problems in their communities with political decision-makers. In Zambia, for example, a project took place between 1998 and 2001 that involved 13 women's clubs in remote rural regions who had their discussions of topics relevant to development recorded (www.comminit.com/pdf/ zambiaDTR.pdf). The recordings were sent to a radio station in the capital, where an editor obtained answers from whoever was politically responsible in each case and then broadcast them over the radio. Admittedly, no increase in the incomes of the women involved was achieved, as was originally hoped. It also remained unclear whether the women's suggestions were ever adopted by policy-makers. Nonetheless, the women's clubs evolved to become important centres for political information and discussion within their communities, valued even by local men and boys. Furthermore, the programme, which was broadcast nationwide, met with great interest in other parts of the country.

Another approach to local e-governance that seeks to involve civil society above and beyond the typical NGOs consists in projects to promote ICT use by traditional authorities (kings and chiefs). In some cases, these still play a key role in areas relevant to government and administration (regulating issues of land ownership, for example). The conditions vary greatly in the different countries, however, both on account of each country's specific colonial legacy and because of political decisions taken by their governments: in some countries, these traditional authorities have been subjected to at least formal and, in some cases, de facto disempowerment (e.g. through abolition of the state appanage). Modern statehood then forces itself into the gaps in local governance structures that appear as a result. While some chiefs or kings react to this development in a more defensive fashion, others, especially younger ones or those who have been edu-

cated in the West or in cities (Misuraca 2006), embrace new ICTs. Ghana, South Africa and other states (especially anglophone ones) support traditional forms of local governance from a national level (e.g. by passing corresponding laws). Ghana is an example (Misuraca 2006) of how a certain degree of success has been achieved in this context (with relatively little funding from US foundations and NGOs): digital storage media, for example, have been used to archive decisions relating especially to land ownership issues, and media literacy levels have been broadened.

The Mauritanian Cybercommune project that was implemented with GTZ support (Altmann 2003) involved civil society and especially women in a remote region. It resulted in a purely Internet-based ICT structure being set up and also entering into regional political use. One current activity worthy of note in the area of local e-governance is the LOG-IN Africa initiative launched by Canadian development aid organisations, which began its cross-border activities in 2006 (Chapter VII).

OVERALL ASSESSMENT 2.4

Much research and evaluation of the use of e-government for development purposes still needs to be done (IfG.CC 2006a). There are particular challenges here, due in the first place to the politically and methodologically problematic character of studies and comparisons that are based on governance indicators. In the second place, considerable methodological difficulties also arise from international activities for benchmarking the development status of e-government (Grunwald et al. 2006). As regards e-government projects in the realm of development policy, one gains the impression, when reviewing evaluations done both by others and oneself – evaluations that are systematically non-uniform, as these are, and available only for isolated cases – that the various overall assessments are hardly adequate for making reliable generalisations. Obviously e-government projects do exist that are successful, in terms of both their specific goals and the higher-level goals of development co-operation. It also appears plausible to assume a high failure rate, however, especially in cases where the existing conditions with respect to infrastructure and administrative culture are ignored.

In any event, the focus on the web presence of institutions, noticeable particularly at the beginning of the current decade, should be regarded critically. Apart from a handful of success stories, the Internet features numerous websites of government institutions that were funded (e.g. by UNDP) under programmes conducted in the first half of the decade but are no longer kept up to date or indeed can no longer be reached. Websites are in many cases in a deplorable state, but appear not to be given priority on account of their cost-benefit ratio. Nonetheless, young people especially are demanding greater e-participation

and better online information. In the medium to long term, the main advantages of e-governance in sub-Saharan Africa, as elsewhere, would appear to be that government institutions (and particularly the people's representatives) can be contacted electronically and comprehensive information made available. Before this can be achieved, however, the fundamental preconditions need to be established; more commitment on the part of organised civil society would make sense here.

Whether one is speaking of government websites in particular or of more extensive projects, African actors should not be subjected to more stringent analytical yardsticks than their »Northern« counterparts. In the »North«, too, examples can be found of poorly planned large-scale projects, websites that are largely neglected and badly designed e-participation services (Grunwald et al. 2006). Admittedly, when development aid resources are invested in developing countries, government actors do have a special obligation to translate project goals into reality and at least to make their failures transparent and account for them. This advantage can only be optimally used to assess the efficiency of e-government for development, however, if the donors in this area also better co-ordinate their evaluation activities. Even today, the importance of the risks and special challenges in sub-Saharan Africa that are outlined in the introduction to this chapter is often underestimated (Zell 2005). Furthermore, the fundamental question arises whether more efficient government action is in fact desirable in countries under authoritarian rule and façade democracies.

In conclusion, it may however be affirmed that e-governance brings with it a whole host of opportunities for making administrative and state action not only more efficient and more effective in overall terms, but also more conducive to democracy. Additional efforts are needed to gear services to poor sections of the population (e.g. »pro-poor services« and e-participation among rural populations) in order to overcome or prevent poverty (IfG.CC 2006a): to achieve this, the target groups within the poor population would first need to be precisely identified. The services and information needed by poor farmers, for example, are different from those suitable for poor urban inhabitants. Especially where Internet costs are still exorbitantly high, as is the case in many countries south of the Sahara, it can be useful to create centres or take greater advantage of existing facilities (community telecentres, community media) for e-governance. It seems plausible to assume that e-government has a beneficial impact on development above all when the use of ICTs goes hand in hand with comprehensive and lasting administrative reform (including extensive training measures at all administrative levels, especially local ones) and a focus on the poor sections of the population.

CIVIL SOCIETY AND THE POLITICAL PUBLIC SPHERE   3.

This chapter will discuss ICT use by civil society actors and their views on ICT4D (Chapter IV.3.2). Special attention will be given to non-governmental organisations (NGOs) of which a survey was carried out for the purposes of the project (Chapter IV.3.2.1). In addition, the importance of new ICTs and the Internet will be examined in particular with respect to the political public sphere (Chapter IV.3.3); countries under authoritarian rule and crisis regions will also be taken into account (Chapter IV.3.3.3). The mass media landscape in sub-Saharan Africa will receive special attention, in the form of a brief overview (Chapter IV.3.1.2), as well as in the individual sections dealing with the political public spheres in Benin and Nigeria (Chapter IV.3.3.4). The same applies to the question of how far NGOs and other civil society actors can be regarded as pioneers in the area of ICT, with respect both to trends towards an Africa- and ICT-related transnational NGO network and to the importance of networks for civil society organisation in Africa (Chapters IV.3.2.2 to IV.3.2.4). The presentations will seek to shed light also on the situation in peripheral, especially rural, regions, as these deserve special attention in view of the population distribution and economic structure of sub-Saharan Africa. The focus will nonetheless be on activities in urban areas because it is there that the Internet is in relatively frequent use. By way of introduction, a number of basic aspects and current tendencies of organised African civil society will be discussed (Chapter IV.3).

STARTING SITUATION IN SUB-SAHARAN AFRICA   3.1

In sub-Saharan Africa, the relationship between politics, civil society and the media public sphere is characterised by problems that, although also to be found in other countries, tend to be less pronounced elsewhere. At the same time, highly promising developments are evident in NGOs, other civil society actors and the media landscape. The background to the relationship between politics and civil society will be outlined briefly below (Chapter IV.3.1.1); this will be followed by an examination of the role of the mass media (focusing particularly on the Internet, as the remit of this report dictates) (Chapter IV.3.1.2).

POLITICS AND CIVIL SOCIETY   3.1.1

The relationship between politics and society in sub-Saharan Africa continues to be strongly influenced by informal exchanges. These should be regarded not so much as close personal relations, but rather as loose extended-family, ethnic or local ties that nevertheless help to establish reciprocal claims to loyalty and protection. This state of affairs favours so-called neopatrimonialism, in which

politically influential actors make funds – even public ones – available to their followers as they see fit. It is argued that the very pronounced degree of neopatrimonialism that exists precisely in sub-Saharan Africa is a major obstacle to the formation of a strong, politically independent civil society. The suggestion that development co-operation should thus concentrate its efforts more on political parties and associations than on NGOs, however, overlooks the fact that it is precisely the relationship between the political parties that is often characterised by informal neopatrimonial relationships and ethnic loyalties.

NEOPATRIMONIALISM AND REPRESSION

The political relationships in sub-Saharan Africa have led at times to the criticism from specialists in African studies that Western development co-operation is based on illusions. It has been argued, for example, that the political systems and societies in this region are predominantly characterised by the fact that the elites are happy to take advantage of the benefits offered by modernisation and development co-operation provided that this will not undermine their power. The elites have in many cases not shied away from inciting violent disputes and exploiting them for their own purposes (Chabal/Daloz 1999): the »uncivil« character of public life in many African states strengthens the position of the political elites, partly because their followers' need for protection increases. The vigilante groups that are widespread in Nigeria and other countries, a mixture of vigilantism, gangs and secret societies, are described and analysed as the dark side or »perverse manifestation« of civil society (Ikelegbe 2001). Such forces appear diametrically opposed to civil society actors (within the normative meaning used in this report; Chapter IV.1.1) to the extent that they have a hugely adverse effect on co-existence and, in order to manipulate elections for example, enter into alliances with political and state actors that are damaging to democracy. Vigilante groups, other private actors and state security forces represent the antithesis of democratic NGOs, social movements and critical journalists (ÖRK 2002).

One problem for African civil societies is that governments and political parties that have come to power in national democratisation processes are frequently given the benefit of the doubt for an extended period by Western and international actors. It is true that violations of basic and human rights on the part of the democratically elected government or those committed with impunity by other politically powerful actors do not remain hidden from the public; nonetheless, they also do not weaken the international position of the government in question in any decisive way. Those who particularly suffer from this situation are civil society forces that break with the rules of neopatrimonialism and make use of their right to freedom of opinion even against the symbolic figures of the democratic change process. One example is the Senegalese hip hop artists whose public profile and critical rap lyrics at first greatly accelerated the process of de-

mocratic change at the end of the 1990s but then refused to be gagged, continuing to criticise government policy, and as a result were subjected to repression by the state and by partly state-controlled neopatrimonial agencies (e.g. Hager 2007). The least favourable situation appears to be in the so-called »failed states« in which political and military power has shifted more or less entirely to non-state actors. Within the often confusing and unclear political situations that prevail in these countries, civil society actors tend to be weak and do not position themselves primarily in opposition to or as partners of a government but attempt, in an atmosphere of lawlessness and violence, to set processes in motion that will promote development and democracy.

MORE RECENT TRENDS IN CIVIL SOCIETY NETWORKS

Even African and »Northern« critics of neopatrimonialism largely agree that a diverse landscape comprising civil society groups and organisations as well as social movements also exists in sub-Saharan Africa. It is true that most observers see these as still being relatively weak and inconsistent (in comparison, as well, to other less-developed regions of the world). They also often lack contacts and allies within the political system, which is not the case in Latin America, for example.

Nonetheless, a variety of processes of consolidation, networking and differentiation have been evident in African civil society since the 1990s. Older organisations and movements, as well as new ones, have identified with the concept of civil society and formed corresponding umbrella organisations and networks. In the area of ICT4D in particular, African organisations play an increasingly important role in transnational networks that originated in the »North«. The entire spectrum of groups of civil society actors, from NGOs and traditional organisations involved in international political processes via grass-roots movements to radical protest groups, is also to be found in the anti-globalisation World Social Forum (WSF). The global WSF was first held in 2007 on the African continent (Nairobi, Kenya). With support from the Italian government, which helped the WSF with ICT equipment and Internet connections, among other things, this contributed to a further interlinking of African civil society actors. Even »Web 2.0«, which is often regarded as having a particular affinity for civil society (e.g. UN 2004) and whose potential for development co-operation has recently been the focus of some attention (e.g. www.web2fordev.net; Kreutz 2007), has already gained a foothold in sub-Saharan Africa and the diaspora; there are numerous examples of African or Africa-related political blogs, citizen journalism and highly interactive information portals offering diverse content. Another area in which political use of the Internet plays an important role is action to counter the homophobia that is institutionalised in many African states. This phenomenon has recently been the subject of international discussion, especially in connection with tightening of laws in Nigeria intended to further curtail gay and

lesbian rights: the European Parliament, the German Bundestag and the German Federal Government took part in this discussion, together with African and international human rights organisations. A growing number of African organisations and weblogs by private individuals and small networks are using the Internet to fight against homophobia (e.g. www.mask.org.za; www.african womenblogs.com; www.blacklooks.org).

The dynamic development of African civil societies is politically reflected on an international and regional level, and in many nation states: the AU, for example, acquired the Economic, Social and Cultural Council (ECOSOCC), which is designed to enable a systematic exchange with civil society, and which has formal advisory rights. Institutions of this kind have also been created for African regional economic communities. In March 2007, the »UN Conference of NGOs in Consultative Relationship with the United Nations« (CONGO), which has existed since the end of the 1940s, together with the African transnational network African Women's Development and Communication Network (FEMNET) and in co-operation with UNECA and the AU, organised an African Civil Society Forum (AfCSF 2007). At the nation state level, civil society actors are increasingly being involved in APRM processes (Chapter IV.1.2.1) and other national political processes.

MASS MEDIA   3.1.2

When questioning the role of the mass media, with the importance of the Internet for the political public sphere in mind, one should beware of the simplistic antithesis »Internet versus mass media«: blogs and other Internet formats (»Web 2.0«) have indeed generated a new form of »lay« or citizen journalism (Grunwald et al. 2006), in developing countries as elsewhere. At the same time, however, established mass media providers and new commercial ones have created a diverse range of online services. Furthermore, the technical convergence of old and new media and possibilities for combining them make many distinctions appear artificial; in the domain of development co-operation this applies to media development co-operation in particular. Mass media and professional journalism should be dealt with separately, however, as they still constitute the core element of the political public sphere. In this area in particular, in the African context, there are serious information deficiencies and an acute need for research.

TRANSFORMATION OF THE SUB-SAHARAN MEDIA LANDSCAPE

Despite a considerable number of positive examples (Chapter IV.1.2.2), the majority of states in sub-Saharan Africa still suffer from major restrictions to press freedom. What is more, even in some of those states that enjoy relatively positive assessments, fundamental problems can still be found, as can new problems

(AMDI 2007; Brüne 2007; Schellschmidt 2007; University of Hamburg 2006). The fundamental problems include the patrimonial structures of power and violence, the high level of corruption, the venality of many journalists, the excessive strength of the executive and the continued inadequacy of journalistic qualifications and resources. New problems that arise on the basis of the old ones include the forms of indirect information and communication control exerted by governments and political elites (e.g. libel and security laws, and the discrimination against or ownership of private media companies by top-ranking politicians). Despite all these problems, the media landscape has nonetheless undergone considerable changes in the sense of strengthening critical activities in the political public sphere.

The press landscape in many countries, especially the more important ones, is markedly prolific and diverse in character and has a high value as a political resource for the opinion-forming urban elites. Private newspapers and magazines have expanded the pluralism of political parties, which to some extent can already be encountered in the (still relatively numerous) state publications, transforming it into a general pluralism of opinion. In the view of Stefan Brünes (2007), the political significance of these developments can hardly be overestimated, since they contribute to a »desacralisation of power« and thus to a transformation of the public sphere that has far-reaching consequences. In this context one should remember, however, that many print media are still owned by the state or by members of the government or governing party; in addition, many private newspapers and magazines are financially reliant on the government as an advertising client. At present, there are online editions of newspapers from around 50 African countries (University of Hamburg 2006), a considerable rise in comparison to the already high number at the beginning of the decade. The quality of the online editions varies enormously, however.

Radio has also undergone dynamic development in recent decades (AMDI 2007; Brüne 2007): in overall terms, television use in sub-Saharan Africa is concentrated in urban areas, while radio reaches many millions more Africans. Of particular importance is the large number of local radio stations that are given licences in many states south of the Sahara and often become established as a result of development aid projects. One of the advantages of this and other community media is that they directly serve the needs of rural populations in particular by providing, among other things, programmes in local languages and focusing on local issues. Radio is thus also the most Africanised medium, even if commercial radio in cities is often entirely tailored to the tastes of »Western«-oriented elites. Its potential as a medium for public criticism of the government has been demonstrated, for example, in Uganda. State-imposed restrictions remain severe in many places, however, and are partly responsible for the fact that African civil society actors and experts in particular tend to give the media land-

scape in their countries a poor overall rating (Schellschmidt 2007). Alongside »Western« broadcasters and cooperation agreements with national companies and organisations that often contribute to public criticism of the government, Brüne (2007) sees a growing influence of other actors (above all China, India and Islamic states) who are increasingly broadcasting in sub-Saharan languages. One groundbreaking project could be the planned pan-African satellite TV station »Africa Together Network« (ATV); this is intended to be independent of government control and censorship, and also to depict a different picture of the continent worldwide (AMDI 2007; Brüne 2007).

The importance of the Internet for the mass media in sub-Saharan Africa would appear to be determined by the following characteristics. In the first place, journalists, their professional associations and mass media with an online presence are among the pioneers of Internet use and the Internet public sphere (University of Hamburg 2006). The Internet is a factor in the dynamic development of the media landscape and the political public sphere in numerous countries and on a pan-African level. Secondly, the Internet represents an important complement to and, in some countries, a central medium for critical activities in the political public sphere. Brüne (2007) and Grätz (University of Hamburg 2006), for example, point to the growing role played by African blogs. Admittedly, especially in countries with very low levels of Internet penetration, the influence of the Internet is usually limited to elites (although these tend to be leading opinion-makers). The Internet does make a key contribution to establishing a pan-African and international public sphere, however, especially in countries in which no free media landscape exists. Thirdly, sub-Saharan and international media experts not only attach the highest priority to improving technical equipment and professional qualifications in general, but also particularly stress specific requirements with respect to the use of the Internet and digital ICTs (AMDI 2007). The role the mass media play in generating awareness of ICTs has also been the subject of attention in ICT4D discourse in recent years. A cross-border comparative study found that knowledgeable, highly positive press reporting of new ICTs emerged, as it were, from out of the blue within just one year (2003–2004) of the first half of the decade (during the WISIS process, in other words) (Berger 2006). Moreover, the Internet is involved in numerous sub-Saharan radio and multimedia projects in the area of development aid, which at least increases awareness of the Internet. There is still much catching up needed, however, especially as far as the contributions of critical and analytical journalism to ICT policy is concerned.

Many development co-operation actors attribute great importance to the training and continuing education of journalists in the use of Internet and ICTs. A large number of actors from »Northern« development co-operation are active in media development co-operation (AMDI 2007), the Friedrich-Ebert-Stiftung

being one of the key actors in Germany. The primary expectation of the Internet is that its competent use can significantly improve the quality of reporting content. Grätz points out that the websites of high-profile media development co-operation actors such as the PANOS institute (www.panosparis.org) make available a plethora of topical publications and data (e.g. on the media landscape, journalistic associations and relevant laws) and drive forward the creation of pan-African networks in this area (University of Hamburg 2006). In their education programmes for journalists, PANOS and other media development co-operation organisations particularly promote knowledge of the Internet and new ICTs. African journalists make it clear, however (AMDI 2007), that all the skills and knowledge in this area are of little use if access to modern ICTs in their daily work is unreliable or non-existent. Ensuring a »basic level of equipment« (including e-mail and the possibility for online research) has now become of central importance to sub-Saharan journalists.

THE INTERNET IN A TYPICAL WORKING DAY OF A PROVINCIAL JOURNALIST

Jean-Claude Kwagou heads the regional office of national newspaper Le Matinal in the Benin département capital of Natitingou. He is also communications officer in the Mayor's Office (University of Hamburg 2006). He has a small office, but no Internet access of his own. Because he is on good terms with the head of the local branch of the national press agency, he is able from time to time to use their Internet connection to communicate with his editorial office in the capital. Informal networks of this kind, together with use by local government institution staff of private or other Internet connections, are a common phenomenon in sub-Saharan Africa.

Grätz also notes that newspaper journalists in Benin are already the country's most important users and designers of web content and that they conduct online research, while journalists who live far away from urban centres (see box) face particularly serious problems if they do not have access to the Internet (University of Hamburg 2006). News agencies like Agence Benin Presse (ABP), which make their news available to most mass media on a partnership basis free of charge, can hardly carry out their work any longer without the Internet.

CIVIL SOCIETY ACTORS 3.2

This section will address a series of questions concerning the ways in which the Internet and ICTs are used by civil society in sub-Saharan Africa and its views on the subject. What role is already played by ICTs, and the Internet in particular, in the work of non-governmental organisations (NGOs)? What are their

requirements with regard to ICTs? Can NGOs and other civil society actors be regarded as pioneers of Internet use? How important are they in terms of raising awareness of ICT-related issues and use of ICT4D? What is the specific situation as regards those civil society actors who focus on using ICT4D? And what contributions can actors in this area make to strengthening sub-Saharan civil society?

AFRICAN NGOS: ICT USE AND REQUIREMENTS   3.2.1

What is the overall situation as regards use of ICTs, and the Internet in particular, by NGOs that are active south of the Sahara or in sub-Saharan Africa? In order to obtain as comprehensive and detailed a picture as possible, the project took the following steps. First, in an expert report commissioned for the project (University of Hamburg 2006), an appraisal of the NGO landscape in this respect was carried out, focusing on francophone West Africa. The basis for this appraisal was an analysis of the literature available in mid-2006, online research, and additional information obtained during field studies in Benin by Tilo Grätz, compiler and author of the expert report. Specialised information on the situation in a remote region in the border territory of Benin, Burkina Faso and Togo was obtained, likewise through field studies, in a second expert report (Buttschardt 2006). Secondly, more than 180 NGOs in Ethiopia, Kenya and South Africa were surveyed for an expert report compiled by the Center for Development Research (ZEF) at the University of Bonn (2006) in co-operation with SAP Research CEC Pretoria. Topics covered by the survey, which was conducted online and by telephone, were ICT use and requirements, as well as the views of the NGOs regarding certain central aspects of ICT use by civil society and the discussion of ICT4D. Third, the results of the expert reports were supplemented and consolidated by the TAB's own research.

The online and telephone survey of NGOs took as its starting point the hypothesis (University of Bonn 2006) that civil society organisations, as active mediators of social interests, are especially reliant on properly functioning channels of information and communication. The results of the survey show that NGOs in the region are already extensively using ICTs. As a general tendency, there are no significant differences between rural and urban areas, or between small and larger organisations. Over 70 % of all respondents said they used ICTs such as fixed line telephones, mobile telephones, computers and the Internet; only in rural areas was the proportion of those who said they used the Internet as low as 62%. All of those surveyed in Ethiopia and Kenya confirmed that they use mobile telephones. In other words, it would appear that mobile phones, computers and the Internet are routinely used or even indispensable, alongside conventional communication tools (verbal communication in direct meetings, letters etc.), if NGOs are to be able to perform their work properly and in a

targeted fashion. A noticeable rise in the use of ICTs was also evident from the survey. Moreover, many NGOs regard the promotion of ICTs by development co-operation as scarcely less important than the satisfying of basic needs. The authors of the expert reports conclude from this that ICTs, including computers and the Internet, have taken on the character of basic tools for performing civil society duties.

An extremely consistent picture emerged with respect to the question of whether ICTs increase the efficiency and effectiveness of NGOs, with a large majority of those NGOs surveyed agreeing that this is indeed the case. While significant differences were noticeable when NGOs were asked to assess the current importance of ICTs in their own work, the view that they should be rated positively for all aspects of NGO organisation and activity clearly predominated (University of Bonn 2006). According to the survey

> ICTs have become established as an important public information tool;
> ICTs play an important role in continuing education and staff development in companies (with nearly a third of all NGOs deploying e-learning courses);
> NGOs make extensive use of computers, e-mail and telephones in their fundraising activities;
> computer software is more widely used than printed material to carry out administrative and programme management tasks;
> meetings, paper-based documents, telephones and e-mail are widely used in the area of internal communication;
> a majority of those surveyed in Ethiopia and Kenya regard the Internet as being important or very important for external communication and (like the telephone) as being more relevant than print media;
> mobile phones, computers, e-mail and the Internet play a prominent role in accessing knowledge and required information;
> NGOs that feel themselves to be well-informed say that they use the Internet, computers and mobile phones roughly twice as frequently as radio and television.

The authors of the expert reports (University of Bonn 2006) believe that the Internet, computers and mobile phones have now become key technologies for information procurement in the professional sphere. Older studies, on the other hand, whose results are summarised in expert reports, conclude that many NGOs give themselves poor assessments as regards certain forms of Internet use (e.g. online conferences and Internet campaigns). It is this fact, they believe, and other shortcomings in the area of ICT skills, that are the main driving force behind the trend towards national and transnational civil society interlinking in ICT matters; this will be discussed in greater detail in the following chapters. The ineffective use of ICTs represents an additional burden on already overburdened NGOs, and has a detrimental effect on their standing.

In functional terms, the ICT infrastructures of those NGOs surveyed are relatively well developed. Most are in possession of computers and telephones, and also – especially and increasingly – of mobile phones. The overall infrastructural framework (power supply, security, Internet access etc.), however, achieves more mediocre scores, and a considerable shortage of equipment is evident. This also highlights the importance of public Internet access points: although most NGOs have direct access in their offices, it is apparent in many cases that NGO staff, especially in Kenya, use public Internet access (e.g. in Internet cafés). The majority of NGOs surveyed expend up to 10% of their budgets on ICTs, while some invest a third of their resources in this area. Funding comes from various sources, and to a large extent, too, from civil society itself. Comparable amounts are provided by the private sector and from development aid. Refinancing of ICTs through the organisation's own business activities is reaching similarly high levels, except in Ethiopia. The less developed a country is, the more it would appear to need ICT to be financed out of development aid. Four-fifths of those organisations surveyed said that they knew of NGOs whose use of ICTs is funded within the framework of development aid.

The findings of the survey as regards the way sub-Saharan NGOs perceive themselves are broadly confirmed by the findings of the online research and field studies conducted for the purposes of the project (University of Hamburg 2006) and by those of various other studies (e.g. Sesan 2007; cf. Chapter IV.3.3.4). Particularly noteworthy is the fact that astonishingly high levels of NGO Internet use were already recorded in the first half of this decade in, for example, Tanzania (Maoulidi 2004), a country with a very low rate of Internet penetration: a fifth used all relevant Internet functions (including online discussion services, and over 40% had their own website).

The hypothesis that NGOs act as trailblazers in countries with low rates of Internet use was further confirmed by looking at various West African countries (University of Hamburg 2006): in this region, there is also not always a direct correlation between the size of NGOs and their financial means on the one hand and the scope and efficiency of their Internet activities and level of technical equipment on the other. In some cases, small NGOs, because of the skills of their individual staff members or productive contact with specialists, have tapped the potential of the Internet to a greater extent than organisations with a greater volume of work, higher level of national importance or more intensive transnational contacts. It is above all the lack or inadequate maintenance of a web presence that is often noticeable in the latter, as well as the low level of internal Internet use. Another group of NGOs believe the Internet to be eminently important, yet so far do not have sufficient funds or contacts at their disposal with which to improve their situation. Nonetheless, even in Benin for example, which is characterised by a relatively low rate of Internet use by NGOs, many organisations take advantage

of the Internet for e-mail correspondence, sending documents and exchanging important information. Furthermore, some smaller NGOs there have their own cyber cafés, providing them with an additional source of income. Possibilities for online discussions are offered in particular on the websites of organisations that belong to transnational NGOs and use the Internet for communication and co-operation (asynchronous work, sending of documents etc.) with »Northern« partners. No-one criticises Internet use in principle, but many employees have little knowledge of ways in which it can be used apart from for e-mail.

Despite the fact that problems of equipment and Internet access, high connection charges and other fundamental problems loom very large, there are, in other words, indications that such obstacles are not the only reason for the observed »under-use« (University of Hamburg 2006) of the Internet. It is precisely the major and the more traditional NGOs that often fail to recognise the Internet's relevance and neglect to actively embrace this technology.

CIVIL SOCIETY ACTORS AS TRAILBLAZERS?   3.2.2

In rural areas in particular, and in countries with low rates of Internet penetration among the local population in general, NGOs, supported in many cases by development co-operation, would often appear to play a trailblazer role as regards Internet use and provision of public access. The same can be said for other regions that are peripheral not in geographical but only in socioeconomic terms: even today, people from poor urban areas, especially young people, are often introduced to the Internet and familiarised with new ICTs by NGOs. To assume that NGOs play a role as trailblazers in use of the Internet throughout society and all over sub-Saharan Africa, however, may not be appropriate: at least in those countries where Internet and ICT use is on the whole undergoing relatively dynamic development, the trailblazing role of civil society – in the narrow sense – is limited to the above-mentioned peripheral areas and disadvantaged sections of the population, providing Internet access on a not-for-profit basis to a wider public and, in particular, to the poor. (Not-for-profit provision of Internet access does not exclude the possibility that small NGOs might run their own cyber café, used for example by tourists, as a source of income.) The pioneers of Internet use in society as a whole, on the other hand, are principally universities and research institutions (Chapter VI), mass media and government institutions. In many countries, NGOs do have a trailblazing role as regards political initiatives for topics relating to the Internet and ICTs, thereby generating awareness (ICT promotion). In Tanzania, for example, a women's media organisation did pioneering work in the area of ICT (Maoulidi 2004). In the geographically and socioeconomically peripheral border territory of Benin, Burkina Faso and Togo, Buttschardt (2006) notes that a single NGO made a key contribution to raising awareness of the Internet, a technology largely unknown in that region. Grätz

(University of Hamburg 2006) shows how civil society actors in francophone Africa, with the support in some cases of the »North«, are developing a diverse range of activities in the area of ICT promotion and education (see box).

FETE DE L' INTERNET EN AFRIQUE AND YAM PUKRI

To mark the UN's »World Information Society Day« (which takes place each year on 17 May), 2007 already saw the tenth Fête de l'Internet en Afrique (www.f-i-a.org/fia). This is a festival, supported by the Organisation Internationale de la Francophonie and held in several sub-Saharan states, designed to promote use of the Internet. Civil society, academic and other ICT promoters use the festival to reach a wider public. As an example of the vitality of NGOs that have created a cross-border network this decade, Grätz (University of Hamburg 2006) cites the NGO Yam Pukri from Burkina Faso, which was founded in 1998. It has set itself the goal of making access to the Internet available in particular to young people from socially disadvantaged groups. Activities to promote ICT are pursued (e.g. by organising the national Fêtes de l'Internet), inexpensive ICT training courses are offered, some in local languages (according to the NGO's own information, 3,000 people had already taken part in such courses by 2006), and discussion forums and various types of information are made available online (www.yam-pukri.org). Training is provided for young people, and also in particular for women and NGO staff, as well as the physically disabled. The six training centres are located close to schools or based in them. Yam Pukri works together with Terre des Hommes, among other organisations. With support from Canadian development co-operation, a network of ICT experts is maintained, and Yam Pukri is also active in the area of village telephone services. One of its strategic partners is the University of Lausanne.

The ways in which NGOs are active as ICT users and promoters in interacting, co-operating or arguing with government and private sector actors varies both from country to country and on the national level. Political decisions (e.g. regarding the costs of domestic telephone calls) and the degree to which large telecom companies are willing to co-operate are key factors influencing the use of the Internet by civil society. In general, one can say that regions without relatively good basic conditions and opportunities for Internet access also tend on the whole not to have a large and vibrant Internet and ICT community. Although it is not unusual to find that NGOs in such countries that are disadvantaged in this way use the Internet to a relatively large extent, this is primarily due to the influence of development aid actors.

Senegal is an instructive example of the interactions between NGOs, other civil society actors, the private sector and the state, and of the trailblazing role played

by NGOs in the area of Internet use (for the presentation that follows, see for example Afemann 2003; AMDI 2007; Chéneau-Loquay 2004; Guignard 2004; Sagna 2000; University of Hamburg 2006; www.osiris.sn). The country is one of the African pioneers of Internet and television use and of liberalisation of the telecom market (Chapter II.2.1). As early as the 1990s, the former state monopolist Sonatel concentrated entirely on issuing licences for private telecentres and new technologies, thereby giving more people access to the telephone and, subsequently, to the Internet, and ultimately making this access cheaper (with corresponding business models for small enterprises). The government also made it easier to import computers and decided (like other sub-Saharan countries) that the Internet should be charged at local call rates. Added to this was the political will to exploit the advantage of the country's geographical position (with regard to the Internet backbone) to supply the Internet with a large bandwidth. Admittedly, the outcome in Senegal remains just as contradictory as is generally the case with trailblazers in the area of liberalisation (Chapter II.2.1): the significant improvements in telephony were limited, essentially, to parts of Dakar, the capital city, and other urban areas. When Sonatel was privatised, France Telecom acquiring a more than 40% stake in 1997 via a subsidiary, the company retained its legally protected market-dominant position. This was considered by various critics to be a serious error (e.g. Sagna 2000), because it meant that despite the existence from 1999 of competition in the mobile phone sector, a quasi-monopoly remained and, through the privatisation of the successful company, there has been recolonisation, as it were, of the ICT sector.

Civil society actors took advantage at an early stage of the overall relatively favourable situation in a state characterised throughout its history by high political stability to call for and promote the use of ICT to fight poverty and bring about development and digital democracy. The main prerequisite for achieving this was the political will to focus on ICT issues (Sagna 2000). The new civil society actors in the area of the Internet and ICT were initially (despite scepticism on the part of Sonatel) supported by the state president. For example, thanks to a civil society initiative, Senegal became the second African country after South Africa to offer public access to the Internet, situated in Medina, the poor district of Dakar. Metissacana (www.metissacana.sn), as the cyber centre was called, was part of a cultural centre that had been founded by world-renowned fashion designer Oumou Sy and offered, among other things, trade fairs, theatre and cinema performances, and satellite transmissions. The initiative created a web presence for local radio stations, established further telecentres in other cities around the country, and launched an e-health initiative to reduce childhood mortality, which it says has been successful. Metissacana also gave illiterates access to online information and in 1997, with the consent of the as yet non-privatised Sonatel, became an Internet provider that enabled access, well

into the new decade, for around half of the Internet users at the time, who numbered at least 10,000 (Sagna 2000). From the outset, the centre encouraged the use of free e-mail addresses, and was also a pioneer of digital democracy: during the presidential elections in 2000, online debates with several candidates were organised, in which Internet users were also given a chance to have their say. Surveys were launched, election results from constituencies quickly published and, in 2001, a chat with the new president organised – still a rare occurrence, at that time, anywhere in the world.

There is some dispute over why Metissacana came to an end in 2003. Its initiators blamed Sonatel. Although the following years saw improvements in the country's telephone and Internet connectivity, a third of villages still have no telephone connection even today. Sonatel's strategy of providing access to telephones by organising private telecentres, successful in the sense that it generated jobs, has long faced the problem of ruinous competition between small enterprises (first and foremost in Dakar) and growing competition from mobile phones. With this situation in mind, the central Senegalese NGOs in the area of ICT4D (Sagna 2000; University of Hamburg 2006) continue to strive towards better provision of ICTs, especially in peripheral areas (urban slums and villages), supported by, among others, Canadian development co-operation. In comparison to the ambitious goals pursued by Metissacana, however, the activities are on the whole fairly low-key.

The Senegal example likewise shows that it is easy to lose sight of the wide range of non-government actors in sub-Saharan Africa when one focuses one's view exclusively on NGOs that correspond more to »Western« ideals. In Senegal, the Mourides – who are highly business-oriented and enjoy significant economic and cultural influence – have on their own initiative long been part of the driving force behind the use of ICTs (Guèye 2003). The Mourides are followers of a Sufi brotherhood, that is to say an Islamic mystic community. Their headquarters are in Touba, the country's fastest-growing and, after Dakar, second-largest city (with over 500,000 inhabitants already). Because of their strong involvement in trade, their positive attitude to new technologies and their worldwide missionary orientation, the brotherhood has placed emphasis on the use of computers ever since the end of the 1980s; the promotion of telephone and Internet use by the Mourides has also been successful by regional standards. To this end, they entered into a partnership with a UN-supported Senegalese organisation aimed at developing trade as part of a global e-business network. Even today, the Mourides maintain a web presence offering varied content and a high level of creativity (www.htcom.sn).

CONNECTING CIVIL SOCIETY ICT PROMOTERS 3.2.3

It is clear that a globally interconnected civil society ICT4D community has emerged, particularly in sub-Saharan Africa. This has received considerable impetus from the WSIS process, and not only in terms of its presence on the international political level (Mueller et al. 2007). A close-knit network of ICT promoters has emerged with the involvement of »e-activists« (for more about this term, see Res Publica 2007; Chapter IV.1.1 u. IV.3.3).

In the first half of the decade, one could still presume that the great importance that African NGOs, which at the time were still relatively weak, attached to the use of ICT4D was primarily linked to awareness of the WSIS process. Indeed, many less high-profile African NGOs, as well as some that are very active in the WSIS process, have since discontinued or significantly reduced their activities in this domain. In international initiatives and development co-operation projects related to ICT4D, however, civil society actors play an important role (as target groups or as sponsors of the activities; University of Hamburg 2006). The more recent development can be outlined as follows. On the one hand, key actors in internationally and transnationally active African civil society attribute high priority in various documents to the use of ICT4D (e.g. AfCSF 2007; UNECA 2005b). Human rights organisations, political resistance and reform movements, as well as other organisations and movements that one would likewise not assume to be overly enthusiastic about new ICTs, are also in many places pioneering the use of ICTs and the Internet. On the other hand, transnational civil society ICT promoters and indeed e-activists have paid special attention to sub-Saharan Africa in recent years, in some cases relocating central elements of their networks to the region. Purely African groups have grown in number and are increasingly developing varied and better-interconnected modes of action. Promoters of ICTs have declared that the priorities of ICT use are poverty eradication, good governance, civil society organisation and networks, stimulation of social debate and control of political and economic power. Women's organisations are playing an important role in this process in sub-Saharan Africa and have also already made use of the tools of e-activism (Chapters IV.3.2.4 and IV.3.3.2). One trend would appear to be that the Internet is bringing transnational and national NGOs that have emerged from the latest wave of ICT4D together with

> NGOs and groups (especially from the women's movement) that have long been working on issues of media and communication (e.g. AfCSF 2007);
> human rights organisations, other NGOs and social movements (e.g. globalisation critics) that are increasingly reliant on the Internet;
> »Northern« government and non-government ICT4D promoters.

Transnational networks that have a strong online presence and are focused on ICT use (see the following examples) make pan-African and international coor-

dination possible, and allow political activities to be combined. Key support for civil society networks and ICT4D activities is provided by the UN, by initiatives created in the »North« (such as Bridges.org, that is likewise increasingly shifting its organisational focus to sub-Saharan Africa; www.bridges.org) and by networks funded by »Northern« donors (e.g. the Bellanet network supported by Denmark, Canada, Sweden and Switzerland; http://home.bellanet.org). The Italian government, for example, supported the World Social Forum 2007 in Kenya in the area of ICT infrastructure and use. Similar activities in francophone sub-Saharan Africa have already been mentioned (Chapter IV.3.2.2). In addition, international NGOs such as Human Rights Watch (www. hrw.org) have numerous blogs and mailing lists, and have greatly improved their websites. The Internet thus represents a central element of civil society information, communication and networking, as well as a new form of political public sphere in and for Africa (Chapter IV.3.3). To illustrate the way civil society ICT promoters form networks, a number of successful initiatives and co-operations will be briefly outlined below (for further examples, see University of Hamburg 2006 and the websites of the Sangonet and Kabissa organisations).

ASSOCIATION OF PROGRESSIVE COMMUNICATIONS

The Association of Progressive Communications (APC; www.apc.org; cf. Grunwald et al. 2006), which assumed a leading role in civil society activities within the WSIS process (Mueller et al. 2007) and is heavily involved in the WSIS follow-up activities, has transferred relevant organisational units of its network to sub-Saharan Africa. Furthermore, central ICT promoters and e-activists from sub-Saharan civil society belong to APC. Besides Pambazuka, the APC website represents one of the most useful civil society sources of online information on ICT topics relating to Africa (e.g. http://africa.rights.apc.org). APC differs from other initiatives and from many development co-operation actors from »Northern« states in that it strongly emphasises multilingualism and the involvement of African partners from both anglophone and francophone states. Its activities include continuing education for women in the area of ICT, e.g. focusing on free and open-source software.

FAHAMU AND PAMBAZUKA

Founded in 1997 (mainly by »Northern« actors) and dedicated to promoting social justice in Africa, Fahamu (www.fahamu.org) is an NGO that attaches a great deal of importance to the use of ICTs. Its diverse activities are supported by the EU, Great Britain and Canada, among others; it also co-operates with various transnational civil society organisations. As of 2005, Fahamu declared its intention of becoming further »Africanised« (Manji/Burnett 2006), focusing on co-operation with the African women's movement, the education sector, conflict prevention and the strengthening of African civil societies and diaspora com-

munities. One form of ICT use that reflects conditions in Africa is the sending of digital audio files by e-mail to community radio stations that then use them in their programming. Fahamu also provides Internet training courses certified by the University of Oxford and has done research on the abuse of the mass media as tools for propaganda and hate speech during the genocide in Rwanda. One outstanding achievement is the success of the online portal Pambazuka News (www.pambazuka.org), which started out as a simple mailing list, and can now be regarded as a central element of the pan-African Internet public sphere with (according to Fahamu's estimates) some 100,000 readers per week and a wide variety of articles on political and social issues in sub-Saharan Africa.

FANTSUAM FOUNDATION

Established in 1996, the Fantsuam Foundation (www.fantsuam.org) in Nigeria is a purely African ICT4D organisation. It is a member of APC, and has as its partners, besides African organisations and the Commonwealth of Learning, various academic and private sector actors from »Northern« anglophone countries. The focus of the Fantsuam Foundation's work, while giving special consideration to women and young people, is on improving connectivity, ICT resources and skills in rural areas (it has played a trailblazing role in northern Nigeria ever since the 1990s) and on the use of ICTs in the microfinance sector and education (likewise primarily in rural regions). The Fantsuam Foundation is one of the most active African civil society actors within the international ICT4D discussion.

KABISSA

Among the initial supporters of Pambazuka News was the US-based organisation Kabissa (www.kabissa.org) that was founded by a German in 1999 and aims to achieve a pan-African network of NGOs. Kabissa received its first major support in November 2002 from the GTZ. Kabissa's work is concentrated on improving the Internet and ICT capacities of NGOs and promoting predominantly online co-operation between them. Not only the number and diversity of NGOs interconnected by Kabissa is impressive (approximately 1,000 throughout Africa), but also the high degree of respect shown to the organisation within the African Internet scene.

SANGONET AND WOMEN'S NET

Founded in 1997, the South African civil society organisation Sangonet (www.sangonet.org.za), likewise a member of APC, has set itself the goal of promoting ICT use and interconnection of civil society organisations, above all by providing technical and conceptual support. It was out of Sangonet, too, that the organisation Women's Net (www.womensnet.org.za) arose.

THE ROLE OF THE WOMEN'S MOVEMENT   3.2.4

The women's movement is highly relevant to ICT4D issues in Africa (for the presentation that follows, see University of Hamburg 2006). Generally speaking, women in Africa have far less access to modern ICTs than men. This is due to structural conditions, e.g. less common access via organisations, to a lack of training, and also to factors of a more sociocultural nature such as stereotypical roles assigned to women that do not give them access to technology in their everyday lives and leisure time. There is a gender-based »digital divide« that a variety of African projects, either supported by the »North« or home-grown, hope to overcome.

Numerous sub-Saharan women's organisations are active here: in the francophone region, for example, the Réseau Genre et TIC (REGENTIC) network deserves a mention. REGENTIC is supported by Canadian development cooperation and carries out gender-based studies on ICT topics. The organisation Courants de Femmes in Paris (www.courantsdefemmes.org) is also helping to increase the web presence of women's organisations, particularly in francophone areas. The Tanzania Gender Networking Programme (TGNP), an NGO founded in 1993, uses its website, for example, to publish contributions to political discussions and scientific analyses. TGNP also runs a documentation centre offering public Internet access. The African Virtual University (AVU; Chapter VI), which long ago identified the proportion of women (which is so far very low) in the area of ICT expertise as a problem, has launched initiatives such as the Women Networking Support Programme, Computing Centre and Women on the Net (for further examples, see AMDI 2006a and 2007; Maoulidi 2004; University of Hamburg 2006). Founded in 2000, the Women of Uganda Network (WOUGNET; www.wougnet.org) is also in solely African ownership, and has set itself the goal of promoting the use of ICTs by women's organisations and individual women in Uganda with a view to improving their situation. A more recent project is the network's participation in the Ugandan APRM process (Chapter IV.1.2.1). WOUGNET, as a »technical institution«, has been entrusted in particular with measuring and assessing the current state of development with regard to access of all citizens (and above all the poor) to water, power, financial services, markets and ICTs. Other WOUGNET projects are concentrating on ICT access in rural areas, on researching ICT use by African women, on the use of ICTs in education and health, and on the promotion of ICT-based companies that are run by women. WOUGNET's partners include NGO networks and African national NGOs. In the area of training and continuing education for journalists, as well as in ICT co-operation, there is a wide variety of activities and initiatives in sub-Saharan Africa that are tailored to women (e.g. www.mediacommunity.org/feminia/; cf. AMDI 2007; University of Hamburg 2006), not to mention pioneering achievements in the provision and

promotion of ICTs in rural areas (Maoulidi 2004). New and old ICTs and media provide information about topics of great relevance to development policy (e.g. vocational and educational opportunities for women and girls, HIV and AIDS, violence against women). National NGOs regularly use the Internet to link up to pan-African networks and to present their work, often with an eye to attracting potential »Northern« support. In an internationally-regarded project in Mauritania supported by the GTZ, a purely Internet-based communications structure was set up for a remote region, with local women and the Mauritanian women's movement (www.maurifemme.mr) playing key roles (Altmann 2003). The project also led to other ICT4D activities, e.g. anonymous legal advice for women on the Internet.

Furthermore, numerous well-established women's organisations have developed a keen interest in the Internet in recent years. Worthy of note in this context is the pan-African orientation and emergence of online-based networks of African women, e.g. in the area of blogs. Overall, the African women's movement can thus be seen as an example of how an established social movement in this decade has recognised the particular benefits of new ICTs, and the Internet in particular, for its work and is increasingly embracing these technologies.

OVERALL ASSESSMENT 3.2.5

The hypothesis of organised African civil society playing a trailblazing role in Internet use in society as a whole is questionable, at least when one considers the countries examined in greater detail in this report. In large parts of sub-Saharan Africa, however, non-governmental organisations (NGOs) and other civil society actors can be seen to have played such a role with regard to Internet access for disadvantaged sections of the population and the raising and strengthening of political and social awareness of ICT topics. One should not restrict one's view to NGOs, as there are also examples of targeted and successful ICT promotion and use by other civil society movements (e.g. religious communities). Civil society ICT promoters have already been active in some countries since the 1990s, and cross-border networks have become established.

As a rule, national NGOs have better access to ICTs, and to the Internet in particular, than the average population. The Internet and modern ICTs in general are an established feature of the landscape in sub-Saharan NGOs, and have been for many years in some countries. The Internet is often widely used by NGOs in places where many ICT4D initiatives have been put in place by development co-operation and national governments despite a low overall rate of Internet penetration in the population. Development co-operation has frequently played a useful role in interconnecting NGOs and in supporting them in their daily work. In countries with relatively high rates of Internet use, by contrast, promotion of the Internet by development co-operation does not necessarily bring with it a

high level of Internet use by NGOs; indeed, the opposite may even be the case. There are still a large number of NGOs that are not aware of the possibilities that modern ICTs and, above all, the Internet open up for their work. In this respect NGOs with international contacts may have an advantage, although even these are often found to underuse the technologies (in terms of their potential). Restrictions on their use due to high costs and non-existent or inadequate skills and infrastructure remain fundamental problems.

It is unclear how far the increasing »Africanisation« that can be observed within the transnational civil society ICT4D community influences international policy-making (e.g. in the follow-up activities to the WSIS process) and communication at civil society level between »North« and »South«. There are signs, however, that ICT promoters are playing an ever more important role in mainstream organised civil society in Africa. Moreover, established African civil society actors now place strong emphasis on the significance of ICT4D (AfCSF 2007) and, in particular, the use of ICTs by women, as well as on »e-activism«, that is to say the targeted use precisely also of new ICTs for campaigns and to create a political public sphere.

POLITICAL PUBLIC SPHERE   3.3

The following section will examine the importance of the Internet for political public spheres in sub-Saharan Africa, and forms of political activism involving ICTs (»e-activism«). Its object is to illustrate that the Internet is already being used for a variety of political purposes in the region and that this, combined in some cases with other ICTs, could potentially make a considerable contribution to further democratisation in sub-Saharan Africa in future. To this end, more recent trends in the political use of ICTs will first be outlined (Chapter IV.3.3.1). The next section (Chapter IV.3.3.2) will discuss use of the Internet and other ICTs by civil society to create a pan-African and global political public sphere. This will be followed by a look at aspects of the special situation that exists in countries under authoritarian rule or affected by war (Chapter IV.3.3.3). The examples of Benin and Nigeria will be used to examine the role played by new ICTs, and the Internet in particular, in national political public spheres (Chapter IV.3.3.4).

THE INTERNET PUBLIC SPHERE AND E-ACTIVISM:
POTENTIAL BENEFITS   3.3.1

In developed countries, the Internet, as a space for political information and communication, has now become an integral part of the political public sphere and is widely used by all relevant groups of political actors and the mass media

(Grunwald et al. 2006). In addition, journalistic content is offered by providers operating exclusively online (ranging from popular, multi-topic online portals to specialised content provided by Internet newspapers and e-activists). Numerous websites, not to mention a large number of blogs with a comments facility, give readers the opportunity to express and discuss their own views, including political ones. The spectrum ranges from online voting via chats to discussion forums and other formats that allow opinions on political issues to be exchanged over a period of time. Private individuals also use their own websites and, above all, blogs to put their views and research on political topics forward for discussion and to connect with others within the so-called »Web 2.0«. In countries like South Korea, citizen journalism is thriving above and beyond the »blogosphere« (a collective term encompassing all blogs); professional online content providers offer a forum in which lay journalists can post their reports and political analyses. The »Internet public sphere« complements the traditional media public sphere by publicising themes and views that have been ignored in mass media or official political discourse. Critics object that the Internet is contributing to the further fragmentation of the national political public sphere and that standards of quality in journalism are being compromised due to the diversity of »micro public spheres« (for more on this controversy, see Grunwald et al. 2006). A crucial question in terms of democracy theory, especially in countries with low rates of Internet use, would appear to be the extent to which a »digital divide« in the political domain becomes problematic as a result of the varying levels of access and use in different sections of the population.

Especially in developing and newly industrialised countries under authoritarian rule, however, the new Internet public sphere of blogs and other online formats offers great potential for consolidating a diverse and critical political public sphere, for better interconnecting civil society actors and for addressing the global public and political exiles or the diaspora (Grunwald et al. 2006; Res Publica 2007; University of Hamburg 2006). It is widely agreed that this potential exists, yet there are warnings not to get caught up in the spirit of early Internet euphoria and perceive the Internet above all or solely as posing a threat to authoritarian regimes and, with »blind optimism« (Kalathil/Boas 2003), to hope that the dissemination of the Internet will make democracy happen by virtue of a kind of technological determinism. This hope is contradicted not only by the possibilities for repression and censorship (Chapter IV.3.3.3) that are tolerated or even supported in some cases by Western Internet companies, but also by the considerable scope for manipulation and pursuit of self-interest the Internet offers to many authoritarian regimes, in the area of e-government, for example.

It is true that the Internet remains an elite medium in large parts of sub-Saharan Africa, yet it is precisely the alternative elites (in NGOs, political opposition and critical journalism) who use the Internet to a relatively large extent. By forming opinion and by disseminating information obtained online among sections of the

population without access to the Internet, these play a multiplier role. The theory that the Internet brings about the relative strengthening of elites is also questionable because the political public sphere in sub-Saharan Africa is highly elitist in character in any case (on account of the low literacy levels and frequent concentration of »cultural capital« in large cities). Given that the mass media landscapes in developing countries tend to be weaker and are often under political control, transnational and national Internet communication can attain a greater relevance there than in the highly industrialised countries with their frequently lamented »flood of information«.

Furthermore, the Internet has proved itself to be an effective resource in political campaigning, at least in some countries with high rates of use (e.g. France, South Korea and the USA) (Grunwald et al. 2006): the pronounced Internet affinity of many e-activists (also known as »cyber activists«) meant that for a long time there was great interest, for example, in online protests, that is to say the transferral of established forms of political action (such as blockades) to the Internet and the development of new forms of political action for the Internet. This included undermining the image of political opponents by creating websites or manipulating contents in such a way as to portray them in an unfavourable light, and various forms of »cyber attacks« that temporarily paralysed websites. The true forte of the Internet here, however, lies in new possibilities for mobilisation and fundraising in traditional political campaigning, and in the scope for coordinating such activities over the Internet and justifying them in terms of content. In this area, other ICTs, and mobile phones in particular, are increasingly being used to supplement the Internet.

The situation is often reversed in developing and newly industrialised countries: if it is used at all, the Internet plays more of a service role there, being used primarily for internal communication between core activists and for making information gathered elsewhere available to those among the general (global) public who are interested. Text messaging is particularly important in these countries (Asuncion-Reed 2007; Hong 2005; Res Publica 2007), and mass texting is used to publicise campaigns, initiate protests and coordinate demonstrations. For example, text message campaigns were used in combination with the Internet public sphere to successfully support a South Korean presidential candidate; text messaging and other mobile phone applications (such as e-mails by Blackberry) were used to campaign for women to be given the vote in Kuwait; a successful campaign was launched against the Philippine president, who described his resignation as a »coup« by text message; and text messages have been used to mobilise and coordinate protests, e.g. in illegal mass demonstrations and strikes in authoritarian states like China and Syria. Of particular interest in this context are applications that combine the specific technical and context-dependent ad-

vantages of different ICTs, for example systems in which text messages can be sent from or to central computers (www.frontlinesms.kiwanja.net).

THE PAN-AFRICAN AND GLOBAL AFRICA-RELATED PUBLIC SPHERE 3.3.2

Numerous ongoing activities and initiatives are directly aimed at promoting a pan-African and global political public sphere. Some of these activities and initiatives were launched by ICT promoters, e-activists and other actors with high Internet affinity, while others emerged when long-established social movements and NGOs began embracing the new Internet-based information and communication possibilities. As already outlined above, the online content offered by various actors in journalism, civil society and academia has already generated a content-rich and varied political public sphere both in and relating to Africa. Three examples will be presented below to illustrate the potential for and aspects of this Internet public sphere as it currently stands and how other ICTs can be used to create a cross-border political public sphere.

A PAN-AFRICAN CAMPAIGN FOR WOMEN'S RIGHTS

One example of how ICTs can help NGOs and other civil society actors to run campaigns and take action is the pan-African campaign to ratify the »Protocol on the Rights of Women in Africa«. This protocol, developed by organisations within the African women's movement, complements the »African Charter on Human and Peoples' Rights«. The AU adopted the protocol in November 2003, yet it could only come into force once it had been ratified by 15 states. In order to accelerate the signature and ratification processes and maintain a continuous focus on the issue, almost 20 NGOs, most of them African, founded the Solidarity with African Women's Rights (SOAWR) coalition. The NGO Fahamu became one of its founding members (Chapter IV.3.3.3) and set up an online petition with a signature and comments facility at www.pambazuka.org that could also be reached via text message. Around 3,800 signatures and over 450 comments have been sent by text message. African signatories also used the website to forge contacts with one another. For the campaign, Fahamu set up a mailing list and a free notification service by text message. During their work at the local level, the participating women's organisations drew particular attention to the text messaging facility. Their work also took advantage of special print editions of the Pambazuka News that had been published online to accompany the campaign. The special editions were handed out to parliamentarians and during lobbying activities at AU conferences.

By November 2005, 15 states had signed the protocol and it was able to come into force. The campaign is still underway, its main purpose now being to exert

continuing pressure on the large number of states who have yet to sign or ratify the protocol. Although the number of people using the online and text messaging facilities in particular appears relatively small, it was not only Fahamu itself that was content with its own contribution to the campaign. The NGO Femnet (Muthoni Wanyeki 2005), a leading actor in organised civil society in sub-Saharan Africa that is partly funded by German development co-operation and has long specialised in information and communication issues, also expressed its satisfaction. The impact of the numerous Pambazuka News online articles about issues relating to the women's movement is difficult to judge, but their diversity and quality are impressive. The text messaging campaign launched by Fahamu can be seen as pioneering work, as such campaigns have since become an important tool for NGOs with sufficient resources (Asuncion-Reed 2007).

TOXIC WASTE SCANDAL IN COTE D'IVOIRE

In August 2006, a scandal flared up in Côte d'Ivoire when a ship unloaded toxic waste in the capital Abidjan (Bundesregierung 2006a; University of Hamburg 2006): the toxic waste was handed over to Ivorian firms that then dumped it illegally in public areas. The president placed the blame on government members, ultimately forcing the entire cabinet to resign. Only few local media raised relevant issues such as the stake held by the president's family in various waste disposal companies. Such background reports were published on the websites of opposition newspapers, however; these were picked up by foreign media and subsequently prompted further investigation in Côte d'Ivoire.

GLOBAL VOICES

Global Voices Online (www.globalvoicesonline.org) is an NGO that is based at a university in the USA and supported by the news agency Reuters. As part of a globally-oriented news offering, reports with links to the sub-Saharan blogosphere are published on an almost daily basis. Although of course there are many other tools for searching for African blogs, the support provided by Reuters and the editorial back-up do help raise the profile of sub-Saharan blogs, on-site reports and, in general, African appraisals of the situation to the south of the Sahara.

AUTHORITARIAN REGIMES AND WAR ZONES   3.3.3

Given the fact that the use of mobile telephony tends to be relatively high in comparison to the Internet (and especially in view of its success stories, e.g. in China), it would appear that text messaging has the greatest potential for political campaigns and protests in countries under authoritarian rule. Nonetheless, the Internet can play a useful role when it comes to organising such campaigns and protests and generating additional awareness of them. Political refugees

from sub-Saharan Africa who are prevented by North African states from continuing their journey to the EU report that they not only use modern ICTs to organise their everyday lives in the difficult conditions of the »unofficial reception camps« there, but also take advantage of the Internet to continue their political opposition activities (Boukhari 2007).

In recent years, however, authoritarian regimes (in the Islamic world and in East Asia in particular) have taken increasing action to counter use of the Internet as a political public sphere in their countries. In Islamic states, such steps are intended to prevent not only the expression of explicitly political opinions, but also undesired cultural activities and contents. Besides international reporting, which has now become extensive and is supported particularly by the online editors of renowned newspapers, this issue is focused on by NGOs (e.g. Reporters Without Borders, who also offer practical help; Reporters Without Borders 2005), academic actors (e.g. the Open Net Initiative) and civil society networks (e.g. during WSIS 2005, held in Tunisia, a country that takes drastic action against Internet authors), as well as »Web 2.0« activists and »bloggers« themselves. The potential that the Internet offers for government critics in the public sphere and for interconnecting them is illustrated, for example, by what is happening in the Islamic countries. Liberal democratic, and indeed Islamist opposition forces there have created well-networked online presentations which in some cases reach a wide readership. In countries like Iran and Egypt, the blogosphere has now become an important element of public political opposition. Among the measures taken by authoritarian regimes are the following:

> direct repression (e.g. imprisonment) of bloggers and other Internet authors who stand up for their right to freedom of opinion (e.g. in China, Iran and Tunisia; CDU/CSU 2004);
> conditions imposed on Internet Service Providers and cyber café owners (e.g. a decree in Iran to reduce bandwidths in a targeted fashion in order to prevent access to foreign films, and in China the successful involvement of Western ICT companies like Yahoo in the criminal prosecution of dissidents; Bundesregierung 2006b; Pain 2006);
> measures, ostensibly designed to protect young people and supported in some cases by parents, that specifically prevent Internet use by children and young people (e.g. paramilitary-style re-education camps in China);
> various attempts to use IT to monitor or prevent Internet communication and web research (for an overview of the forms the various methods can take and their limitations, see http://opennet.net/about-filtering).

The latter measures include the monitoring of e-mail communication and the filtering and blocking of political content offered online. A current study by the Open Net Initiative (http://opennet.net) has found that a total of nine states worldwide pursue extensive and, in some cases, full-scale filtering and blocking.

Added to this are cases of temporary intervention (e.g. during elections), a number of states that are suspected of filtering or blocking political online content or that carry out such activities in isolated cases, and (above all in the Islamic world) measures implemented against websites on moral grounds, including for example the blocking of websites with feminist or gay and lesbian content. If other measures are factored into the equation (conditions imposed on providers, legal regulations, monitoring of e-mail communication), the number of states that restrict Internet communication rises considerably.

Filtering and blocking of political online content has so far been a rare occurrence in sub-Saharan Africa, presumably to some extent because of a lack of attentiveness and knowledge on the part of authoritarian regimes. Severe measures that also affected non-political blogs have been implemented, however, in Ethiopia (http://opennet.net/research/profiles/ethiopia; University of Hamburg 2006); in this case the main target was the websites of the opposition and critical blogs. They took place against the backdrop of a very low Internet penetration rate in the country (0.2 % of the population in 2005). Possible reasons for the considerable censorship measures are the country's geographical proximity to Islamic states that rely heavily on Internet censorship, and the fact that it is precisely the opposition that makes extensive use of the Internet. As the Internet grows in importance, the situation in sub-Saharan Africa – which on the whole can be seen as fairly unproblematic – could change. China has allegedly already supported Zimbabwe in measures directed against the political public sphere on the Internet (Pain 2006).

Zimbabwe has already adopted a law to control Internet communication that could lead to a decline in the country's use of the Internet for political purposes (AMDI 2006a). As far as one can tell, there has not been any filtering or blocking of online content there yet, though e-mail communication has been subjected to checks and what were blatantly reprisals were taken against visitors to a cyber café from which, allegedly, an e-mail insulting President Robert Mugabe had been sent (http://opennet.net/research/profiles/zimbabwe). By sub-Saharan standards, the proportion of the country's population that uses the Internet is very high (approximately 10 %). Accordingly, there are a considerable number of political websites relating to Zimbabwe, and the country's political development is also discussed and analysed in many other African and Africa-related online forums. An interesting dual form of counter-public sphere can be noted here: many blogs and other websites break with the widespread consensus among political elites with pan-African aspirations who, through their shared roots in the fight against colonialism, and presumably for reasons of political power, tend to refrain from criticising the anti-democratic policies of other African governments too harshly. With reports from and about Zimbabwe, African groups and private individuals use the Internet to create a political public sphere in opposition to the regime. Access to the exile newspapers of banned political parties is of

particular interest (University of Hamburg 2006). At the same time, however, the Internet also gives one the opportunity to become acquainted with the stance held by the regime's defenders and with the opinions of those who make no bones about naming the errors and crimes of the regime yet question the motives of many »Northern« critics, making reference among other things to the fact that they ignore human rights violations in other African states. From the perspective of media development co-operation, the view held by Brenda Burrell, technical and ICT director of the NGO Kubatana (www.kubatana.net; www.bridges.org/case_studies/349) is worth noting: given the government ban on direct funding of non-state media, she is against providing direct financial support to state media yet is in favour of allowing journalists who work for such media to become involved in projects for training and continuing education in ICT use (AMDI 2006a, p. 65).

An Internet public sphere can play an important role when prolonged conflicts have become entrenched within society and are pursued in parallel via the media (especially because of the influence of the diaspora) (University of Hamburg 2006). In such cases, social negotiation, that is to say dialogue between groups within society, only takes place to a limited extent (e.g. Bernal 2005), above all among dialogue-oriented members of the diaspora; such negotiation appears to be far less marked than it is in relatively liberal states where there is no open conflict. The Internet also presents new opportunities for propaganda on the part of »political perpetrators of violence« (University of Hamburg 2006): during the war between Ethiopia and Eritrea, a parallel »Internet war« was waged, with disinformation and pictures of tanks bathed in heavenly light and of destroyed enemy equipment. Both states sought advice in this connection from American public relations agencies. NGOs such as Fahamu (Chapter IV.3.2.3) encourage research into how ICTs (e.g. radio during the genocide in Rwanda) are used to disseminate political, racist and religious hatred. ICTs and the media, however, can potentially also play an important role in preventing social conflicts and improving the flow of information during wartime. It would make sense to install ICT-based warning systems for populations in war zones, helping them escape or defend themselves in case of need.

THE INTERNET IN NATIONAL POLITICAL PUBLIC SPHERES   3.3.4

How important is the Internet (as compared also with other ICTs and the mass media) for national political public spheres in sub-Saharan Africa? The following section will attempt to shed light on this question by examining Benin, a country that is regarded as being politically free and, in Africa, is also held up as a shining example of press freedom (Reporters Without Borders 2006), and by looking at the example of the crisis-stricken democracy in Nigeria. These are countries with above-average or average rates of Internet use by sub-Saharan

African standards (approx. 5.5 % or 425,000 users in Benin; over 3 % or 5 million users in Nigeria; cf. Chapter III.) in which national elections took place in 2006 (Benin) and 2007 (Nigeria).

BENIN

Use of the Internet for political purposes in Benin has recently seen dynamic development (for the presentation that follows, see University of Hamburg 2006), although this phenomenon is by no means new. For example, when former minister Idelphonse Lemon was suspected of corruption and mismanagement in 2001, he set up his own website in order to put across his view of these accusations and, above all, to make a plea to Benin expatriates for support. Benin's leading newspapers and magazines have, or at least have had, an Internet presence. Their websites, however, tend to offer only a selection of articles, although they do publish official announcements and press statements. As in other countries, Benin has several private online media portals, although some of these limit themselves to articles on the ICT sector and ICT policy.

A remarkable example of how the Internet can be used to generate a counter-public sphere is the so-called »Initiative Elan« in 2004. Supported by donations, the initiative was launched by a group of intellectuals, business people and artists, and may be regarded as an important expression of the will of Benin's civil society to promote democracy. With its slogan »Touche pas à ma constitution!« (»Hands off my constitution!«) it successfully attempted to block a constitutional amendment that would have allowed the then president to remain in office for a third term. The campaign's core element involved displaying posters emblazoned with the slogan throughout the capital city. The awareness that this generated was used in a press conference to publicise the intentions of the campaign's organisers, who were now appearing in public. Simultaneously, a highly-frequented website went online, serving primarily as a gateway to the international public sphere and as a source of background information. According to the organisers, the website was also intended to express the serious, professional nature of the campaign in order to counter any attempt on the part of the government to play it down. They admitted that the posters had a much greater impact, but said that they were far more expensive than the website.

The presidential elections in 2006, in which the incumbent no longer competed, led to a relatively high rate of Internet use and diversification of online content in Benin. There were numerous politically relevant articles, candidates with their own websites, election canvassing via e-mail and civil society statements over the Internet (e.g. an »appeal by civil society« between two ballots). Use of the Internet – unlike other audiovisual media – was also subjected to no form of control or regulation whatsoever during the elections. Almost all presidential candidates had websites; many of them used e-mails for the purposes of mass canvassing.

Four candidates, among them the ultimate victor and the runner-up, had set up their own blogs that were frequently updated; this is remarkable even by European standards (Coenen 2006). For its part, the government set up an election website to introduce all the candidates and provide details of their career paths and manifestos; portraits of the candidates, most of them positive and written by well-known journalists, were gathered together in a special section. Intensive debates on the elections took place on private online portals. Characteristically for sub-Saharan Africa, many of the individual candidates' websites and indeed private online portals were geared primarily towards Benin expatriates, some of whom played an active part in online debates. Furthermore, the Internet contributed to the creation of an oppositional, counter-public sphere: for example, a press statement about the elections by a civil society umbrella association was posted on the Internet via private online portals shortly after the second round of the election, and was distributed using mailing lists. Finally, domain names of other candidates were purchased in advance, probably by those working for Thomas Boni Yayi, a candidate who was then elected president, to make it more difficult to find their websites. The Internet has also been regularly used in the campaigns he has run since taking office (especially for e-mail circulars). A new government organ is the newspaper Beninhuzu, which appears both online and in print.

NIGERIA

It is often recognised that Nigeria, by far the most populous and oil-rich country south of the Sahara, has begun to some extent to face up to its responsibilities as a regional power since the end of the military dictatorship in 1999; elections are held, activities to combat massive corruption have been launched, and the media are still relatively free. One core problem, however, especially during election campaigns (Lewis 2007), is the tensions, some of them religiously-charged, which exist between the numerous ethnic groups and whose flames are fanned by criminal militias and politicians. The introduction of the sharia and Islamist tendencies in the north have in particular led to tensions. Another of the country's core problems, likewise exacerbated by ethnic conflicts, is the catastrophic situation in the oil- and gas-rich and densely-populated Niger Delta, where the economic, political and ecological devastation has taken on extreme dimensions. In view of the growing importance of Nigerian oil for the world market, the developments in the region would appear to be a cause for concern from a global perspective, too. Besides violent disputes between ethnic groups, attacks of the security forces employed by both the state and foreign businesses have been observed since the end of the 1990s, and increasingly since 2006. This has culminated in well-organised guerrilla attacks on corporate facilities (e.g. those of Shell) and the kidnapping of staff of Western and Asian companies.

Nigeria's Internet community has already reached sufficient size for the Internet to constitute a varied political public sphere. The potential for further growth appears considerable, especially in the rapidly-expanding cities. Furthermore, a large number of leading national newspapers have online editions, as in other countries south of the Sahara. Discussion forums play a lesser role; articles by journalists clearly predominate, and there are a striking number of academic articles. The degree to which journalists are susceptible to bribery can be assumed to be high in Nigeria (AMDI 2006b). Political parties are less widely represented on the Internet, and little priority would appear to be given to updating web content outside election campaign periods. Discussion forums are rare here, too. However, various large online portals exist in which discussion forums either play a central part or at least constitute a separate category. Admittedly, the political and ethnic dividing lines are reflected in separate portals, yet controversial and in some cases rational discussions and networking between political adversaries and above and beyond ethnic groups also come about (e.g. http://Biafra nigeriaworld.com). A variety of Nigerian NGOs and grass-roots groups likewise maintain an Internet presence with well-designed websites, focusing for example on the disputed initiative for a freedom of information law or on state reprisals against journalists and media companies (e.g. http:// mediarightsagenda.org). It is noticeable, however, that the web publications of certain key NGOs offer limited scope in terms of content (e.g. www.tmgnigeria.org). In a survey of 51 civil society organisations (in urban and rural areas), 40% said they had their own Internet access, 58 % have a website, 47 % use feedback from their websites in their work, and 70 % use mailing lists (Sesan 2007). The number of NGOs specifically working on media issues and ICT4D is very low compared with the total number of NGOs active in Nigeria (AMDI 2006b). One Nigerian NGO uses text messaging, for example in partnership with a mobile phone provider, to attract a large number of mobile phone users to its cause (the fight against HIV/AIDS) (Sesan 2007). Increasingly, private individuals and small networks are contributing to the political public sphere on the Internet through blogs and other personal websites (e.g. www.nigerianbloggers.com). Broadly speaking, Nigeria's numerous political and ethnic currents are reflected on the Internet, where their representatives discuss topics such as the historic Nigerian kingdoms, colonialism, the history of the civil war, the country's more recent history, and its current situation. Guerrilla activities and kidnappings in the Niger Delta in 2006 and 2007 were announced to Western journalists in advance by e-mails written by people using pseudonyms, and questions from the journalists were answered by e-mail. Sympathisers of the movement used the comment facility in blogs written by Western experts on Nigeria to have their say.

The main purpose of the 2007 national elections was to elect a successor to President Olusegun Obasanjo, who had been in office since 1999. He had made a key contribution to Nigeria's democratisation and also achieved renown by co-

founding the international anti-corruption NGO Transparency International (Cholet 2007). The opposition, civil society observers and indeed the EU, however, had already expressed criticism of the election process when he was re-elected in 2003, questioning in particular the surprise election victory of the governing party in the Niger Delta. Nevertheless, the rate of assent to democracy in principle has stabilised at the high level of approximately 70% of those surveyed (Afrobarometer Network 2006; Chapter IV.1.2.2). Admittedly, satisfaction with the way democracy actually functions in Nigeria fluctuates considerably, and fell to a low of 25 % in 2005. This figure recovered to nearly 40% at the beginning of 2007, but is likely to fall again during the course of the elections because fair national elections are named as the clearly highest political priority by the survey's respondents (Afrobarometer Network 2007), while the election of the new president Umara Yar'Adua, who is supported by Obasanjo, and of several provincial governments continues to be criticised as irregular.

What role then was played by new ICTs before, during and after the elections? Given the relatively low overall use of the Internet by the Nigerian population, direct political information and communication online cannot have played any substantial part. According to a survey (Afrobarometer Network 2007), which admittedly did not take the Internet into account, it was above all radio and television, but also print media (flyers, posters and newspapers) and personal contacts which constituted the most important sources of information about the elections. It should be pointed out that the number of newspaper readers in Nigeria is relatively high, representing 39% of the population, and that the country is one of the pioneers in the area of the tabloid press, a new phenomenon in sub-Saharan Africa. In overall terms, respondents expressed a high level of dissatisfaction with their own political knowledge.

Well-informed, relatively prosperous groups of the population who use the Internet can act as information multipliers. Even in rural areas, supplied with Internet access mainly by NGOs, the cyber centres are apparently well-frequented (Sesan 2007). The wide-ranging reporting of the elections by Nigerian newspapers, based on networks of domestic correspondents, maintained a strong online presence (http://allafrica.com/nigeria/). The online articles and opportunities for discussion provided by foreign media, particularly the British press, were also numerous and included local reports from Nigerian citizens. An important reason why newspapers have recourse to the Internet in Nigeria is the vulnerability of editorial departments (http://mediarightsagenda.org/attacks.html) to attack by security forces such as the country's domestic secret service that since 2005 has been classed by the NGO »Reporters Without Borders« as an enemy to press freedom. The Nigerian e-activists, however, were doubtless aware that the usefulness of materials offered online within Nigeria is still fairly low. Opportunities were seen above all in »watchdog« functions and as regards

the global public sphere, and less in use of the Internet to directly influence national public opinion.

Experiments conducted before and during the 2007 elections and involving a combination of computers and text messaging are worthy of note, especially in terms of their short- and medium-term potential (Eigen 2007). As far as can be seen, this represents a new development in sub-Saharan Africa. It is true that Africa was the scene of pioneering activities in the field of dual text messaging and Internet campaigns (Chapter IV.3.3.2), and the importance of mobile communication for election observing has long been acknowledged (as demonstrated, for example, by a donation of satellite phones by the German embassy in Lagos to the election observation network Transition Monitoring Group in 2003). Moreover, Ghana's citizens, for example, already used mobile phones in 2000 to report in election broadcasts by local radio stations on the obstacles that had been placed in their way in the voting process (Zuckerman 2007a). What is new for Africa, however, is apparently the combined use of text messaging and computers for the rapid collection of election observations. The Nigerian e-activists from the Network of Mobile Election Monitors (NMEM 2007; http://www.kiwanja.net/frontlinesms.htm; Banks 2007) report that they received roughly 11,000 text messages in total about the way the elections were proceeding. One specific advantage, they claim, is the chance to collect election observations in areas such as the Niger Delta, where the EU, for example, had not sent any observers for security reasons. In view of the numerous other reports of irregularities, the political relevance of the NNEM remained limited, yet the network is planning further activities. The potential use of text messaging and computers in future elections would appear to be of interest, as would the idea to carry out a monitoring project in which text messages about observed misconduct on the part of those in official positions would be collected and, after analysis, handed over to political authorities (NMEM 2007).

For the 2007 elections, a large quantity of original African content and a wealth of information were posted on the Internet. Besides views criticising the government, supporters of the governing party also had their say. Appealing in some cases directly to the diaspora, the latter sought to use the Internet to counter what they perceived as biased Western media reporting. In conjunction with the online reports of Western media, and supported by »Northern« ICT4D and »Web 2.0« activities, the Nigerian Internet community (including mass media with an online presence) made it possible for Nigeria's complex political development to be followed and commented on worldwide in an entirely new way. If one looks at the »Web 2.0« activities and Nigerian blogosphere in particular, the greater number of local reports on the elections and the critical analysis and discussion of the elections from a Nigerian and pan-African viewpoint represent an improvement on the mass media and its online offering. Bloggers, for example, contributed additional information to the controversial provincial elections

in April 2007. The strong web presence of the Nigerian press, established private online portals and the many online analyses conducted by African scientists and journalists, however, puts the relevance of »Web 2.0« as a whole into perspective.

Because of Nigeria's importance for the region and the relatively favourable conditions that exist in the area of ICT, concerted support of ICT use over many years would be the best way to strengthen democracy and civil society, perhaps in the form of an e-activism model project (Res Publica 2007; cf. Chapter VII).

OVERALL ASSESSMENT OF THE ROLE OF THE INTERNET 3.4

The following section presents key findings of the study relating specifically to the importance of the Internet for civil society actors and for the political public sphere in sub-Saharan Africa. In general terms it may be maintained that the use of old and new ICTs is regarded by a far wider group than simply ICT promoters and e-activists as being essential to their own work and to political action.

MINORITY MEDIUM WITH SCOPE FOR BROAD PUBLIC IMPACT 3.4.1

With a penetration rate of just under 3% of the population (in 2005), there is no doubt that the Internet remains a minority medium, essentially limited to elites. Despite the rapid growth in user numbers in many places, it has a long way to go before it can be generally seen as a medium for political information and communication with broad public impact, even if one takes into account the fact that Internet users can act as multipliers.

If one considers the differences that exist within sub-Saharan Africa, however, a more nuanced picture of the public impact of the Internet emerges: while the Internet penetration rate in some countries is less than 1 % of the population, some states show much higher rates. This is probably due in some cases to governments and development co-operation taking action at an early stage. In any case, the differences are striking, in terms of both the penetration rates and absolute user figures: countries that stand out with respect to the latter are South Africa and Nigeria with an estimated five million or so users each, Sudan (2.8 million), Zimbabwe (1.2 million), Kenya (1.1 million) and Benin, Ghana, Senegal and Uganda (each with between 400,000 and 600,000). All other populous countries have considerably lower penetration rates than these; Ethiopia and Congo, for example, each have approximately 150,000 users.

The TAB project identified a series of African and international online services intensively used for political debate by Africans in sub-Saharan Africa or by the diaspora. It is clear that the Internet, wherever access is reasonably inexpen-

sive, is used in many different ways, just as it is in the »North« (University of Hamburg 2006), and is by no means used exclusively for topics of high relevance to development. There are grounds to assume, however, that a considerable number of users take advantage of the Internet for political reasons, quite independently of the work of NGOs. For example, the political websites of individuals and small groups (especially in populous countries with above-average Internet penetration rates), when added together, already create Internet public spheres of significant dimensions. The cautious hopes to which the growth in Internet use gives rise are expressed by a participant in a heated political debate on a Benin web portal as follows: »Today we can use the Internet to communicate our ideas. This is already a small step forward. Be reassured: our generation will not allow itself to be dominated as our parents' generation did.« (University of Hamburg 2006, p. 132). In such discussions the Internet is used by Africans to exchange views with one another on topical and indeed historical issues of political relevance. This kind of pan-African communication (involving the diaspora) may not be entirely new if one considers the history of anti-colonialism and of recent decades. All the same, the Internet allows this communication to take place more easily. As user numbers increase, it can also encompass broader swathes of the population in sub-Saharan Africa and be followed with greater ease by observers worldwide. The political benefits of the Internet for the diaspora is that this group of actors, with their considerable resources and international contacts, can be reached directly and provided with reports from their homeland. Ideally, online forums of the diaspora itself can enable an exchange between hostile groups, although they can also further entrench existing dividing lines by having separate websites for different political or ethnic groups, for example, or because of the excesses made possible by anonymous Internet communication (such as hate speech). The growing importance of the African Internet public sphere is beginning to be reflected in increased interest on the part of governments. As Grätz points out (University of Hamburg 2006), politicians in Benin, for example, are also using devices such as blogs that have only recently come into use even in developed countries (Coenen 2006).

KEY ROLES FOR INDIVIDUAL GROUPS OF ACTORS   3.4.2

In sub-Saharan Africa there is a whole host of civil society organisations, projects (including those put in place by development co-operation), groups, individuals and media stakeholders for whom the Internet already plays a central role (or could play such a role given better conditions for use). To this may be added the wide use of the Internet by transnational networks based in this region of the world and by the diaspora. The key functions offered by the Internet include easier transnational exchange (where physical distance is irrelevant) and self-portrayal through websites, the use of the online information reservoir, the

creation of a political public sphere and the mobilisation of supporters and, in the case of some actors, the improvement of internal networks.

The mere fact that having a website is frequently seen as a sign of professionalism is in itself enough to make the Internet attractive. Moreover, to achieve an »eye-to-eye partnership« with »Northern« actors (especially in development cooperation where NGOs are concerned) it is extremely useful to be able to use e-mail. Transnational communication is also essential for actors who have a matter they wish to communicate to the international, pan-African or national public sphere. It is to be observed that civil society networks specialising in ICT form a diverse and closely interwoven ICT- and Africa-based Internet public sphere that has continued to thrive even after the end of the WSIS process. Their specific competencies are increasingly benefiting the activities of African civil society, as the example of the women's movement shows.

Moreover, the Internet is often a useful complementary medium when competing for attention and for a presence in the political public sphere: e-mails play a central role in political debates and are used to send information to large numbers of people, which is why many actors have long made active use of mailing lists. The Internet can also serve as an inexpensive supplementary means of reaching the general public (e.g. as compared to newspapers, flyers or posters). It has a relatively low public impact, but does reach potential information multipliers and influential actors, allows abundant information to be made publicly accessible and offers a high level of interaction. Among its risks are new opportunities for propaganda, communication and recruitment on the part of political fanatics.

By using the Internet in conjunction with other ICTs, some organisations can improve internal networks and the general efficiency of their work, especially when they have long-distance partners. The Internet also plays an important role when it comes to obtaining information that is then to be passed on in a different way. In journalism, it is already an integral part of the working day in many places: if providing an online edition of established print media is merely a supplementary advantage (when one thinks, for example, of the diaspora), for journalists themselves, especially those in rural areas, the Internet has become a vital means of research and communication. Moreover, an anonymous online publication on politically sensitive issues is relatively safe for the author.

The results of the TAB study show that the Internet, even for groups with »Internet affinity«, often only has a significant political benefit when combined with other ICTs. In the area of e-activism, for example, it would appear to be precisely a question of moving away from a blinkered focus on Internet communication and towards linking up with successful uses of other ICTs and media (such as the publicising of election observations on radio programmes that allow citizens to phone in reports of their election experiences). This does not mean

renouncing the Internet, however: even if mobile phones are often the preferred means of collecting information and radio is the preferred means of disseminating it, the Internet allows a large quantity of information to be made publicly available and the campaigns themselves to be organised. Particular potential is offered here by the combination (in technical terms, too) of text messaging and the Internet.

ICT USE IN INDUSTRY   V.

Networked computer applications in industry are relevant on the one hand to internal, business-oriented needs and, on the other, to cross-company, trade-oriented requirements. It is hardly surprising that these applications are not particularly widespread in Africa as compared with most of the countries in the northern hemisphere. Not only are the conditions for the deployment of ICTs poor (inadequate ICT infrastructure and ICT qualifications); even the fundamental conditions for business are not computer-friendly: the southern African economy is still largely agriculture-based, with the informal sector dominating both in the country and in large cities. Trade, transport and transaction infrastructures (financial payments, banks) are inadequate virtually everywhere. These do not represent favourable conditions for industry, and even less so for advanced interconnected digital applications.

Given that this is the case, it would appear to make little sense to promote the deployment of ICTs solely in the business domain. Only if this is enshrined within a comprehensive policy of economic development with a long-term outlook can the potential be tapped that doubtless exists for the economy and only then is it conceivable that e-business and e-commerce could develop and catch up. It is interesting to speculate, however, whether the very fact that the starting conditions are poor might act as an incentive for creating particularly innovative ICT solutions and, possibly, even applications not to be found in developed countries. Such phenomena will be discussed with reference to the term »leapfrogging«. Examples from the domain of financial transactions and banking services will be presented at the end of Chapter V (Chapter V.3), but first some basic information about industry south of the Sahara will be provided (Chapter V.1), followed by a discussion of the topics of e-business and e-commerce (Chapter V.2).

INDUSTRY AND TRADE IN SUB-SAHARAN AFRICA   1.

Africa south of the Sahara is the region of the world with the lowest economic output. While the member states of the Organisation for Economic Co-operation and Development (OECD) recorded an average per capita gross domestic product (GDP) of 27,571 US dollars in 2004, sub-Saharan Africa, at 1,946 US dollars (adjusted in each case for purchasing power parities), achieved only 7 % of this figure. This development has been negative since the mid-1970s in particular. The average annual rate of per capita GDP growth between 1975

and 2004 was -0.6 %; the same figure in the OECD states was +2.0 % (UNDP 2006, p. 334).

As Figure 5 shows, sub-Saharan Africa accounts for 11% of the global population, yet generates only 2% of gross national income (GNI) (taking purchasing power parities into account). The OECD countries make up 18% of the world's population, while their share of gross national income is 57 % (UNDP 2006, p. 300, 334).

FIG. 5   SUB-SAHARAN AFRICA'S SHARE OF THE GLOBAL POPULATION AND
                                OF GROSS NATIONAL INCOME IN 2004
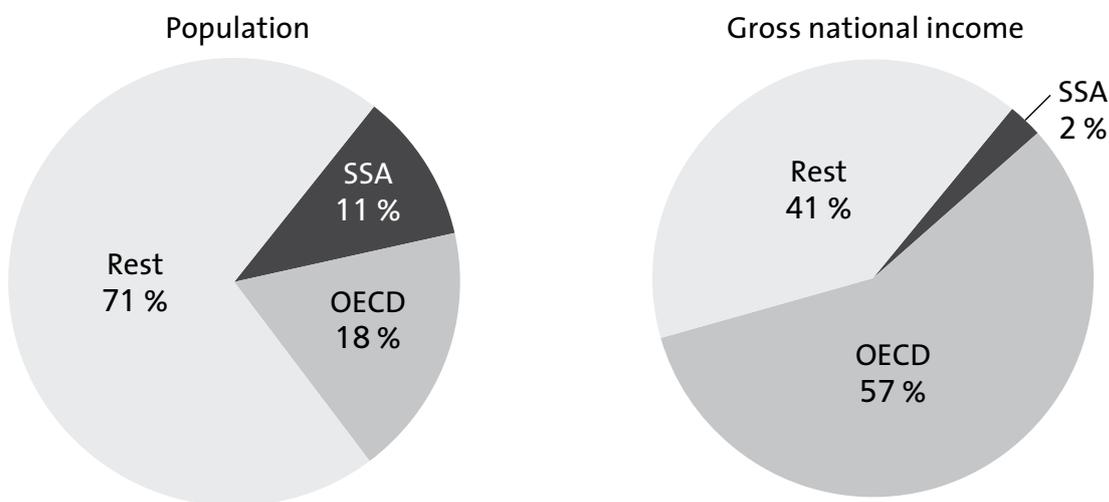
Source: TAB; own calculations and pie charts based on UNDP 2006, p. 300 and 334

Only recently has there been a noticeable improvement in economic growth rates. Sub-Saharan Africa's price-adjusted GDP rose by 3.5 % in 2002, by 4% in 2003, by 6% in 2004 and 2005, and by 5.4% in 2006. The International Monetary Fund (IM) expects growth as high as 6.7% for 2007 (IMF 2007, p. 4), a figure that Germany, for example, has not achieved for a long time. This gratifying level of economic growth in Africa in recent years, however, is highly dependent on the rise in global demand for oil and other natural resources, and on the increased prices for these products. It scarcely reflects any development towards a »modern« economic structure. Yet even these growth rates are insufficient, the IMF believes, to achieve the Millennium Development Goals (Chapter II) by 2015 (IMF 2006, p. 5).

Africa's economic activities continue to be shaped by a population working in agriculture or the informal sector and, on the whole, living in rural regions. While 75% of people in OECD countries live in urban areas, this figure is only 35% in sub-Saharan Africa (in 2004; UNDP 2006, p. 300). Even in 2001,

57.3 % of Africa's economically active population was still employed in agriculture; the figure was as high as 70 to 80 % in Central and East Africa (Brockhaus 2007; Schliephake 2001). That Africa has largely failed to achieve industrial development in recent decades is also evident from the fact that industrial production in Africa has not risen as a proportion of global production since 1980 (1980 0.9 %, 2003 0.8 %), whereas developed countries have been able to increase their share from 16.5 % to 23.7 %. China had a particular bearing on this growth, increasing its share of global industrial production from 3.3 % in 1980 to 8.5 % in 2003 (UNCTAD 2006b, p. 181). The situation in terms of scientific and technological development is much the same (Chapter VI).

Africa's trade situation is likewise problematic. In 1980, Africa still contributed 5.4 % to global exports with processed raw and industrial products. This figure dropped to 2.6 % in 1990 and continued to fall to 1.8 % in 2000, only rising slightly to 2.0 % in 2003 (UNCTAD 2006b, p. 181). Sub-Saharan Africa's share of global trade as a whole fell significantly from 3.1 % in 1950 to 0.85 % in 1999 (Brockhaus 2007 online). This has to do not only with a lack of economic development, poor trade infrastructure (roads, ports) and insufficient competitiveness, but also with global and bilateral trade agreements that are dominated by the interests of industrialised countries. Textile exports from African countries to the USA and Europe, for example, have declined significantly, either because existing trade agreements were terminated or because they expired (e.g. the multifibre agreement) – mostly to the advantage of China (IMF 2006, p. 6; for general information about the importance of international trade from a development perspective, see UNDP 2005a).

As far as the target markets for sub-Saharan exports are concerned, Europe's share (EU-15) fell markedly from 60 % in 1990 to 37.3 % in 2005, while China's rose from 0.6 % to 12.8 % (Fig. 6; IMF 2007, p. 41).

From Germany's viewpoint, trade with Africa is less important than with other regions of the world. Just 2 % (2005) of German foreign trade (imports and exports) is conducted with Africa. The increase in recent years is attributable primarily to price rises for imported oil and other basic resources from Africa, and not to actual growth in terms of quantity. Among African countries, the Republic of South Africa is Germany's most important trading partner. Of the total volume of trade between Germany and Africa in 2005 (28 billion euros), the Republic of South Africa accounted for 35.9 % (Gehle/Rosenow 2006; Monnerjahn 2006).

FIG. 6   TARGET MARKETS FOR SUB-SAHARAN AFRICAN EXPORTS 1990 AND 2005

1990

China
0.6 %
Asia excl.
China
11.7 %
USA
27.4 %
EU-15
60.3 %

2005

Asia excl.
China
15 %
China
12.8 %
EU-15
37.3 %
USA
34.9 %
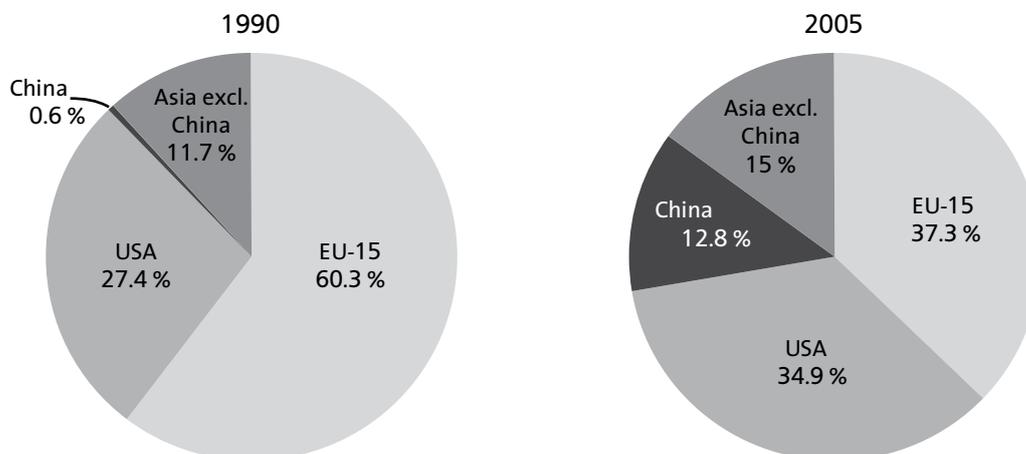
Source: TAB based on IMF 2007, p. 41

When assessing the economic situation in sub-Saharan Africa, the marked regional differences also need to be taken into account. Although the Republic of South Africa, for example, accounts for only 6% of Africa's population south of the Sahara, it generates roughly a third of the region's gross national product (GNP) (IMF 2006, p. 15). The development gap between the Republic of South Africa and countries such as Burkina Faso, Guinea Bissau, Mali, Niger or Sierra Leone is enormous. With a score of 0.653, South Africa ranks 121st in the UNDP's »Human Development Index« and has a per capita GDP of 11,192 US dollars (after purchase power parity adjustments). The other countries listed above, with scores of between 0.349 and 0.331, occupy places 173 to 177 at the bottom of this ranking list. Per capita GDP in these »least developed countries« is between 561 and 1,169 US dollars (after purchase power parity adjustments), around a twentieth to a tenth of the level in the Republic of South Africa (UNDP 2006, p. 285 f.).

The IMF groups the countries south of the Sahara according to geographical position (coastal versus landlocked countries) and according to whether they export or import oil. The coastal countries achieve a per capita GDP of 1,072 US dollars (2005), while the figure for the landlocked countries is just 189 US dollars. Nevertheless, there are »beacons of success« among these landlocked countries, such as Botswana with a per capita GDP of 5,186 US dollars. Botswana is often regarded as a success story of African industrial development. The country's success is based to some extent on its close economic co-operation with South Africa, forward-looking social and economic policy and, above all, its huge diamond wealth. Critics point out that even Botswana has not managed to introduce extensive industrialisation and that social differences and poverty levels in the country are, if anything, rising again (Kappel 2005).

CURRENT ICT USE IN INDUSTRY   2.

The use of information and communication technologies, that is to say telephones, fax machines, computers and the Internet, is vital for those African companies that have direct or indirect links with international commercial enterprises and are active in global markets.

A Nigerian food or flower wholesaler has no choice but to check international prices on a daily basis and give his international customers up-to-the-minute information on what he has to offer. A Tanzanian hotel chain wishing to attract international travel organisations must hook its hotel booking system up to global systems. A South African automotive supplier will have no chance of success without IT-based communication and co-operation, encompassing everything from the exchange of design and product data to integration of the order handling process into the corresponding procurement systems of major car manufacturers. Textile producers and the energy and primary sectors must also maintain close electronic contact with their consumers abroad. Naturally, the African branches of major international banks are connected to the relevant global electronic payment and stock exchange systems, while software developers in Africa (Chapter VI) will certainly communicate and co-operate with their clients and parent companies in the northern hemisphere by e-mail and electronic data interchange. The use of IT networks is also generally taken for granted or required in the area of press and radio (Chapter IV).

Even if the IT infrastructure in Africa is inadequate by the standards of developed countries, there are sufficient opportunities in the major African cities for this category of commercial enterprise to satisfy their IT requirements, using in some cases special technologies (e.g. satellites). The frequently lamented shortage of skilled labour is likewise not a real problem for these globally oriented companies, as they recruit their staff from around the world.

This is by no means intended to give the impression that improvements in ICT use are not necessary in this area of business. Essentially, however, the question of whether or not to use ICTs simply does not arise. An internationally active African company or a supplier or subsidiary of a multinational corporation either shows itself capable of resolving these problems or will not be allowed to play in this league at all in the long term. The real problem is rather that there are too few such African commercial enterprises with an international focus.

ICT USE IN INFORMAL AND FORMAL
SMALL AND MEDIUM-SIZED ENTERPRISES   2.1

The great majority of businesses in Africa are micro, small and medium-sized enterprises (SMEs). This is the sector of the economy that provides work for most of the workforce. How important is access to and use of ICTs for these companies? What differences exist between the informal and the formal sectors with respect to ICTs? Unfortunately, no official statistics or studies exist that cover large areas. However, »Research ICT Africa!« (RIA!), a network of African research institutions, has published a recent study of ICT access and use in SMEs in 14 sub-Saharan African countries, among them Nigeria, the most populous country, as well as Botswana and the Republic of South Africa, two of the countries with the most advanced economic development levels of all African states (RIA! 2006, see box).

RESEARCH ICT AFRICA! AND THE STUDY OF SMALL AND MEDIUM-SIZED ENTERPRISES

The RIA! network currently comprises 14 members, most of them universities, from as many African countries. The network is coordinated by the LINK Centre at Witwatersrand University in Johannesburg.

The study of ICT use in SMEs was carried out in the fourth quarter of 2005 and the first quarter of 2006 in 14 African countries. These were Ethiopia, Botswana, Ghana, Cameroon, Kenya, Mozambique, Namibia, Nigeria, Republic of South Africa, Rwanda, Zambia, Tanzania, Uganda and Zimbabwe. A total of 3,967 businesses were surveyed, among them 1,606 in the informal sector, 1,235 in the semi-formal sector, and 1,126 in the formal sector. The most important industries covered by the survey were retail and wholesale trade, including the motor vehicle industry (1,325 companies) and manufacturing industry (728 companies). All businesses had to have fewer than 50 employees, had to be independent (that is to say were not to be a subsidiary or branch of a larger company), had to operate with the aim of generating sustainable income streams, and required some sort of physical presence (shop, workshop) with an address and the possibility of establishing contact by post or by telephone. The formal sector was distinguished from the informal sector by an index value made up of the following criteria among others: payment of income tax and/or value added tax, bookkeeping, separation of business and personal finance, written employment contracts with staff.

Source: RIA! 2006

The study covers both the informal and formal sectors, and it is in the first place on this perspective that the following presentations are based (for more about the use of ICTs in small enterprises, see also Merlin/Vielhaber 2006, p. 70 f.).

Among the means of communication which were surveyed, namely post boxes, fixed line telephones, mobile telephones, fax machines, computers and the Internet, mobile phones rank top and the Internet ranks bottom in terms of access or availability. 83 % of all enterprises surveyed have access for business purposes to a mobile phone, and as many as 19 % have access to the Internet. One striking fact is that there is no difference between the informal and formal sectors when it comes to using mobile phones: the access level is the same in both. The modern means of digital communication, namely computers and the Internet, show very significant differences, however: while no less than 75 % of businesses in the formal sector have access to a computer and 42 % have access to the Internet, the figures for the informal sector are just 13 % (computers) and 3 % (Internet) (Table 5). In other words, for the majority of sub-Saharan SMEs in the formal sector at least, computers are seen as standard equipment, as is the Internet for a relatively large group.

TABLE 5			SHARE OF SMES WITH ICT ACCESS
	Informal sector	Formal sector	All
Mobile phone	83 %	84 %	83 %
Post box	34 %	77 %	54 %
Fixed line phone	24 %	83 %	51 %
Computer	13 %	75 %	40 %
Fax machine	4 %	58 %	26 %
Internet	3 %	42 %	19 %

Source: TAB; data compiled on the basis of RIA! 2006, p. 111 ff. Companies assigned to the semi-informal sector are not listed separately in this table.

Those who have *no* access to one of the technologies listed were asked how important they considered this technology to be (Table 6). 71 % of the relatively few businesses without a mobile telephone consider mobile phones to be important or very important for their business operations. What is more surprising is that 61 % of businesses without a fixed line telephone consider a landline connection to be important or very important, although 83 % of all respondents already possess a mobile phone. This – like other results of this study – would indicate that mobile phones do not fundamentally replace fixed line telephones, and that there continues to be relatively high demand for fixed line telephony.

Clearly, this demand is not being satisfied, which may be ascribed to a generally inadequate supply. If one compares the call costs of mobile and fixed line phones (using our own calculations based on the data in RIA! 2006), local fixed line call charges in the majority of countries under review are cheaper or much cheaper than the lowest mobile call rate. Even for national fixed line call charges, the costs are lower in the majority of countries than the lowest mobile call rate. The reason why there is a desire for fixed line telephony is thus that call charges tend to be cheaper.

TABLE 6	SMES THAT HAVE *NO* ACCESS TO A PARTICULAR ICT BUT CONSIDER IT IMPORTANT FOR THEIR BUSINESS
	Would be important or very important
Mobile phone	71%
Fixed line phone	61%
Computer	52%
Internet	41%
Fax machine	31%
Post box	26%

Source: RIA! 2006, p.114

Of those companies that do not possess a computer, only around half (52 %) consider one to be important or very important; for companies without Internet access, this figure is as low as 41 %. Businesses poorly equipped with ICTs, or lacking such technology entirely, thus show a clear preference for mobile and fixed line telephones, only listing computers and the Internet as a lower priority. Why is this the case?

The study provides a number of interesting points in this connection. If one considers that the owners of the businesses tend to be relatively well qualified – 78 % have a secondary or tertiary academic qualification – the low use of computers and the Internet is unlikely to be attributable to the frequently cited qualification hurdles. Essentially, it is cost considerations that count, as well as the perception that the technology in question is not needed (Table 7).

Nearly half the non-users of computers and the Internet cite high costs (48% and 45%) as the reason; nearly the same number believe they do not have any need to use these technologies (42 % and 44 %).

TABLE 7		WHY SMES DO NOT POSSESS A PARTICULAR ICT ITEM
	Too expensive	**No need**
Mobile phone	37%	50%
Fixed line phone	33%	45%
Computer	48%	42%
Internet	45%	44%
Fax machine	27%	60%
Post box	9%	78%

Source: RIA! 2006, p. 115

Having access to ICTs in principle is distinguished for the purposes of the study from actual use for business purposes (Table 8). Here too, the dominance of telephone-based communication is evident in the SMEs surveyed: 91 % of those businesses in possession of mobile phones use them for communicating with their clients.

TABLE 8   BUSINESS AND PRIVATE USE OF MOBILE PHONES AND THE INTERNET

	Informal sector	Formal sector	All
Use of mobiles by businesses with mobile phones for …			
Communicating with clients (sales)	89.2%	93.3%	90.6%
Ordering supplies (purchasing)	51.4%	68.9%	60.0%
Private use	66.7%	61.8%	65.2%
Use of the Internet by businesses with their own Internet access for …			
Communicating with clients (sales)	47.2%	78.3%	72.6%
Ordering supplies (purchasing)	25.0%	52.6%	46.3%
Private use	28.0%	42.2%	42.0%

Source: TAB; data compiled on basis of RIA! 2006, p. 119 f., tables 91 and 94; data for the semi-formal sector are not included

In businesses with Internet access, only 73% of its use is for the purposes of contacting clients. The differences are even greater in the informal sector, where 89% of businesses with a mobile phone use it for communicating with their clients, yet only 47 % of businesses with Internet access use the Internet to handle communication with customers (RIA! 2006, p. 119 f.). The same pattern is evident, albeit at a lower level, in communication with suppliers: the telephone is

more important than the Internet, and the difference is greater in the informal sector than in the formal.

The results of this study of ICT use by small and medium-sized enterprises in the informal and formal sectors in 14 African countries can be summarized as follows:

> The mobile phone is the dominant medium for business communication in both the informal and formal sectors.
> The relatively low use of fixed line telephones and the widespread use of mobile telephones does not mean that fixed line telephones are not considered to be important too.
> A relatively large number of those companies without a PC and access to the Internet consider these to be too expensive *and* not absolutely necessary; this is more noticeable in the informal than in the formal sector.

Buttschardt's (2006) regional analysis of the use of ICTs in the West African border region encompassing Benin, Burkina Faso and Togo supports and complements these results: there are for one thing only few (formal) enterprises in these economically less-developed regions that have any need of the Internet in the first place, namely a handful of larger cotton producers or cotton processing firms. Generally speaking, they can afford access to the Internet. According to Buttschardt, the main problem for economic development in this region is the low level of business activity, not the inadequate availability of the Internet. Throughout the informal sector, which dominates in the region, the question of ICT use virtually does not arise due to a lack of money. Only mobile phones – in those regions where a network has already been installed – have some degree of importance, as do the cyber cafés that exist in some places, where people can use a telephone and, in some cases, also have access to a PC and the Internet. In rural areas, potential is offered in addition by village mobile phone services funded by microloans (Chapter VII).

E-BUSINESS AND E-COMMERCE IN THE FORMAL SECTOR   2.2

In their study of the existing literature on the use of ICTs in the African economic sector, Merlin/Vielhaber (2006, p. 43) concentrate on the formal sector and on Internet-based e-business and e-commerce applications. They found use of e-business in African companies to be rudimentary. First and foremost, the Internet is used for e-mail communication, searching for information, and marketing (presenting information about the business on the web). Using the Internet to handle business transactions, on the other hand, is extremely rare.

They found that the main effect was that existing relations between suppliers and customers could be deepened and organised more effectively with the aid of

the Internet (Merlin/Vielhaber 2006, p. 44). Use of ICTs and the Internet could also bring about improvements in terms of internal communication within companies. Whether this produces general cost savings and increases efficiency in transaction costs is debatable. In this respect they found the study's results to be contradictory. This may be due in part to the fact that the periods of time analysed are too short and the level of use is still too low to allow reliable conclusions to be drawn.

Another factor influencing the form and success of Internet use is the respective branch of industry. Not all offer the same conditions for productive use of ICTs. For example, some branches of industry maintain relatively long-term manufacturer-supplier relations and involve only a small number of companies (e.g. automotive industry). These make less use of open electronic markets and price auctions, but do use company-specific data networks (extranets) and specialised industry applications based on the EDI (Electronic Data Interchange) standard. Electronic markets and price auctions play a much more important role, on the other hand, in highly fragmented industries with a whole host of suppliers and consumers (e.g. coffee). The properties of the product also influence the way ICTs are used. In industries in which buyers dictate the product specifications and check the type and quality of the production process (e.g. the clothing industry), long-term business relations are the rule. The same is true of markets in which sensitive, e.g. perishable goods (agriculture and horticulture) are traded. Here, too, permanent value-adding structures tend to exist, with preference given to tools like extranets and EDI applications. Where product information plays an important role in the industry in question, as is the case in tourism or the handicraft industry, website use increases as a means of providing access to a large amount of information in a simple and inexpensive manner (Merlin/Vielhaber 2006, p. 53).

Overall, this extensive study of the available literature leaves the impression that the situation in Africa in terms of e-business and e-commerce is not so very different from that in Europe and the USA; Africa – depending on country, industry and type of enterprise – simply lags a good five to ten years behind. The fundamental difference between developed countries and African countries is that the sub-Saharan economy is still largely dominated by the informal sector, for which the complex and highly formalised procedures of e-business are not relevant. The pressure to adapt exerted by the international community, supported by corresponding political initiatives, will in itself be sufficient to ensure that Africa's internationally-oriented businesses will continue down the »digital path«. Consequently, the specific need for development aid to promote the use of ICTs in the formal sector needs to be particularly clearly demonstrated.

OPENING UP NEW MARKETS, FINDING NEW CUSTOMERS   2.3

One of the key expectations linked with the use of ICTs in the economies of developing countries is that e-commerce will allow *new* consumers and customers to be found and business to be done more cheaply. One reason for these reduced costs is that middlemen can be cut out of the equation; ideally, the producer would enter into a direct business relationship with the consumer. This potential could be exploited both on the rural small-scale producer level and by larger agricultural and industrial producers wishing to participate in national, African or international trade. A series of success stories at both levels can be found in the relevant literature (IICD 2005), although objections backed by solid evidence are also expressed (Buttschardt 2006; Humphrey et al. 2004; Merlin/Vielhaber 2006, p. 43).

Buttschardt (2006), for example, in his study of ICT use in the less-developed regions of Benin, Burkina Faso and Togo, points to the fact that for rural small-scale producers and service providers, even if they were to have access to the Internet, doing business with the next largest city is not an information-based problem but a logistical one. Such producers, quite simply, lack their own transport capacities, and reliable, affordable haulage services do not exist. Furthermore, e-commerce in the sense of »long-distance trade« between partners without direct contact also requires a reliable payment infrastructure; in developed countries this is provided by banks, but it likewise cannot be taken for granted in the rural regions of Africa.

Humphrey et al. (2003 and 2004) have investigated the question of whether e-commerce between companies (known as business-to-business or B2B e-commerce) opens up new and cheaper access to the world market for producers from developing countries. This question was examined in relative detail for three developing countries, among them Ghana and South Africa. The focus was on two industries that play an important role in these developing countries: the textile industry and agricultural products and flowers. The answer to the question they raise is that open electronic markets in particular are not well suited to tapping new markets in international commerce.

The problems that arise are similar to those already mentioned above for rural areas: a lack of trust between businesses, inadequate logistic capacities, non-existent independent quality control, non-secure or unreliable payment systems. The idea that a Kenyan flower producer could use an open »e-marketplace« to place his flowers on the Amsterdam wholesale market is naive and ignores the complexity of these commercial processes. International trade requires more than a supply that meets a demand. The quality of the products must be verified, customs and tax formalities have to be dealt with. The supplier must be able to rely on receiving payment, and the consumer must be able to rely on receiving

the shipment. These intermediary functions have been performed hitherto by commercial, financial and logistics service providers, and these will also be required in future.

This by no means implies that the Internet plays no part in these processes or that it will not play a part in the future. It is important from a marketing point of view for producers to present the products they are offering on the Internet. For contact with customers, e-mail communication, as well as the telephone, is often particularly useful. As a rule, however, the Internet will not be sufficient to forge new, long-term customer relationships: this requires direct contact and local intermediaries, that is to say procedures that are already in place in these industries.

»If intermediaries and suppliers and buyers are tightly linked within the global value chains, they are likely to remain so, even as electronic means of facilitating trade are introduced. Despite the potential for global networking offered by the Internet, there is no *a priori* reason to expect that B2B e-commerce will replace conventional means of organising trade« (Humphrey et al. 2003, p. 30).

From their studies, Humphrey et al. (2003, p. 31 ff.) draw the following conclusions for economic policy in developing countries: priority should be given not to ICTs, but to developing the economy and establishing business relationships based on trust. The Internet and ICTs could be helpful, but improving traffic and transport infrastructures would appear to be more important, precisely in Africa. Planned legislation for e-commerce-specific regulations, they say, fail to take into account the reality of the business processes and their requirements. They also question the wisdom of giving high priority to the availability of broadband connections to businesses, at least for the purposes discussed here. As a rule, business-related communication does not require these bandwidths. Far more important are *reliable* telecom services, as failure of telephone or e-mail for several hours or even days can spell disaster for internationally active producers or traders in Africa.

E-MONEY AND M-BANKING: INNOVATIVE MOBILE-BASED APPLICATIONS   3.

During the course of the Internet and e-commerce boom in the mid-1990s, a discussion emerged about electronic payment systems and electronic money on the Internet. The idea was that the new methods of purchasing goods and services over the Internet required new electronic payment systems and that technological means were available to create »electronic money« outside the banking system to enable, for example, anonymous and cost-efficient payments. Ultimately, this failed to become established for two main reasons: first, politicians,

financial supervisory authorities and banks trusted the stability and security of the established financial and banking system rather than high-risk innovations that would increase competition by allowing new actors to enter the banking business; secondly, there was no real demand for such financial innovations on the part of customers, who after all could make their payments for online business transactions using conventional payment methods already in widespread use (bank transfer, credit card etc.), which in some cases were adapted to meet some of the new requirements of e-commerce (Böhle/Riehm 1998).

The situation of banking services and payment methods in the developing countries, especially in Africa south of the Sahara, is by contrast quite different. In Kenya, for example, only 19% of the population have a bank account (Rice 2007). In sub-Saharan Africa's most economically developed country, the Republic of South Africa, 16 million people, that is 48% of the adult population, have no bank account (Ivatury/Pickens 2006, p. 2). This extremely low availability of banking services not only makes it more difficult for these groups of the population to take advantage of opportunities for social and economic development, but also constitutes an obstacle to the economy as a whole.

In development policy discourse a certain amount of attention is therefore paid to the idea of using mobile phones, which are now relatively widespread in developing countries too, to handle banking and money transfer services (Ivatury/Pickens 2006; Lymann et al. 2006; Merlin/Vielhaber 2006, p. 68 ff.; Porteous 2006; Wishart 2006). Building on existing relationships between mobile network operators and their customers, additional financial services could be offered. There are no widely available alternatives (bank accounts, credit cards), as there are in industrialised countries, and accordingly there are no powerful economic coalitions wishing to protect their conventional systems against competition from the mobile phone sector. The use of mobile telephony for »e-money« in developing countries could thus prove to be the perfect example of »leapfrogging«, when phases of technological development are skipped.

The Philippines can be held up as a successful example of this application (the presentation that follows is based on Merlin/Vielhaber 2006, p. 69 f.; Wishart 2006). Two mobile phone providers, Globe and Smart, already have more than 3.5 million customers there using their »Smart Money« and »G-Cash« financial services. Under the »Smart Money« scheme, for example, a customer has to make a single visit to a Smart office to open an account. As soon as funds have been paid into the account, customers can use the text messaging function of their mobile phones to

> top up their pay as you go accounts;
> transfer money to and receive money from other Smart customers;
> transfer mobile phone credit to or receive credit from other people;

> › make cash-free purchases and pay bills in participating businesses;
> › receive international transfers from compatriots living abroad;
> › make withdrawals and deposits of limited sums of cash in participating shops (which used to sell pay as you go cards).

G-Cash works in much the same way, and offers a similar range of functions.

Two companies in South Africa have been offering their customers mobile banking services since 2005: mobile phone provider MTN, in co-operation with Standard Bank, with its MTN Mobile Money product, and Wizzit, a branch of the Bank of Athens of SA. Because of the stricter financial and banking regulations in place in the Republic of South Africa, both services are coupled to official banking corporations (the presentation that follows is based on Ivatur/Pickens 2006; Lymann et al. 2006). Wizzit was launched in December 2004, and was able to attract 50,000 customers in little more than a year. Customers can use their mobile phones to perform the following transactions, among others: money transfers between Wizzit customers, transfers to bank accounts, advance purchase of electricity and of mobile phone services.

In Kenya, the Vodacom subsidiary Safaricom offers a service it calls M-Pesa. As with Smart and G-Cash in the Philippines, M-Pesa works together with local businesses to enable cash deposits and withdrawals, and offers roughly the same scope of services. The system was officially launched in March 2007, with 10,000 customers participating.

The schemes underway in sub-Saharan Africa – there are several others that could be listed in addition to those mentioned above – are all at a very rudimentary stage, and it is difficult at present to predict their chances of success or failure. A distinction is generally made between bank-based and non-bank-based services. The regulatory frameworks that exist in the respective countries dictate whether one variant or another is used. Wizzit in South Africa is a bank-based solution, while M-Pesa is a non-bank-based »e-money service« provided by a mobile phone company.

Because the only way to top up one's electronic balance on a mobile phone, especially for the majority of customers without a bank account, is to make a cash deposit, one of the key conditions for the success of such systems would appear to be the establishment of a network of agents throughout the country that also covers rural regions as far as possible. Co-operation with post offices and shops is the obvious way forward. This network of local agents, however, has to be recruited, trained and financed out of revenues.

To reduce the risk of abuse, all these systems have low limits for transfers. Furthermore, in order to minimise the risk of default, no loans or overdraft facilities are provided. For the system operators, however, this considerably limits po-

tential revenues from transaction charges and interest on loans, and could jeopardise their business model.

m-banking throws up a number of legal and regulatory questions: Who is entitled to receive »electronic« deposits? What can be done to prevent such systems being abused for money laundering purposes? How can customer investments be secured if the service provider goes bankrupt? The response to these questions was if anything rather restrictive in the Republic of South Africa. Wizzit is an official product provided by a bank that raises the entry barriers for new investors in this area and possibly makes innovations more difficult. Many of the above questions still remain legally unresolved in Kenya; this can give rise to uncertainty for both private investors and end customers (Porteous 2006, p. 38 ff.).

It is also likely that bank accounts will become more widespread in the population as economic development continues, resulting in reduced demand for alternative and novel payment services. The new mobile systems also face competition from Internet-based payment systems like PayPal, which is now used by over 100 million customers worldwide. It is true that this requires the customer to have a bank account, yet payment between PayPal users in different countries can take place by e-mail without the direct involvement of a bank or money transfer service (such as Western Union). This could in principle prove to be an attractive and inexpensive option for Africans living abroad to transfer money to their home countries. With few exceptions, however, Africa to date remains a blank space on the PayPal map.

The fact that mobile phone penetration in many developing countries, among them the countries south of the Sahara, is much greater than provision of bank accounts and banking services, has led to the conclusion that this mobile phone availability allows the poor and rural population to be better served with mobile bank and payment services. There is a problem here, precisely from the perspective of small and medium-sized enterprises in Africa: according to the RIA study cited above, only 16 % of businesses in the informal sector have a current account; even in the formal sector only 61% have one (RIA! 2006, p. 123 f.). As far as further development is concerned, it will be particularly important to see how the established banks will react to these innovations and which path politicians will take between restrictive, security-oriented regulation and a less risk-averse approach to promoting innovation. Even if the described systems continue to become established, they are likely to remain niche products due to their limited functionality. It would appear doubtful that bank- and account-based payment systems could be »leapfrogged« in favour of m-banking and m-payment.

CONCLUSION   4.

After many years of stagnation and even decline, Africa's economic development has improved only in recent years, though this has come about not so much as a result of industrial development as on the basis of increased global demand for raw materials and oil and rising prices in these sectors. From a German perspective, Africa is not an important trading partner, while from an African perspective the importance of the EU in international trade is declining in favour of China and other emerging new economic powers.

In the countries south of the Sahara, too, the differences between the economic conditions in the »economic powerhouse« of the Republic of South Africa and the »least developed countries« such as Mali, Niger and Sierra Leone are extreme. Nonetheless, one can speak in overall terms of an economic structure that is strongly characterised by the rural population and by agricultural self-sufficiency.

In order to assess ICT use in the economy, both the telephone and the computer and Internet must be taken into account. When reviewing the fields of application, one must at least make a distinction between the broad mass of micro, small and medium-sized enterprises, the few larger companies and the tiny minority of internationally active businesses, many of which are the subsidiaries of multinational corporations. When looking at the many small and medium-sized enterprises, one must not forget the very large informal sector with its own laws and practices.

In small and medium-sized enterprises, the telephone is more or less the standard means of business communication, with mobile phones predominating. Even so, there is a relatively high demand for (inexpensive) fixed line telephones, which could also be used for fax and Internet. PCs and the Internet are much less widespread, especially in the informal sector. There is potential in the area of mobile phone services in rural regions for small businesswomen, for example, to improve access to ICTs in their villages with the aid of microcredit.

The major role played by the telephone in business communication has also resulted in a discussion of telephone-based economic services which, it is hoped, better reflect sub-Saharan conditions than Internet-based services do. One widely discussed proposal is for banking and payment services via mobile phone, which could close an existing gap in the payment transaction infrastructure. The few available systems, which are as yet not widely disseminated, are run either directly by banks or by mobile phone service providers. However, they operate on a credit basis only and are limited to small sums, which means that they cannot serve as a fully-fledged substitute for a bank account. Further development, especially of non-bank-based mobile payment services, will depend on the re-

sponse of the government to this innovation (in the sense of regulation) and on the influence of the banks, which generally have no interest in making life easier for rival new actors such as mobile phone companies that offer business and private customers independent financial transaction services.

Computers and the Internet are certainly widely used in the formal sector, although Internet use is dominated by information-, communication- and marketing-oriented applications, transaction-oriented ones being relatively rare. The latter are most likely to be found in subsidiaries and branches of international corporations or in the African suppliers to such multinationals. The question of whether to use computers and the Internet generally does not arise here, as this is taken for granted in international business relationships.

The risks of an economic strategy geared towards integration in international commerce and therefore necessarily requiring extensive ICT use (e-business, e-commerce) should not be ignored. By taking part in international electronic stock exchanges, African companies make themselves comparable to many others from developing and developed countries. This opens up opportunities, but also considerably increases the economic pressure. The companies thus enter a global economic terrain in which the trading volume cannot be infinitely expanded, so each new supplier has to compete with existing ones. Rather than getting involved in cut-throat competition, a supplementary or indeed alternative strategy might be to serve national and local markets within Africa or to try to serve niche markets in international trade with specialised African products.

The conditions for ICT use in Africa's export-oriented economy may not always be optimal and reliable. The costs of ICTs are generally also much higher than those in developed countries, putting African businesses at a disadvantage when it comes to international competition. The problem faced by the African economy, however, is not that ICT use represents a major hurdle for internationally-oriented African businesses, but that there are too few such companies and that the economic framework conditions are poor. Development aid should thus not aim first and foremost to promote ICTs in business, but to bring about sustainable economic development or, as Humphrey et al. (2003, p. 35) put it: »Commerce first, technology second.« The following are just a few examples of the bullet points that might be mentioned in this context: conclusion of the Doha Development Round in a way that is beneficial to Africa, bilateral trading agreements to promote development, qualifications and foreign investment.

EDUCATION, RESEARCH AND TECHNOLOGICAL DEVELOPMENT VI.

It is widely believed that ICTs play an important role within the so-called knowledge triangle of education, research and innovation. ICT enthusiasts have a tendency to place ICTs at all three corners of this triangle. Research in the ICT sector can benefit the education system (e.g. by creating new computer-centred learning concepts) and technological development (directly in the field of ICTs themselves, and indirectly through their enabling function for innovations in other fields). The use of ICTs in educational institutions produces benefits for research and innovation (especially by generating the necessary individual qualifications for academic work and efficient innovation systems). Finally, an efficient and innovative ICT sector also has a favourable effect on the research landscape (e.g. through co-operations in the ICT sector) and motivates people to learn (e.g. by presenting new labour market opportunities).

UNESCO, together with the G8, has placed the triangle model in the development policy context, likewise stressing the role of ICTs. Of particular importance are ICTs and especially the Internet in the overarching concepts of »information society«, »knowledge society« and »knowledge-based economy«. Here too, UNESCO and other central actors, especially via the WSIS process, have developed various concepts and issued programmes.

After eradicating extreme poverty and hunger, the provision of a full course of primary school education for all children is the second priority of the Millennium Development Goals (MDGs). The third goal, namely to promote gender equality, is the only one to target improvements in education: gender equality is to be achieved in primary and secondary education, preferably by 2005, and at all levels of education no later than 2015. The most important indicator for achieving the relevant targets in both MDGs is literacy rates. In principle, the prioritisation of education is undisputed in development policy discourse, as illiteracy is a huge obstacle to development. A well-educated population, by contrast, can have positive effects in many different ways. In view of the many years of inadequate success in primary education achieved by many developing countries, knowledge- and education-based development co-operation has been focused since the end of the 1980s on improvements in this area.

More extensive skills are essential, however, if people in developing countries are to be able to take part in globalisation processes and if efficient innovation systems are to be created in the »South«, yet little attention has been paid hitherto in international development policy discourse to tertiary education, science, research and technological development in developing countries. It is only re-

cently that greater importance has been attributed, for example, to the use and development of technology in Africa (especially with regard to the environment, energy and agriculture). More particularly, home-grown research and technological development in the »South« is only moving up the development policy agenda very slowly, despite the fact that the scientific and technological basis in developing countries would need to be reinforced by expanding local capacities (capacity building) in order to achieve almost all of the MDGs (UN 2005). For example, the indicators for the only technology-related MDG target (MDG 8, target 18) are limited to access possibilities (to telephones, computers and the Internet), even though it is precisely here that it would appear sensible for the »South« to develop its own technology (Heeks 2005). The EU and other »Northern« and international actors have in recent times, partly as a result of the WSIS process, paid greater attention to the development of science and technology and, in particular, ICTs (Chapter VII). Organisations that have been active for many years in the area of ICT4D warn against ignoring secondary, continuing and higher education in developing countries (GKP 2007): even if the targets for primary education were to be reached, the populations of developing countries would still lack sufficient skills to overcome mass poverty. Accordingly, various »Northern« actors have set more ambitious targets; in Germany's case this has primarily been in the area of vocational continuing education, as well as in the form of university co-operation agreements.

Furthermore, central aspects of the issue as a whole were discussed rather early on by development co-operation actors in Germany (BMZ 2001); the following section (Chapter VI.1) will initially take a brief look at these aspects. The subject of ICT use in educating children and young people will then be raised (Chapter VI.2). Following a description of the starting situation in sub-Saharan Africa (Chapter VI.2.1), the current state of the debate and relevant projects and initiatives in Africa will be mentioned (Chapter VI.2.2). The much-discussed activities relating to the so-called »100 dollar laptop« will be dealt with separately, as will comparable projects aimed at making ICTs universally available to children and young people and relating to ICTs specifically for developing countries (Chapter VI.2.3). The opportunities presented by Internet use that are the primary focus of the TAB project would appear to be particularly significant in the academic area, which is why these will be dealt with in Chapters VI.4 and VI.5. Special consideration will also be given to the question of technological development in sub-Saharan Africa, particularly in the area of software.

KNOWLEDGE SOCIETIES AND THE BRAIN DRAIN   1.

Leading political actors stress that efforts to improve education should be supported irrespective of whether these have a beneficial effect on development. Although labour markets in African countries so far have often offered only few opportunities for people with higher qualifications, measures to improve qualifications and education are nonetheless worth promoting for the sake of the needs and aspirations of individuals. In international development policy discourse, improvements in the area of human resources and »investing in people« are generally supported, in many cases largely irrespective of the efficiency criteria set by development policy. Different sides in the debate have expressed the expectation that science-oriented co-operation in particular could contribute to the development of societies in developing countries with the result that they could be organised in a more open, innovative and politically rational fashion (Benn 2005).

There are indications that development co-operation should accord higher priority to promoting tertiary education, research and technological development, partly for reasons of pragmatism and effectiveness: generally speaking, knowledge-intensive and new high-technology fields, together with lifelong learning, are believed to be increasingly important for economic development. Contrary to the widespread belief that it is predominantly the privileged sections of society that profit when higher education is promoted, a number of studies (among them ones specifically focused on sub-Saharan Africa) have revealed precisely the opposite (BMZ 2001). Moreover, external effects not related to improved levels of income can often be noted, especially when it comes to the promotion of democracy, the healthcare sector, and the potential role of universities as engines of innovation and incubators of social change (Newthinking/ DIE 2006). After all, examples of former and current newly-industrialised countries (like South Korea and Chile) show that targeted investments in science and technology can promote development. An active education policy and the achievement of a »critical mass« of human resources (at least in niche research and technology areas) are however of central importance in this respect.

In view of the considerable progress that has been made in the area of primary education in many developing countries, the challenge increasingly is to meet growing demands for secondary, continuing and scientific education. In this context the problem of the brain drain is also discussed and particularly stressed by African actors. The problem of a lack of prospects despite individual strivings towards education is noticeable on all levels: from a financial point of view, many families in rural regions do not see any sense in sending their children even to primary school, as this means a loss of labour in agriculture without any new opportunities being created for educated children at the local level (Buttschardt

2006). In sub-Saharan Africa in particular, the lack of prospects for highly talented and highly qualified individuals would appear to be a key obstacle to development.

The »North«, which profits economically from the brain drain and from the influx of highly-motivated low-skilled workers, has yet to address this problem in a way that does justice to its importance and prioritisation by its partners in Africa. In Germany there has long been an awareness of the challenges, however (BMZ 2001); in recent times there have been increased activities aimed at better integrating migrants from developing countries living in Europe, that is to say the »diaspora« (Chapter IV). In the German Bundestag, for example, there is widespread consensus that the role of the diaspora should be regarded in a positive light and reinforced (CDU/CSU et al. 2007; Chapter VII.2.3). One important goal, however, is still to directly strengthen the knowledge economies in developing countries, particularly through capacity building at the local level and better integrating them into the global economy.

EDUCATION FOR CHILDREN AND YOUNG PEOPLE   2.

All over the world, young people, and increasingly children too, are often seen as trailblazers in the use of ICTs, and of computers and the Internet in particular. Educational and social policy strategies, and indeed commercial strategies (e.g. ring-tones for mobile phones) are targeted at the youngest sections of the population. Although at present there is evidence of contrary tendencies in countries in which ICT use by children is advanced (e.g. growing concerns about addictive usage patterns and, in some cases, a move away from the vision of providing every schoolchild with a computer), ICT use continues to be regarded as a core element in a modern learning and teaching culture. The following section initially takes a brief look at the starting conditions in this respect in sub-Saharan Africa (Chapter VI.2.1); this is followed by a discussion of relevant ICT4D projects and initiatives (Chapter VI.2.2).

STARTING SITUATION IN SUB-SAHARAN AFRICA   2.1

The picture as regards success in educating children and young people in sub-Saharan Africa is, at best, a mixed one. Sub-Saharan Africa as a whole is at risk of failing to meet the Millennium Development Goals in this respect as in others (UNDP 2006): it is true that the proportion of adult illiterates (15 years and older) dropped significantly between the start of the 1990s and the middle of this decade, yet the Arab states have since overtaken sub-Saharan Africa in terms of the literacy rate among the over-14s, and South Asia has almost caught up. It is important to note that no figures were available for some states in 2004 (in-

cluding the extremely populous Nigeria), which may mean that the situation is even worse. The state of affairs among young adult illiterates (aged 15 to 24) is even less favourable: even though the proportion of young illiterates is lower than the number of illiterates as a proportion of the entire population above the age of 14 (as is the case in all under-developed regions), sub-Saharan Africa has fallen back to bottom place as compared to the rest of the world. The proportion of young people and young adults able to read and write remains stagnant at 70 % of this age group, although once again data were not available for many of the least developed countries, some of which are highly populous. In overall terms, sub-Saharan Africa scores slightly below average on literacy even when compared with the group of least developed countries, despite the fact that school enrolment rates in the great majority of countries in the region have risen.

The situation in many states remains unsatisfactory; among the countries for which data were available for 2004 there are examples of deterioration since 1990 (e.g. the literacy level in Ghana). In many places, the situation is characterised by irregular or non-existent school attendance and low rates of school graduation, which in some cases have dropped drastically since 1990 (e.g. in Nigeria). Where advances have been made in literacy levels and primary education, there is at times inadequate provision of secondary education. Not only can this be disappointing for those affected themselves, it also presents national economies with the problem that precisely the medium-level qualifications that tend to be needed most are not available on the labour market. Particularly serious problems continue to be poor training and pay for teachers, a lack of equipment in schools and the fact that they are hard to reach for children and young people living in remote areas. The situation in this respect is especially difficult in countries and regions suffering from wars and other acute crises. Nonetheless, success stories can be found in some countries, e.g. in Botswana, Mauritius and South Africa, each of which achieved considerable growth in the rates of enrolment in secondary education. The share of public sector investments in education (both in terms of gross domestic product and national budget) was relatively high in the middle of this decade in several countries of East Africa and Southern Africa, even by international standards. In some cases, the proportion has risen significantly since 1990. West Africa, however, to the extent that data are available, scores much less well as compared with other African and global countries; in many cases the proportions have fallen considerably in percentage terms since 1990.

In this context, the global »Education for All Fast Track Initiative« (EFA-FTI; www.fasttrackinitiative.org) is of particular importance: at a meeting in Dakar (Senegal) in the year 2000, donor and developing countries agreed that the latter would use their own resources and set the necessary political priorities in a drive to achieve the Millennium Development Goal »universal primary education«. If

they do this, they are to receive assistance from the donor countries in the form of technical expertise and additional financial support. In Africa, too, EFA-FTI has resulted in a number of successes (DATA 2007), including a rise in school enrolment rates of between 40 and 100% in eight participating countries and huge increases in the number of teachers recruited in Niger. By the end of 2006, a total of 17 African states (almost all from the sub-Saharan region) had already met the conditions, most of them from West and East Africa. A further 17 states, many from Central Africa, are to join the scheme by 2008. One crucial problem of EFA-FTI, according to one of the initiative's civil society partners (DATA 2007), is that almost all »Northern« donors (with the exception of Great Britain) are still a long way off making available the promised financial support, despite the commitments they made within the framework of the G8. Admittedly, a large share of the 2.7 billion US dollars invested in EFA-FTI by the 17 African states already taking part (equivalent to 72 % of total planned expenditure for these countries) stems from capital made available by the cancellation of debts on the part of the »North«. Nonetheless, there appears to be an urgent need for the donors to contribute their 28% share of total EFA-FTI expenditure for the countries already participating, especially given that additional countries are to join. By the end of 2006 there would otherwise be a shortfall of 690 million US dollars (18 % of total expenditure), a figure that would rise by the end of 2007 to one billion US dollars.

ICTS IN SCHOOLS AND CONTINUING EDUCATION FOR TEACHERS   2.2

In the academic literature and evaluations of development aid projects (e.g. Farrell/Isaacs 2006 and 2007; Trucano 2005), the positive and negative assessments (both of the benefits of ICTs for education in developing countries and previous ICT4D projects in development co-operation) over a period spanning the 1990s to the middle of this decade are fairly evenly matched. Experiences range from complete failures to unequivocal successes. To date, however, optimists and sceptics alike have often backed up their arguments only with isolated better-researched case studies or indeed only with examples containing anecdotal evidence at best. A number of key actors have recognised that this situation is unsatisfactory, with the result that a series of new evaluation and monitoring activities has been launched, with Africa in the forefront. Worthy of mention is a project of the Commonwealth of Learning (www.col.org/colweb/site/pid/4062), as well as various activities coordinated by the World Bank (www.infodev.org/en/Project.3.html; Farrell/Isaacs 2007). There is general consensus that increased use of ICTs in primary and secondary education only makes sense if a solution is found at the same time to the fundamental problems of education organisation and policy, school equipment, and teacher training and pay. An exception to this

is the proposal to begin making laptops available to all schoolchildren, as experience to date has shown that it takes too much time to solve the other problems (Chapter VI.2.3). In addition, there is the objection that the use so far of new ICTs in lessons is ineffective even in industrialised countries from a costs-benefits point of view, partly on account of the neglect of ICT skills and the lack of proper integration into educational concepts (TAB 2007). These problems would appear relevant in particular for the states of the »South«, which tend to be financially weak.

ICT use is expected – primarily on the basis of positive case studies – to make a contribution to solving a number of specific problems. Radio, for example, has long been successfully used for distance learning at the primary level (World Bank 2005a), especially to serve remote areas and crisis zones. There are also high expectations, some of them supported by experience, for the use of ICTs in the training and continuing education of teachers (Chapter VI.2.2.1) and as regards making computers and the Internet available to schoolchildren and schools (Chapter VI.2.2.2).

TRAINING AND CONTINUING EDUCATION FOR TEACHERS   2.2.1

A variety of activities have already been launched south of the Sahara aimed at promoting the use of ICTs for the training and continuing education of teachers, many of them specifically intended to improve their media and ICT skills. Even more importantly, they aim to make available ICT-based teaching materials; this avenue is extremely promising given the very low general availability of books. Both areas are considered by several African universities to be a particularly important aspect of their ICT-related work. Even where the conditions are in place for the use of ICTs, however, a high level of uncertainty or reluctance is still often noticeable among teachers when it comes to using computers and the Internet. Due to social structures, this applies especially to female teachers. With regard to developing countries in general, a study commissioned by the European Parliament even concludes that a lack of ICT skills and the role model adopted by teachers are the main obstacles so far to successful ICT4D projects in the area of education (STOA 2004a).

One recent example of a project that uses ICTs in continuing education courses for teachers is the South African Africa Drive Project (www.adp.org.za; s.a. Grill 2005) that is supported by a number of German actors: it aims to enable teachers in areas with poor infrastructural conditions (in the north-west of South Africa) to improve the quality of their teaching. To this end, they take part in courses, on top of their normal professional commitments and together with colleagues, which are supported by experts and take place in centralised e-learning and ICT facilities. The project faces problems that are typical of large

parts of sub-Saharan Africa, particularly in rural regions. These include non-existent or inadequate infrastructure (power supply, transport links etc.) and a widespread reluctance among the people to embrace new technologies. Another problem, likewise typical of sub-Saharan Africa, that the project aims to address is the lack of opportunities for the indigenous African population to acquire education in the sciences, a legacy of colonialism. Given that South African schoolchildren are remarkably weak in mathematics and that maths and science teachers have considerable gaps in their knowledge, these subjects, besides English skills, are the main focus of the project. Additional benefits cited by teachers involved in the project are that it gives them access to a great deal of relevant information on the Internet and makes possible an exchange with colleagues and experts living far away. Furthermore, jointly taking part in the courses presents opportunities to share experiences with colleagues in the local region and to motivate one another. The project is being run by North West University, which is based in the region. It is a Public Private Partnership involving the education ministry and ICT department of the finance ministry of North West Province, the GTZ and a number of companies. German companies play an important role: the software company SAP, for example, which is also involved in other ICT4D projects in South Africa (among them via its research centre SAP Research CEC Pretoria), is making its own products available and was one of the co-initiators.

While participants in the Africa Drive Project particularly stress the scope the project offers for co-operation between African teachers, other projects focus more on individual use of e-learning courses and ICT-based teaching materials. Providing the necessary equipment for schools and linking them up to the networks of (preferably) African universities, however, is a far more complex business and still remains the exception in areas with poor infrastructure. Development co-operation projects often face the challenge of building up the ICT skills of teaching staff in schools in a long-term way which will endure beyond the end of the respective project and of maintaining computers that are often old and have been donated by the »North«. Some ICT4D actors hope that supplying teachers with their own private computers will help remove the massive disadvantage that African women traditionally face when it comes to new technologies: in their own homes, they are more likely to overcome their diffidence towards new technologies (Isaacs 2006).

The fact that many ICT4D activities are focused on teachers is probably partly a result of criticism of the Internet and ICT euphoria that developed around the year 2000. In many places, it is widely thought that larger investments in modern ICTs are rarely justified from a cost-benefits point of view. A study commissioned by the World Bank, for example, confirms that providing basic equipment for schools and, in particular, employing a much larger number of teachers

are of paramount importance if improvements are to be achieved, especially in Africa (Gaible/Burns 2005). Admittedly, the authors also point out that ICTs can indeed play a useful role when it comes to the equally crucial question of continuing education for teachers. One should remember that the use of ICTs often leads initially to poorer overall results because it puts additional strain on teachers and because of problems with using them in the schools. The study also makes reference to the dilemma arising from the fact that the key requirement in the least-developed countries is getting more and better teachers into their schools, yet providing them with the necessary degree of continuing education is virtually impossible in areas with poor infrastructure. In this connection the authors warn against over-estimating the computer, the television and the Internet. Well-established media like the radio should not be ignored. A further problem which can result in ICTs actually having a negative impact on continuing education measures is the use of unsuitable ICT equipment, e.g. recycled computers that are not powerful enough. The study weighs the different ways of using and combining new and old ICTs and the Internet up against one another:

> The main disadvantages of setting up one's own continuing education centres with computers and Internet connections are the high ongoing costs and infrastructural challenges.
> Online distance learning incurs low costs only if advantage is taken of offers of free courses. Key factors are the Internet competence and teaching skills of participants, the quality of the courses and (if interactive multimedia courses are used) a high bandwidth and suitably functional hardware. In less-developed regions, online distance learning is an ideal way to build capacities in the area of continuing education for teachers, and to improve co-operation with experts in this field.
> An Internet component can prove a suitable complement to radio use when infrastructural conditions are poor. Admittedly, this model likewise requires a relatively high initial outlay, but is inexpensive thereafter. As a rule, however, this has not resulted in the financial sustainability of the projects. The scope for using new teaching models is limited due to the lower level of interactivity as compared to models based to a greater extent on the Internet.

COMPUTERS AND THE INTERNET IN SCHOOLS   2.2.2

In projects that focus less on continuing education for teachers and more on equipping schools with ICTs and promoting ICT skills among schoolchildren, reference is made at times to the effects new ICTs have on the learning process itself. These effects have long been the subject of a wide-ranging debate in the realm of education policy, in educational science and in other disciplines. In this debate, modern ICTs, and the Internet in particular, are often regarded as a means not only of offering pupils access to a wealth of information and knowl-

edge resources but also of providing them with the tools to exploit these resources themselves and use them in a creative and productive manner. Studies on e-learning have established that the relationship between teachers and students, the ICT skills of the students in particular and the ability to acquire information and knowledge independently are of key importance if use of the Internet and ICTs in the area of education is to be successful (TAB 2006a, 2006b and 2007). African education systems, however, are characterised to a very marked extent by traditional hierarchies (Newthinking/DIE 2006) which makes designing sustainable ICT4D projects a particular challenge. One extreme solution would appear to be projects that put the teachers' ICT skills and school ICT equipment last, primarily focusing instead on children as individual private users (Chapter VI.2.3). ICTs have long been used in the area of informal learning (particularly adults learning independently, learning communities and in development aid projects not directly related to education).

When supplying African schools with computers and Internet access, one must take the conditions of use into account in each case. Sometimes, for example, too little attention is paid to the acquisition of skills, insufficient resources for maintenance and advice are made available, or the problem of disposing of obsolete equipment remains unresolved. What is more, additional costs can be incurred if only proprietary software is used. In this context, as in others, free and open-source software presents an alternative, e.g. Edubuntu, which is available free of charge (www.edubuntu.org; cf. for example www.linux4afrika.de). However, the licence fees for proprietary software, which in principle are considerable, have rarely been paid in non-profit-oriented ICT4D projects (Bridges.org 2005b). When supplying computer equipment, the specific local climatic conditions also need to be taken into account, especially as regards cooling systems. Modern computers built specially for the relevant usage conditions are of course ideal, though donations of used computers that are virtually worthless in the »North« can be useful under certain conditions, for example for use as so-called »thin clients« in networks where just one more powerful computer is required. Among the advantages of these networks are the low administrative and maintenance workload, the immunity of the client to viruses and spam and the low level of power consumption. Generally speaking, it would appear to make sense for projects aimed at supplying Africa with computers and Internet access to use a mix of free and open-source software on the one hand and proprietary software on the other (Bridges.org 2005b); when proprietary software is used, the most important thing is to calculate for the costs of ownership (including possible problems with computer viruses). Thin client networks are a reliable, inexpensive and efficient way to use computers in such projects. The potential offered by free and open-source software (Chapter VI.3.4) is often not exploited by organisations, institutions and individual users in Africa due to a lack of expertise and knowledge (Bridges.org 2005b): there are only a few ex-

amples of software being modified by users or of adapted software solutions being created for other local actors. Both of these could change if politicians had the will to increase the popularity of free and open-source software.

Two outstanding activities in schools are the NEPAD e-Schools initiative and the civil society SchoolNet Africa programme, both of which will be discussed below.

NEPAD'S E-SCHOOLS INITIATIVE

The e-Schools initiative of NEPAD's eAfrica Commission (www.eafricacommis sion.org), which was announced at the WSIS in 2003 and launched in 2005, has set itself the goal of equipping hundreds of thousands of schools with computers and Internet access by 2015, initially in those countries taking part in the APRM process (Chapter IV.1.2.1). The first step is to equip all secondary schools and then, by 2015, to equip all primary schools in the participating countries. The plans also envisage continuing education courses for teachers, to be designed in co-operation with the ITU on the basis of experience in a pilot project, as well as the creation of a satellite network for the initiative which, by the end of the project, is to link all the 600,000 or so schools with the Internet and with national state suppliers of educational materials (Malapile 2007). The schools are also to serve as centres for health care. NEPAD's co-operation partners on the e-Schools initiative are five consortia led by the major US ICT companies AMD, Cisco, HP, Microsoft and Oracle. The consortia encompass above all African and Western ICT companies, though non-profit companies are also involved, as is (in the area of logistics) the company DHL, which is part of the German Deutsche Post World Net group. The calibre of the private sector partners, the number of which NEPAD would like to see increased, and the high level of importance accorded to the initiative by NEPAD, make its prospects appear favourable. Within the framework of the eAfrica Commission's Information Society Partnership for Africa's Development (ISPAD), government initiatives, NGOs and companies from different industries and of different sizes can take part in the e-Schools initiative and other ICT4D projects launched by NEPAD's eAfrica Commission.

16 countries have already selected a small number of schools for a pilot project (e-Schools Demonstration Project). According to information provided by a competent member of NEPAD's staff, the project should be completed by the end of 2007. By the end of May 2007, nine countries (eight of them south of the Sahara) had officially launched their pilot projects (NEPAD 2007b). One of the people responsible for the project, referring to initial results of external evaluation and monitoring activities (www.infodev.org/en/Project.6.html), reported on the reactions in the schools selected for the pilot project (Malapile 2007): 55% of schoolchildren surveyed in the study said that they had no previous experience

of computers; 75 % of teachers had only very limited experience of using ICTs in lessons or none at all; the rest had good to excellent ICT skills and had also already used ICTs in their classrooms (as well as to procure information in some cases and to exchange views with other teachers). Possible limiting factors, the study found, were infrastructural problems (above all a lack of or insufficient Internet access), ineffective management and implementation plans that had not been thought through by state actors, and language barriers (with regard to a pan-African exchange of experience). According to information provided by a competent member of NEPAD's staff, the external evaluation revealed that the pilot project had also brought about unintended but positive side effects (e.g. the involvement of neighbouring schools). Possible synergies between the e-Schools initiative, SchoolNet Africa and other initiatives in this area should be more closely investigated.

SCHOOLNET AFRICA

SchoolNet Africa (www.schoolnetafrica.net) has its roots in activities pursued by Canadian development co-operation in the 1990s and was one of the first major ICT4D initiatives in African ownership. It was designed to be a network of national school networks. Especially for the first half of the current decade, many activities have been documented online, focusing on ICT equipment for schools, continuing education and cross-border networking of teachers, research into ICT4D in education and creation of African content (in local languages among others). The network encompasses more than half of all sub-Saharan countries, while other projects similar to SchoolNet Africa are limited to one country or, so far, to just a handful of countries (such as the Gesci project funded by Danish, Swiss and Finnish development aid; www.gesci.org). As an umbrella organisation, SchoolNet Africa has devoted its time in recent years particularly to lobbying activities at conferences, to pursuing its own research projects and to supporting a competition in which young people design websites (www.mtandao-afrika.org). As far as can be seen, given the non-existent or inadequate web presence of many national school networks, these are often funded to a large extent by »Northern« actors or are part of global initiatives. Several school networks have long been taking advantage of free and open-source software (see box) or have started doing so in recent years (e.g. in Malawi). The reasons for this include cost considerations, a fear of becoming dependent on providers of proprietary software, and an assumption that school students will find such skills useful in their later professional lives.

SCHOOLNET NAMIBIA

A good example of a national school network is SchoolNet Namibia, which has a number of successes and special features to show for itself: SchoolNet

Namibia (www.schoolnet.na) received particular support from Swedish development co-operation and has supplied several hundred schools with computers and Internet access since the beginning of this decade. Furthermore, local ICT skills were provided, while toll-free access to technical support and a maintenance service were set up. The government of Namibia has recognised the school network as a key actor and co-operates with it. According to a Swedish evaluation (SIDA 2004), SchoolNet Namibia achieved considerable success in terms of Internet access and ICT infrastructure, and was able to document a high level of Internet usage in schools; apart from anecdotal evidence, however, it remains unclear what specifically the Internet in schools is used for. The statistics currently published on the website point to broad-ranging usage that goes well beyond educational use in its more narrow sense. As far as computer equipment is concerned, the school network takes advantage of open-source software developed by a South African company (http:// getopenlab.com). SchoolNet Namibia was involved in designing the software and developing the EduKar educational application. SchoolNet Namibia's experience of overhauling second-hand computers featured in a cross-border African study on this subject (Bridges.org 2004a). SchoolNet Namibia obtains monitors and other hardware from local manufacturers. Like other organisations active in SchoolNet Africa, SchoolNet Namibia requests that »Northern« actors verify that donated computers are fully functional before shipping them to Africa, as this is not always the case (Bridges.org 2004a). Ideally, there should be a guaranteed right of return to prevent the problem of electronic waste in developing countries becoming even more acute. Schools themselves pay for their fixed line or, where necessary, wireless Internet connections, although the state has stipulated low charges (below local call rates). Where no power supply is available, a solar power infrastructure is created.

At the end of 2006 and the beginning of 2007, SchoolNet Africa underwent a period of upheaval; its headquarters was relocated from South Africa to Senegal, and there were a number of management changes. In an interview, Shafika Isaacs, the initiative's long-standing director who now plays a major part in wide-ranging evaluation activities (e.g. Farrell/Isaacs 2006 and 2007), summarised her experiences of SchoolNet Africa and its framework conditions as follows (Isaacs 2006): to date, only around 27,000 of an estimated 600,000 schools in total in Africa have been equipped with computers (and not all of them with Internet access). The non-existent or poor infrastructure in many places, exorbitantly high bandwidth costs, cutbacks in education in many states and the far-reaching lack of local ICT industry also have a negative impact, she says, on ICT4D activities in the area of education. Admittedly, SchoolNet Africa has made continuing education available to approximately 5,000 teachers,

familiarised some 14,000 students with computers and the Internet, and helped to set up a network of around 200 school network activists in over 30 African states. In addition, it has established links with non-African organisations and pursued lobbying activities on a pan-African level. Isaacs feels, however, that the achievements of SchoolNet Africa are extremely modest when one considers them against the backdrop of the huge challenges that exist in Africa. She believes a »paradigm change« is necessary in order to address the fundamental problems facing the education sector and ICT infrastructure in Africa. She welcomes the move to make available open, cost-free educational resources, but thinks that it is also important to create African content that is suitable for educational purposes.

»100 DOLLAR LAPTOPS«   2.3

The ICT4D project that is probably attracting most attention at present is the so-called »100 dollar laptop« project which was launched by the Media Lab of the renowned US Massachusetts Institute of Technology (MIT). The project's goal is to develop a laptop (now named the »XO«) costing 100 US dollars, tailored to the specific requirements of children and the conditions of use in developing countries. To achieve this goal a non-profit organisation was founded, the »One Laptop per Child« (OLPC) foundation, its name being an indication of its ultimate objective of making it possible for every child in the world to own a laptop. Start capital was provided mostly by large companies from the ICT sector. A founding member of the OLPC foundation and a key figure in the initiative is Nicholas Negroponte, a leading promoter of the »digital revolution«. Together with the then UN Secretary-General Kofi Annan, Negroponte presented a prototype of the laptop at the WSIS 2005 in Tunis. In 2007, mass production and shipment to at least three countries in two continents (this is a condition of the initiative) is to begin. If the planned production volumes are achieved, the next few years will see an enormous rise in global production of laptops, the XO becoming the world's most-produced laptop.

It should be noted that there is a whole host of other projects that have goals similar to that of the OLPC foundation (www.infodev.org/en/Publication.107.html; Zuckerman 2007b). Projects pursued by university researchers and technology-oriented NGOs (e.g. http://geekcorps.org) are likewise working – some of them having done so for a considerable time now – on developing ICTs and Internet infrastructure tailored to the natural and socio-economic conditions prevailing in developing countries. The Nigerian Fantsuam Foundation (Chapter IV.3.2.3), for example, is an NGO that is developing a computer adapted to the climatic conditions of the hot and dry northern part of Nigeria, to be powered by solar energy. The ultimate objective is to supply every Nigerian village

with such a computer. A rival project to the »100 dollar laptop«, directed at the same target group, has been launched by the Intel company, whose former CEO, who is also the chairman of UN GAID (Global Alliance for ICT & Development), has publicly dismissed the XO as a gadget (Noon 2005). The »Classmate«, Intel's laptop, is also intended to be purchased by public sector clients in the area of education. The company makes much of the fact that the Classmate (that costs up to 400 US dollars) achieves, if anything, more »Northern« standards.

Bill Gates of Microsoft also took a critical view, claiming that the XO is not a real computer. Microsoft's strategy vis-à-vis the »100 dollar laptop« project is two-fold: while making critical comments of this kind and developing its own rival concepts (e.g. a mobile phone that can serve as a substitute PC when connected to a screen and keyboard), Microsoft also repeatedly conducts negotiations with the OLPC foundation. The company's goal, it would appear, is to make it possible for the XO in developing countries also to run Microsoft's own software, e.g. in the form of a Windows starter pack presented in 2007 and costing two US dollars. Microsoft and Negroponte admittedly have rather different views of the extent to which governments in developing countries that are interested in the XO care whether Microsoft products can be used on the »100 dollar laptop«. The supporters of free and open-source software, whom Negroponte sees as strategic partners, complain that some of the costs that have now been added to the XO's price tag (estimated in May 2007 as being 178 US dollars per laptop) are the result of efforts to ensure that Microsoft products can run on the machines. There is also criticism of the fact that the XO's high level of energy efficiency could drop if it runs Microsoft products.

As far as is possible from the perspective of May 2007, the following section will focus on relevant elements of the XO's technical design, the basic pedagogical assumptions of the OLPC foundation and the political debate.

IMPLEMENTATION MODEL AND TECHNICAL DESIGN 2.3.1

The basis for the project launched by the »One Laptop per Child« (OLPC) foundation is that the laptops will not be available for private purchase but will be sold in large quantities (anything from 250,000 to a million) to governments of developing and newly industrialised countries, and will then be handed out by schools on a »one laptop per child« basis. Support with logistics in the respective countries and distribution at the local level has been promised by organisations such as UNDP and the Commonwealth of Learning, but the foundation stresses that its role in the distribution process ends once it has supplied the laptops to the national governments. It still appears to be unclear how in this case the laptops are supposed to reach children and young people who do not

attend school. The majority of laptops are initially to be produced by Quanta Computer as ODM (Original Design Manufacturer), a Taiwanese company that produces for several leading laptop suppliers and has most of its production plants in the People's Republic of China. In early 2007, Negroponte denied press reports that the OLPC foundation had a concrete plan also to sell laptops to individual users in developed countries. There is discussion, however, of an idea that private individuals could for example pay for two laptops and donate one to developing countries. Quanta Computer, which has already been commissioned to produce one million laptops, has announced its own intention to develop a low-cost laptop (costing approximately 200 US dollars) for the world market.

The XO is to be tailored to the needs and usage of children of primary school age (6 to 12 years) and as such features a very robust design. An average product lifetime of five years is targeted. The computer is also supposed to be child-friendly in terms of its compact size, operating system and special software. The XO is adapted to extreme climatic conditions, outdoor use and the infrastructural conditions in developing countries. ICT experts and engineers (e.g. Perry 2007; Rink 2007) praise some of its technical elements as useful, innovative and even groundbreaking. For example, the laptops are interconnected via mobile ad-hoc networks (mesh networks), each machine serving as a network node and able to perform server and router functions simultaneously. No central network infrastructure is required. When one laptop is connected to the Internet, all other laptops in the network can also use the Internet. According to the foundation, this means that one or two land-based Internet connections are enough to serve approximately 1,000 users. Under ideal conditions (flat, sparsely populated countryside), the range would thus be as much as 40 km. The foundation has also announced support with Internet access. The screen received particular praise: it can be used just as easily in bright sunlight as in darkness at night, where it could also be used as a source of light in houses without electric power. In addition to school activities in a more narrow sense, children will also be able to use the XO to chat to and telephone one another, to conduct video conferences, to make music and to play games. The laptop also features an inbuilt video camera. Although the machine is designed for free and open-source software, it should also be able to run standard proprietary software. In the view of the foundation, the software is designed to help children learn through play. The XO boasts a very low level of energy consumption; it should be possible to generate energy using a dynamo, although the original idea of a hand-crank was scrapped in favour of a pull-cord power generator. The XO is also adapted to the various peculiarities of power supply in developing countries (e.g. use of car batteries).

There is also criticism of the technical design: it is claimed, for example, that the lack of hard drive (intended to make it more robust) results in too little memory, and that there are no output options (Buttschardt 2006), to which the

OLPC initiative replies that this can be compensated for if necessary by using memory cards, for example, and the USB ports. Intel and Microsoft in particular warn that using computers without the globally dominant software programs and without the possibility of upgrading them (except by replacing the motherboard) is not adequate preparation for the requirements of secondary education and the labour market. This is countered in turn by the argument that the frequent updates with »Wintel« (jargon for Intel computers running Microsoft »Windows« software) often overburden older equipment, that »Wintel« solutions have a very high energy consumption, and that the most commonly used software (e.g. Office applications) can in any case be run on the XO. Furthermore, it is beneficial not to become dependent on software that has to be paid for, and users familiar with free and open-source software can, if necessary, quickly acquire skills in the use of proprietary software. The software equipment is also criticised on the grounds that breaking with successfully established conventions (e.g. not using file folders) is risky because the mere existence of these conventions is an indication of their user-friendliness. In addition, mass sales to governments are to be started immediately, in the absence of any competitive situation and without long-term testing of the laptop's reliability, with the result that users do not have a free market choice. Generally speaking, it appears questionable whether a sufficiently functional laptop can in fact be made for a purchase price of less than 200 US dollars, yet many experts believe (e.g. Rink 2007) that the functions offered by the XO as of May 2007 would suffice for use in the area of education.

PEDAGOGICAL ASSUMPTIONS   2.3.2

The »100 dollar laptop« initiative is often accused of being a typically technology-driven project that completely ignores the most pressing needs of the education sector. Negroponte and his colleagues, by contrast, stress very strongly that the initiative is not an ICT project but a general educational project focused on children between six and twelve years of age (for more about this and the presentation that follows, see http://wiki.laptop.org/go/The_OLPC_ Wiki). They also dispute the allegation that the foundation expects use of the laptops to provide a comprehensive solution to the problems of developing countries, but do forecast, for example, that it will make possible individual paths out of poverty and enable entire village populations to achieve a middle class status. The foundation's declared objective is to support learning and high quality education for all as the basis for an equal society. Computers are described as the most powerful tool for knowledge generation, development and research for and by children and their teachers. Five core principles are defined: ownership by the child, low age of the child, a high rate of ICT penetration (»saturation«), network links and free and open-source software. Although teachers and other adults are also to

play an important role in the communities interlinked by the XO, they are clearly of little significance as far as the foundation is concerned. Ownership of a laptop is defined by the foundation as a basic right of every child. Children do not necessarily have to be able to read or write to play with the XO, and play is the basis for human learning. The foundation goes on to explain that digital activities promote the acquisition of reading and writing skills. Education is compared to an inoculation that makes children immune to ignorance and intolerance. Technical equipment, the foundation claims, will facilitate shared responsibility and co-operation within communities.

One striking feature of the initiative is the strong emphasis it places on constructivist learning theory and on the suitability of computers for children's learning processes. The reason for this emphasis lies in ideas developed at MIT by co-founders of the initiative. Their primary aim is for children to »learn how to learn« and, of their own accord, to select and acquaint themselves with content and technologies. Admittedly, the initiative repeatedly, though somewhat incidentally, talks on its website about the role of teachers; clearly, however, a counter-model to teacher- and school-centred approaches is being developed. The level of trust placed in children's ability to learn autonomously is high; one member of the XO project's staff talked of children as »learning machines«. The foundation suggests that a new or expanded form of school should be created that extends beyond the normal classroom boundaries. The XO, it believes, could also become a mobile school, a transportable learning and teaching environment suitable also for use outdoors and at home. A child with an XO, moreover, should not be simply a passive consumer of knowledge, but an active participant in a learning community which is to be expanded to include adult members of the community. According to the foundation, the children would learn from one another, share their experiences and ideas and support each other in their intellectual development. Children could thus be pupils and teachers at the same time. By contrast, it is not only representatives of companies like Intel (Barrett 2007) who believe that its neglect of teachers is a particular weakness of the initiative; various academics and NGO representatives also share this belief. From a pedagogical and costs-benefits point of view, they feel that the approach is questionable.

POLITICAL, SOCIAL AND ECONOMIC ASPECTS   2.3.3

Of the seven states that had already placed orders in May 2007, three were African countries, namely Nigeria, Libya and Rwanda. Libya has announced its intention to use the XO to become the first participatory e-democracy. In sub-Saharan Africa, Rwanda is a country that generally sets much store by science, education, technological development and, in particular, ICTs, while Nigeria has taken a leading role and has already launched a pilot project in a school. Up to

May 2007, however, no payments had yet been settled. Brazil is testing not only the XO, but also Intel's rival Classmate project. The Indian government, having shown initial interest, has now not only announced that it is not interested, but also expressed strong criticism of the project, prioritising instead the training of teachers and general equipping of schools and warning against the negative effects of computer use on education.

The »One Laptop per Child« (OLPC) foundation and its supporters have already responded to a whole host of other points of criticism (for the presentation that follows, see for example www.olpcnews.com; Matzat 2007). The initiative seeks to counter one of the most common objections – namely that the project's success would lead to a massive increase in the problem of electronic waste in developing and newly industrialised countries – by pointing to the ecologically-aware design of the XO (e.g. using no mercury) and by announcing that a guaranteed right of return could be procured for a small additional charge. Another point of criticism concerns the risk of laptops being stolen; to address this, initiatives like SchoolNet Africa (Chapter VI.2.2) are for example insisting that schools provide evidence of security concepts for their ICT infrastructure. The anti-theft facility planned for the XO, which allows a stolen laptop to be rendered non-functional from a central point, may in fact provide a degree of protection, as does the laptop's design, which makes it difficult to break an XO down into its individual components. It is also unclear whether the laptops would be stolen simply for their material value, and what steps could be taken to prevent the laptops being sold (e.g. by parents). If a large number of XOs are sold on, this could be seen as a sign that the intended target groups do not feel any great need for computers (in comparison to other commodities). It has also been suggested at times that the foundation is interested only in the profits it will generate by selling the XO.

One serious objection is the criticism that purchasing a large number of XOs would put extreme strain on the national budgets of the countries in question (e.g. Vota 2006). It is unclear what should be done about the problem of the lack of good governance, which could see laptops being distributed solely according to political preference. Critics also accuse the initiative of pursuing a highly hierarchical approach, using the wide-area introduction of technology as it were to enforce a phase of development and thus contradicting the development policy consensus that calls for participation (Matzat 2007). The approach, which takes virtually no account of adult authorities, could moreover result in intergenerational problems and in problems of acceptance in communities. In many places, children are already far ahead of adults in areas such as literacy.

If Nigeria and Rwanda were to actually hand out a large number of XOs, this would significantly change the situation of ICT use (and, potentially, Internet penetration) in quantitative and (because of the laptop's modernity) qualitative

terms. In Rwanda, the plan to supply all primary school children with the XO by 2012 is part of the government's ambitious overall strategy known as »Vision 2020« (Chapter III.2.1). This strategy places a heavy emphasis on research, education and technology (particularly ICTs), thus making a considerable impact, among other things, on the country's research budget. It would perhaps be sensible for organisations experienced in ICT4D to constructively supervise the launch and use of the XO and to help reduce any undesired side effects. Nigeria deserves particular support simply on account of its great political importance, as does Rwanda because of the tragic events that took place in the country in the 1990s. IT experts from the German-Ethiopian »Engineering Capacity Building Programme« are already supporting the testing of 40 XOs at an Ethiopian school.

UNIVERSITIES, RESEARCH AND TECHNOLOGY   3.

The following section will begin by outlining the starting situation in sub-Saharan Africa in terms of scientific education, research and technological development (Chapter VI.3.1) and relevant political discussions and activities (Chapter VI.3.2). Even if other areas of technology (e.g. biotechnology) are often placed higher on the political agenda in Africa, the specific importance of ICTs is stressed virtually everywhere and is also reflected to a certain degree in the planned and realised efforts announced within the pan-African framework. In this connection the AU and NEPAD often point out that access to ICTs and the relevant capacities and competencies are key prerequisites for progress in other areas. Institutions of higher education and university networks are given a special role to play; their use of the Internet will be discussed in Chapter VI.3.3. Technological development in the area of ICTs in sub-Saharan Africa is the subject of Chapter VI.3.4, which focuses on software development at universities.

STARTING SITUATION IN AFRICA   3.1

African governments generally agree that greater importance should be attached to »higher education«, »research« and »technology«. The agenda set early on by NEPAD has resulted this decade in a consensus that national systems of innovation need to be strengthened through greater co-operation. Indeed, many of those sub-Saharan African states for which data were available in 2004 invested a not inconsiderable proportion – by global standards – of their total education budget in financing tertiary education (UNDP 2006). However, figures relating to public expenditure on research and development are only available to date for a handful of countries. Meaningful data concerning private investments in education, research and development are hardly available at all, which makes a gen-

eral appraisal of the situation more difficult given the increasing importance of private tertiary education establishments. A further problem is that very little is known about the quality of these private educational offers.

As early as 2003, sub-Saharan African governments agreed at the NEPAD Ministerial Conference on Science and Technology to increase investments in research to 1% of their respective national gross domestic product (GDP). Even if some states (e.g. South Africa and Uganda) are relatively close to achieving this objective or (like Rwanda) claim to have already exceeded it, the situation as a whole still appears, as NEPAD itself accepts, to be far from satisfactory. In 2006, the average within the AU was below 0.5 %. If one assesses the situation to date on the basis of indicators such as the number of scientific publications and patents, the starting situation in sub-Saharan Africa can indeed be regarded as extremely poor by global standards. Especially if one ignores South Africa, which is a special case, and the populous Nigeria, sub-Saharan Africa virtually does not feature at all on a science and technology map of the world (Schmoch 2005). The AU's goal, supported by UNECA, of establishing a knowledge-based economy within a pan-African network would thus appear to be still a distant dream. Opportunities for achieving a »critical mass« are seen, above all, in the area of the life sciences. Nonetheless, on the basis of the above-mentioned indicators, the sub-Saharan science and research landscape in this decade can be said to be undergoing development that is in some degree positive (Newthinking/DIE 2006), although the increased number of publications is due to a large extent to co-authorships with scientists from industrialised countries (Schmoch 2005). This can be seen as an indirect sign of the great value of the Internet in such contexts, as co-operation projects of this kind are largely handled via the Internet nowadays. All the same, the growth in the number of scientific publications in sub-Saharan Africa since the 1980s has tended to be less marked than the global average (Schmoch 2005), so sub-Saharan Africa is not catching up, and in fact fell even further behind until around 2000. The relative deterioration in Africa's position since the mid 1980s is attributed in part to the decline in the continent's commitment at state level to the education and research sector (Académie des Sciences 2006).

POLITICAL ACTIVITIES WITHIN AFRICA   3.2

Various high-level activities in the area of science and technology took place in Africa at the end of 2006 and the beginning of 2007: the AU summit in Addis Ababa in January 2007, for example, focused precisely on this theme. Several other national, cross-border, regional and pan-African activities recently pursued by African states have been devoted to similar objectives. In February 2007, South Africa announced that it planned to increase its budget for science and

technology (Manuel 2007); this was welcomed by the Academy of Science of South Africa as a »visionary step« and should make possible the creation of a low-cost academic broadband infrastructure. In the run-up to the AU summit and during the summit in January 2007, various measures aimed at raising the political profile of scientists and research and increasing their social visibility were agreed (e.g. awards and the establishment of a committee at presidential level). These measures are also flanked by activities to promote ethics in technology, to enable social dialogue and to raise awareness of the opportunities offered by science and technology; these activities are to be driven forward primarily by involving civil society actors. Scientists, engineers and technology experts among the diaspora will likewise be brought in. As a first step, the AU and participating diaspora groups announced that online databases and resources would be set up to identify and mobilise the potential existing outside Africa. The Pan-African Parliament also addressed the issue of science and technology in January 2007 and called upon its members to ensure that this subject is discussed in their national parliaments. Rwanda, a country with high ambitions for the promotion of science and technology (including ICTs), has warned, however, that the 1% target is very unlikely to be sufficient and that efficient deployment of resources also continues to be desirable in most cases. Among the decisions and ideas welcomed by African scientists is the intention of the AU to issue scientists with diplomatic passports to facilitate pan-African scientific and technological co-operation. A particularly active role in the ongoing discussions is played by the AU's high-ranking panel on biotechnology, chaired by Calestous Juma, a scientist who works in the USA (Chapter II). Juma maintains that improvements in the areas of higher education, research and technological development are of fundamental importance for development success (in Africa as in other parts of the world). The office of the AU Commissioner for Human Resources, Science and Technology also has a key role to play. The commissioner, Nagia Mohammed Assayed, often refers (as do many other African politicians and experts) to the central importance of improving the scientific and technical education of the African populations.

A core role in terms of political administration is played by the African Ministerial Conference on Science and Technology and NEPAD's Office of Science and Technology that supports it (NEPAD-OST; www.nepad st.org). The strategic framework for the activities is »Africa's Science and Technology Consolidated Plan of Action« (NEPAD 2005), which was developed by NEPAD for the AU. It is divided into various areas of research, and contains a 12-point plan, one of which is devoted to the issue of ICTs. NEPAD sees closing the technological gap between Africa and the rest of the world as one of its most urgent priorities (Chapter III). The action plan accords fundamental importance to ICTs. It aims not only to promote applications in the areas of environmental and agricultural policy and to create early warning and monitoring systems for conflict manage-

ment and natural disaster prevention, but in particular to interlink existing centres of excellence, create economically useable information systems, and generate a »critical mass« of technology expertise in areas that offer high growth potential (such as biotechnology and geo-science). The period from 2006 to 2010 has been set as the implementation phase for the projects.

NEPAD expects institutions of higher education, if they are given substantially better support, to act as an African engine for the »ICT revolution« (NEPAD 2005, p. 34). In NEPAD's view, using electronic networks to interconnect the many isolated academic actors with ICT skills is of central importance. Particular value is attached to developing home-grown free and open-source software, both for universities and to meet the needs of the economy, the state and civil society (Chapter VI.3.4). Focusing on software innovation would appear logical due to the relatively low project costs and the positive impact this would make on other activities in the realm of development policy. Institutional responsibility for implementing ICT projects will lie with the African Virtual Open Initiatives and Resources (AVOIR) network, which is run from South Africa and encompasses universities in six countries (www.nepadst.org/platforms/icts.shtml). Its core activities are to be projects concerned with e-learning (Chapter VI.3.3.4), an area in which AVOIR already has many years of experience. The second sphere of action in which AVOIR is to be involved is ICT use in healthcare (e-health).

A core element of the new pan-African initiative is the establishment or expansion of centres of excellence, a strategy that is supported by various »Northern« actors as well as by the World Bank (through a programme of its own). Criticism that this may result in elitist »islands of excellence« without any broad impact is countered by the initiative's supporters, who say that close interconnection with other universities and research centres is planned, and that the brain drain problem would be exacerbated without such centres. The Internet is to play a key role in the ongoing process of interconnection, e.g. in providing institutions with shared access to electronic magazines, and in interlinking the various centres. On the basis of a partnership agreement between the African knowledge management programme of the Development Bank of Southern Africa and NEPAD, a project was launched in spring 2007 in which the framework and criteria for the establishment of five centres of excellence (one in each African region) were to be developed (NEPAD 2007a). The Centre for African Renaissance Studies (CARS) and the University of South Africa are also involved in the project, with CARS acting as the »lead agency« in setting up the five centres. The first step of this project, which is mainly conceptual and preparatory in nature, is to create a database of African intellectuals (including the diaspora). It was announced that an initial report would be issued in autumn 2007.

UNIVERSITIES, RESEARCH AND INTERNET USE   3.3

Supported by the activities of universities (e.g. from the USA and several European countries), various »Northern« development policy actors and international organisations, an Internet and ICT community began to emerge in sub-Saharan Africa as early as the 1990s at the point where academia, the private sector and the state intersect. The first half of the 1990s saw co-operation, for example, between African and US universities in the area of healthcare, with older radio-based technology (packet radio) and e-mail being used for communication (Cleveland 1993). By the end of the 1990s, almost all African universities already had access to e-mail in one form or another, and at least 50 had full Internet access (Useem 1999). It is only recently that the Internet has started to be used by a significant number of university members, however (Newthinking/ DIE 2006), as access was previously restricted almost everywhere to just a few users (e.g. Tusubira 2005). Some universities, though mainly only the best-known universities in sub-Saharan Africa, have been gathering experience of new ICTs and the Internet ever since the 1990s, particularly through co-operation with »Northern« universities. When this is coupled with the relevance that academic communities have for the Internet as a whole as stakeholders in Internet and ICT policy (Coenen/Riehm 2006), a relevance that is historically significant and that is increasingly being recognised politically, there may be good reason to hope that universities will continue to drive forward development in sub-Saharan Africa in future. Academic work also has a certain professional affinity for Internet use on account of its structures, work practices and specific competencies. Because the situation of universities and academics in sub-Saharan Africa is characterised as a rule by insufficient exchange with one another and with the international academic community, there are great hopes for the Internet in a variety of areas. What actual potential is offered by the Internet, however, and what is the current situation in sub-Saharan Africa?

Ever since the 1990s, academic and university use of the Internet has undergone dynamic development worldwide. This is also true, albeit to a lesser extent, of sub-Saharan Africa. In tracing the development there and the specific opportunities and challenges evident south of the Sahara, this report is based to a very large extent on an expert survey commissioned for the TAB project (Newthinking/DIE 2006). This in turn is based on an analysis of around 50 interviews conducted in 2006 with African and other Africa experts, an online discussion conducted for the purposes of the report in August/September 2006 with 75 active participants (most of them from anglophone Africa and working or enrolled at universities), and various source material (such as official publications, conference papers and grey literature). The TAB supplemented the findings of the expert report by analysing additional current literature, holding individual discussions with experts, and conducting additional research on relevant websites. On

this basis, the following section will trace and analyse the fundamental chal-
lenges and shortcomings of African universities with respect to Internet use
(Chapter VI.3.3.1) and current developments (Chapter VI.3.3.2).

CHALLENGES AND SHORTCOMINGS   3.3.1

Overall, major challenges appear to be presented in three areas:

> the shortage of capacities when it comes to Internet and ICT qualifications;
> the fact that many projects are donor-dependent, which often has negative
  effects on their sustainability;
> the lack in many cases of strategic orientation and the lack of awareness of the
  relevance of university Internet and ICT use among key actors (especially uni-
  versity authorities and politicians).

Added to these are the massive infrastructural problems already mentioned in
other parts of the report, the unreliability of the power supply, the lack of politi-
cal consideration given to the consequences of population growth, the brain
drain due to migration to the »North«, the under-developed innovation systems
and labour markets, and the low bandwidths despite very high costs even by
international standards. In some cases, there are grounds for hoping that there
will be significant improvements in tertiary education institutions in the short to
medium term (through university co-operation agreements and the formation of
consortia, through initiatives in the area of education and research policy, and
through improvements in the basic Internet and ICT infrastructure), at least in a
large number of countries. However, characteristic problems of the research
landscape in sub-Saharan Africa are also among the challenges needing to be
overcome in this context. The following are worthy of mention:

> structural under-funding of universities with corresponding consequences for
  personnel and equipment (libraries, laboratories, ICTs etc.), which will take
  on even more dramatic proportions due to population growth and successes
  in primary and secondary education;
> the predominantly traditional culture of teaching, learning and scholarship
  in sub-Saharan Africa; this also contributes to the fact, for example, that
  certain forms of academic co-operation that are in widespread global use
  (such as pre-publication and the circulation of work in draft form) are
  hardly practised in the region;
> the proportion of research, meagre by international standards, and the high
  level of absorption of staff time by teaching duties (against the background of
  rising student numbers and structural under-funding);
> the difficult conditions under which African academics live and work, at
  times causing the proven benefits of the Internet for academic work (espe-

cially when it comes to time-consuming co-operation with »Northern« partners) to »go up in smoke« (Duque et al. 2005);

> the fact that universities were for a long time geared almost exclusively to the qualifications needs of state institutions and administrative departments (with the resulting shortage of students in engineering and the sciences, and a high proportion of students in the social sciences, law and economics; Müller 2006);

> the lack of incorporation of universities into national innovation systems (with low individual and social opportunities for knowledge transfer to create prosperity or combat poverty) and the associated risk of low work motivation among researchers;

> the marked differences evident between the universities in the region (even leaving aside South Africa) (e.g. Rosenberg 2005) that are exacerbated by the concentration of »Northern« donors on just a handful of universities (e.g. Makerere University in Uganda, University of Dar es Salaam in Tanzania, Eduardo Mondlane University in Mozambique and Cheikh Anta Diop University in Senegal) (Newthinking/DIE 2006);

> the isolation of African academics (from their African colleagues and internationally speaking), evident, for example, in the small number of international projects with African partners, and the splintering of the sub-Saharan academic landscape (along linguistic dividing lines, among other things).

Moreover, to date, the objective of drawing on traditional and indigenous knowledge, often called for by African academics and politicians, has tended to remain no more than a pipe dream.

INTERNET USE: OPENINGS AND OPPORTUNITIES   3.3.2

The Internet is becoming increasingly relevant for African researchers and the institutions they work for, and not only on account of its growing global importance in the area of science and technology. It is precisely the backwardness of sub-Saharan Africa in terms of development, among its other characteristics, together with the extreme weakness (in relative terms) of its science and technology landscape, that result in the region's special need for use of the Internet and digital storage media. First and foremost, these are the following:

> the fact that the opportunities for African researchers to access global and African knowledge and relevant literature are severely limited due to lack of resources or do not exist at all in infrastructural terms;

> the shortage of teaching resources and the frequent lack of knowledge among teachers about the current educational state-of-the-art;

> the broad lack of ICT-related and other technological know-how in large areas of the region (leading, for example, to a substantial demand for free and open-source software available via the Internet);
> the great importance of distance learning in sub-Saharan Africa, especially in its large-area states, in countries where students are dependent on courses offered by other African or non-African states, and particularly for the inhabitants of geographically peripheral regions.

In view of the conditions that prevail in sub-Saharan Africa, the Internet can thus bring about considerable changes, in some cases radical ones. The Internet tends to increase academic productivity, even if the extent of the genuine benefit may be limited in the case of international co-operation by the basic conditions of academic work practices in Africa (Duque et al. 2005). Internet-based university courses for the training and continuing education of teachers can contribute to achieving the Millennium Development Goals relating to primary and secondary education or the global development partnership. Furthermore, the Internet-based scope for access to »Northern« medical expertise, which has in some cases been available since the 1990s, is of direct importance to the Millennium Development Goals related to health, while ICTs can be used to take African medical expertise even into peripheral areas (STOA 2004b). Finally, ICTs can, given the political will and necessary capacities, contribute to establishing effective, science-based resource management (e.g. in terms of the environment).

Benin offers two positive examples of Internet use in institutions of higher education and research. Benin, it is true, is a less-developed country, yet its rate of Internet penetration is relatively high by sub-Saharan standards. In a local study carried out for one of the expert reports (University of Hamburg 2006), Tilo Grätz concluded that the CERCO project (http://mail.projetcerco.com), mainly the result of an African initiative and currently expanding to other countries, not only makes modern ICTs available to relatively well-off or otherwise funded CERCO secondary school pupils and students, it also helps supply the population as a whole with Internet access by setting up its own community cyber centres (as well as a mobile cyber centre bus). This is a good example of the trailblazing role institutions of higher education can play in terms of Internet use. An example that shows that the Internet improves the opportunities for research even outside metropolitan areas is the LASDEL social sciences centre (http://www.lasdel.net), which is based not only in Niamey, the capital of Niger, but also in Parakou, a smaller major town in the north of Benin (University of Hamburg 2006). The research centre, equipped with modern ICTs, was founded in 2005 with the support of Swiss development co-operation and has already co-operated with German partners. It can only make effective use of its international contacts with the help of its relatively well-developed Internet infrastructure. LASDEL also makes studies conducted by its staff available online, especially on social and political development in francophone West Africa. In his

analysis of the tightly-knit network of Benin Internet pioneers, Grätz uses other examples to show that ICTs are used effectively there to promote development in education and research, with the support in particular of francophone states (and also Germany) (University of Hamburg 2006).

Another expert report for the project revealed that the situation can be far less favourable within one and the same region of Africa and, indeed, even within the same country. Following research he conducted in the less-developed border region of Benin, Togo and Burkina Faso, Tilmann Buttschardt (2006) came to the conclusion that in rural areas the Internet is widely unknown except in the handful of places that have cyber cafés. The only Togolese university in this border region has to survive without Internet access, as do all secondary schools. The high costs not only hinder school students from using their e-mail accounts; even a largely donor-financed state science facility, a national park, is considering restricting the amount of time it uses the Internet.

NETWORKS FOR AND THROUGH INTERNET USE   3.3.3

Despite the difficulties and challenges outlined above, however, Internet use is already both an element in and a driver of what are in many places highly dynamic processes of reorganisation and closer interconnection in universities and in science and technology (for the presentation that follows, see Newthinking/DIE 2006).

Bandwidth consortia have appeared in many places, and have a decisive bearing on opportunities for increased university use of the Internet. Their main aim is to jointly purchase more bandwidth at lower prices; examples of these bandwidth consortia are the National Research and Education Networks (NREN, Pehrson/Ngwira 2006), as well as other academic networks (Steiner et al. 2005). Such networks also improve the ability of universities to take decisions about Internet access and (on account of their greater mass) their negotiating position vis-à-vis providers. Considerable cost savings and efficiency gains can be expected. Universities are partnered by other research institutions and libraries, with cross-border co-operation taking place in some cases.

A variety of different models are available to improve networks within the university and research landscape, although many universities in peripheral regions and least-developed countries have hardly been able to make use of these so far. One obvious short-term solution is to optimise the management of existing resources, which would involve challenges, above all, in terms of generating and improving the necessary competencies. A short- to medium-term solution already in use (by research and library networks) in various countries is the satellite-based »Very Small Aperture Terminal« (VSAT) technology that also allows mobile use of satellite dishes. VSAT connectivity makes it easy to involve rural

regions too. The recent establishment of VSAT bandwidth consortia means that a relative reduction in bandwidth costs can be achieved for an increased number of users. Terrestrial fibre-optic cables, however, are generally regarded as the best solution in terms of performance and cost for African universities, yet represent a goal that in many places can only be achieved in the long term. There are hopes that the boom in mobile telephony will motivate mobile phone companies to make investments in improving their so-called backbone connectivity. If the necessary regulatory changes were to be made, existing yet half-forgotten fibre-optic cables could also be used. As a result of the wave of liberalisation that has been seen in many countries (in most cases since 2006), new actors and private networks could indeed emerge for the first time as bona fide network operators and service providers. This also presents new opportunities for the National Research and Education Networks (NREN). If the planned Eastern African submarine cable EASSy (Chapter III) were to be regulated by a policy of open access, many universities and research institutions could obtain a high-performance connection to the global fibre-optic network (Pehrson/Ngwira 2006). Given the situation outlined above, however, VSAT connectivity is likely to continue to play an important role initially.

Besides well-established and newly created university networks in African regions, e.g. in East Africa and in Southern Africa, there are other drivers of ICT development. Worthy of mention are, for example, the South African Meraka Institute, the Ghana-based and India-funded »Ghana-India Kofi Annan Centre of Excellence in ICT«, the »Kigali Institute of Science, Technology and Management« in Rwanda, and the AVOIR network already referred to above, which is run from South Africa. On behalf of the AU, as elsewhere, the AVOIR network is also particularly active in the area of e-learning, a subject that will be dealt with in the following section.

E-LEARNING 3.3.4

The Internet is already used in teaching and learning processes in many sub-Saharan African universities (for the presentation that follows, see Newthinking/DIE 2006), albeit on an individual and informal basis in most cases. In many places, as well as at the pan-African political level, there is great interest in the organised integration of Internet use into tertiary education. This integration is at a most rudimentary stage, however, with the exception of a few (mostly donor-financed) pilot projects. Experiences of e-learning, by which is meant Internet- or intranet-based learning, vary considerably depending on context, method and objective.

An important application for e-learning is distance learning, which has long been common practice in large parts of Africa. Its flexibility enables people to

study who would not have the time to attend a course of study with compulsory attendance. The patchy availability of the Internet, however, means that extensive integration of the Internet into degree courses is not feasible as yet. In many places, experiments are underway with optional Internet components, or ones that require only sporadic Internet access, in an attempt to improve quality. A model in which educational content is imported from foreign universities on an e-learning basis in order to provide African students with a high-quality course of study at acceptable cost has only proved successful in a few cases, particularly where no local alternative exists whatsoever.

The most prominent donor-supported e-learning project is the African Virtual University (AVU). The AVU example can be used to illustrate the two different approaches to distance learning. During the first phase of the AVU's development, study content and teaching material was transferred to Africa from abroad (normally from industrialised countries); in the ongoing »paradigm change« phase at the AVU, by contrast, the aim is to develop and disseminate African content.

The AVU was founded in 1997 as an initiative of the World Bank with the aim of offering African students certified degree courses in information technology and economics that comply with international quality standards. The courses were to be made available using video transmission of lectures via satellite, and then in the form of Internet-based e-learning. For African students, the Internet offers the only realistic chance of studying at foreign universities. In order to enable access to the courses on offer, the AVU supports its partner institutions in setting up so-called AVU Learning Centers and establishing satellite-based Internet connectivity. With 53 Learning Centers (at universities in 27 African countries), the AVU is an important channel for online courses provided by European, North American and Australian universities. The AVU has been under African management since 2001, as an autonomous educational institution based in Kenya. The thinking behind the concept in the first phase, in other words, was to increase the possibilities for foreign study in African countries themselves so that Africans interested in further education would not have to take on the high costs of leaving their home country to study abroad. In 2005, however, the AVU announced a »paradigm change«, from making available external e-learning study content to strengthening African universities in creating their own e-learning courses and content. A report that gives reasons for the AVU's paradigm change (AVU 2005) summarises the experience gained from attempts to use e-learning to teach foreign study courses as follows: it is a relatively expensive instrument that makes no significant contribution to a transfer of knowledge, puts a strain on the African institutions by demanding high levels of equipment and by making available competing courses, and can therefore not sensibly serve as a model.

Depending on the context, the model of using the Internet to obtain foreign study content for African universities can be appraised in different ways. Countries in which foreign degree courses represent the population's only opportunity to complete a certified course of tertiary study or modules in specific subjects without leaving the country have found foreign e-learning courses to be successful. At universities where the foreign e-learning programmes compete with local courses in the same subjects, by contrast, the picture is a mixed one, with positive results in Ghana, for example, and more negative results in Uganda. The competition (above all in the form of the AVU) either had a detrimental effect on local university providers or prompted them to improve the courses they offer. One negative experience associated in some cases with the importation of e-learning courses is that it is said to undermine the position and motivation of local lecturers. A strategy similar to the AVU's new approach is pursued by the Agence Universitaire de la Francophonie (AUF). Founded in the 1960s, the AUF is involved in a wide range of activities, including setting up centres of learning equipped with computers and the Internet at universities in francophone countries (University of Hamburg 2006). Many of its courses were created in cooperation with African universities, and some are offered only by African universities.

There is clearly a trend at present towards strengthening and extending African e-learning competencies rather than using external content as a substitute. It is precisely the acute shortage at African universities of diverse and up-to-date teaching materials that can be addressed with digital Internet- or intranet-based content. Efficiency gains (especially in the sense of reduced costs) can be achieved by providing online access to international and African content and through the convenient updating and contextualisation of digital content. Co-operation on online development and shared use of teaching resources (»Open Educational Resources«) offers potential for efficient utilisation of the scarce available personnel capacities in the African higher education sector.

One hypothesis that is frequently put forward is that ICT use broadens the range of tertiary education without increasing costs, yet there appears to be no evidence to support this. The amount of supervision that high-quality courses require is often underestimated. Quality assurance is a central challenge in the area of e-learning in sub-Saharan Africa as elsewhere, which is why current connectivity activities should be used to define standards and compare offers.

A NEW CONFERENCE SERIES ON E-LEARNING IN AFRICA

An important new forum for exchange and information on the subject is the eLearning Africa conference (and its website www.elearning-africa.com), which took place for the second time in May 2007. This major event, which

was held in Ethiopia in 2006 and in Kenya in 2007, is supported by numerous companies, several NGOs, a number of states and the EU, and is organised by two German companies based in Berlin (Hoffmann & Reif Consultants and ICWE GmbH). On the German side, contributions to the conference were also made by organisations in the realm of governmental and non-governmental development co-operation, as well as by various universities.

ACCESS TO LITERATURE AND PUBLICATIONS   3.3.5

One noticeably positive effect that Internet use has had at African universities and research institutions is improved access to international academic literature. In this context, various donor-supported initiatives have made a major contribution to the availability of international academic online journals and publications at reduced prices, as has a trend towards free online publication. Here, too, consortia – that is to say academic libraries that have joined forces – also play an important role because they are better able to come up with the necessary subscription fees when they pool their resources. African academics have long shown great interest in free or low-cost academic online content (e.g. Willinsky et al. 2005).

The electronic publication of African content is also increasing, and the actors (of which there are few as yet) in this area are closely interlinked (Adala/Frank-Wilson 2005). African academic publications are still only available online to a limited extent, however, and are often hard to find because they are few and far between (Newthinking/DIE 2006): the reasons for this generally lie in the relatively low research output available for publication, in the fact that there is not a very pronounced culture of publication, as well as in the lack of quality and marketing activities of African journals, and in the difficulties African academics face when they wish to publish abroad. Consequently, many findings of African research, mostly available in the form of dissertations, hardly contribute at all to the furthering of African academic work, and reduplications remain unnoticed. It is true that the Internet presents an opportunity for the African research landscape to become more transparent through online publications (Adala/Frank-Wilson 2005 and, for the area of the social sciences, www.codesria.org), with »North-South« partnerships (Adala/Frank-Wilson 2005) and highly motivated librarians driving forward the development process. One possible approach is to set up institutional databases of publications. International licensing models that grant users free access and more scope for reusing digital content, while at the same time protecting authors' rights, represent a tool that may prove increasingly important given that copyright legislation is becoming ever tighter (Newthinking/DIE 2006). In Africa, however, such »open access« models would first need to be put to the test on a wider basis. One key question that is also asked

by journal publishers in Africa (Ouya 2006) is how access to African and Africa-related information can be guaranteed while at the same time creating economically viable publication models for African content providers (Adala/Frank-Wilson 2005).

ICT DEVELOPMENT 3.4

To what extent is it justified for NEPAD and other African actors to expect ICTs, and software development in particular, to present opportunities for them to develop their own technology? And what importance is attached in this context to universities and the development of free and open-source software?

In overall terms, sub-Saharan ICT development is still in its infancy. With the exception of South Africa, only isolated examples of success can be found. Ghana can be cited as one such example: at the beginning of this decade, it made this area a political focus and now boasts a small but relatively diverse collection of private ICT service providers (for relevant links, see www.ghana.gov.gh). These include a local software provider which dominates the market (www.sis.gh; Zachary 2005) and has also been able to attract foreign investors and partners, developing software specially for low-performance computers; a series of other software companies which also receive contracts from the Ghanaian branches of multinational corporations and government authorities; the already mentioned successful e-government project GCNet in the customs sector (Chapter IV.2.1.4); e-business activities in various areas and several research centres active in similar fields (particularly the Kofi Annan Centre of Excellence in ICT as mentioned above). Added to this is the work of a number of journalists with ICT competencies who generate awareness of opportunities and new developments in the area of ICTs (e.g. http://ghajict.blogspot.com). There is also a certain amount of interest in Germany in co-operating with Ghanaian (university) partners in the area of software; the GTZ has already funded university co-operation within the framework of a Public Private Partnership aimed at providing Ghanaians with training and continuing education in software development (Ruf 2003). One example of African hardware production is the Nigerian company Omatek, which also manufactures computers.

Initiatives like the new project ICT Empowerment Network (www.itu.int/parners/telecom2006/empowerment.html), run by the ITU, the US company Cisco and the Grameen Bank, aim to support graduates of ICT training programmes in starting up their own businesses. Micro-loans are to be used both to finance the ICT training and business management training, and to provide capital for start-ups. The ICT Empowerment Network is taking its lead from the Internet Training Center (ITC) project that was already launched in 2004 by the ITU and Cisco. This project, which also involves universities, has created Internet- and ICT-

related training centres in numerous developing countries. Reliable statements about the success of this and other initiatives cannot yet be made, but according to development co-operation experts surveyed, and in the view of sub-Saharan software developers themselves, the latter have relatively good chances on the labour market: there is a demand for their skills not only from NGOs financed by the »North« and from multinational companies but also from African businesses (Bridges.org 2004b), although, in the view of African software experts, pay levels in African companies often leave a great deal to be desired.

Newthinking/DIE (2006) summarise the advantages of developing ICTs in sub-Saharan Africa, and what still needs to be done in this context, as follows: in comparison with other fields of technology, the capital investments necessary to implement research and development projects are considerably lower, which in turn reduces the financial risk of a particular development proving unsuccessful. There are numerous examples of possible applications. Many developments that would make sense and may be marketable in the African context are not pursued by major providers from industrialised countries because they do not fall within the scope of the core competencies of the providers and because the companies themselves do not expect the market in Africa to be lucrative, e.g. for software that is tailored (in terms of language, among other things) to the needs of small businesses. Moreover, the basic technologies are still relatively new and in some cases are still in flux; the head-start that industrialised countries have in terms of experience in this area is not as large as it is in other industries. In comparison to other technologies, ICTs require fewer complementarities: in other words, comparatively little know-how from other disciplines is needed to make a product or service marketable. What is more, ICT products and services can be transported in what is in effect real time over huge distances at extremely low cost. This reduces the relative geographical disadvantages of African countries, e.g. the landlocked developing countries. Finally, there is considerable local demand. Despite growing use of ICTs in the continent, Africa continues to lag behind by international standards, and is primarily an importer of ICT solutions. This could be countered in the area of software by focusing more on free and open-source software.

What role could sub-Saharan universities play in the area of free and open-source software? Essentially, the studies carried out during the TAB project and, in particular, by Newthinking/DIE (2006), confirm that giving political priority to home-grown African development in the area of free and open-source software offers great promise. Technology has already been developed at various universities, primarily to meet the software requirements of the institutions themselves. Participants in the online discussion that was conducted for the purposes of the expert report also said that technology (once again, mainly software) was being developed to a limited extent at universities, despite the difficult framework

conditions. Free and open-source software networks have already emerged in various parts of sub-Saharan Africa (see box); in some cases, habits such as a reluctance to present unfinished work have had to be overcome. The various formats of Web 2.0, when they are based (like Wiki) on intensive co-operation, can be helpful in this context. One hindering factor is the fact that free and open-source software developers in Africa as a rule have less time than their »Northern« counterparts, who often spend large amounts of their free time on development work.

THE AVOIR NETWORK

The most prominent network of software developers in Africa, and an example of Internet-based research co-operation, is the AVOIR (African Virtual Open Initiatives and Resources) initiative already mentioned as a NEPAD partner. Established at the South African University of the Western Cape (UWC) in 2004, the AVOIR network encompasses some 60 software developers from 15 universities in nine African countries who work together online. The first AVOIR project involved redesigning and enhancing the Kewl learning management system that was created at the UWC; the outcome was Kewl.NextGen, which is already in use at various African universities.

Activities in the area of free and open-source software receive political support not only from NEPAD and the AU, but also through the ICT strategies of South Africa and many other states in the region; a greater input from development co-operation actors would be desirable (Chapter VII). African civil society actors, e.g. women's organisations (http://wentafrica.blogspot.com), have shown increasing interest in free and open-source software in recent years. There are also examples of co-operation between »Northern« and African universities in this field, including a project of the School of Art and Design Zurich (Hochschule für Gestaltung und Kunst Zürich, HGKZ) and Malawi Polytechnic (http://lix.cc/projects/malawi/), in which an ICT infrastructure based on free and open-source software and a thin client network equipped with powerful computers was set up and the hardware and software skills of African students were improved at the local level. Greater support for activities of this kind could help ensure that Africa's institutions of higher education are better able to fulfil the function that governments envisage for them.

INTERNET, ICT AND BASIC REQUIREMENTS   4.

According to Isaacs (2006), one of the good things about the »One Laptop per Child« initiative (Chapter VI.2.3) with its so-called »100 dollar laptop« (or XO)

is that it has generated considerable additional awareness of the problem of the digital divide and in this respect serves as a »first step in the right direction« (Wieczorek-Zeul 2007). The initiative has inspired and revitalised activities among all relevant groups of actors (including the business community). One can hardly help thinking, however, that many of the initiatives, programmes and products are focused on the much-cited »next billion« (people in the »South« without access to the Internet), that is to say the middle classes that are growing in number in many places, yet pay scant attention if any to the last billion. This is a problem for the less-developed region of sub-Saharan Africa because it could result in greater inequality.

If, despite the unresolved questions of finance, there is indeed massive use of the »100 dollar laptop« in sub-Saharan Africa, this would considerably increase the ICT penetration rate and provide users with ICTs that, while admittedly limited in terms of their functionality, have an innovative design and are probably well-suited for educational purposes. Because the »One Laptop per Child« (OLPC) foundation is keen to involve supporters of free and open-source software, the initiative could also contribute to the dissemination of this kind of software. The foundation's concept appears audacious, however, and not only because it requires considerable expenditure on the part of financially-weak states. It also relies on a kind of dismantling of the traditional system of education, and expects a great deal of young children, many of whom live in difficult conditions. It may also turn out that the initiative is asking too much of the communities that are supposed to provide a stable framework, as it were, for a technology-induced cultural revolution. The lack of participation among the target groups and the failure to bring in social and cultural expertise, coupled with planning that does not appear particularly sustainable, could prove to be the experiment's undoing. In any case, the project's social, cultural and ecological consequences are hard to predict.

Despite the hype surrounding the »100 dollar laptop«, bringing about fundamental improvements to the educational and research situation would appear to be one of the primary challenges. This is by no means intended to deny that a great openness towards new ICTs is often evident in Africa or that the demand expressed for them should be taken seriously. In the area of education, however, there are also basic requirements (e.g. in terms of general school equipment or qualifications and pay of teaching staff) the satisfaction of which is regarded as an extremely urgent task by almost all actors. First and foremost, there is a need to provide better equipment for educational institutions, improve the material status and skills of teachers, and increase their number. In this context there is no point in comparing blackboards, chalk and books on the one hand with costly modern ICTs on the other. Admittedly, creating and maintaining well-stocked libraries, increasing staff numbers and improving the work situation of

teaching staff, researchers and librarians is far from cheap. Nonetheless, there is no doubt that use of the Internet and new ICTs in education and research, even once the basic infrastructural problems have been resolved, can only serve a useful purpose if the intended users are in a position to derive tangible benefits from access to these technologies. Concepts that focus on the playfulness, inquisitiveness and creativity of children may sound appealing and may indeed be effective to some extent. An uneasy feeling remains, however, when problems such as illiteracy are casually disregarded, as in the case of a claim on one of the web pages of the OLPC foundation that »digital activities« enhance reading skills per se. A person who is motivated to learn does not automatically learn successfully. Additional strain placed on teachers in the form of ICT training courses can also have a detrimental effect on their ability to perform their core duties, namely the teaching and education of their students. Similarly, it is unwise to assume that teaching staff numbers could be cut as a result of e-learning. There is without doubt great demand for distance learning on the basis of older and new ICTs; this is particularly true of peripheral regions and crisis areas in which the radio, for example, has been successfully used to teach children cut off from schools and teachers. Hopes that e-learning will reduce staff numbers, however, are often unfounded, primarily because the need for supervision generally remains undiminished. A whole host of ICT requirements exists all the same, as do various highly promising possible uses, especially for the Internet:

> When discussing the education of children and young people, one cannot dismiss out of hand the theory that modern ICTs can have a motivating effect. Despite the risk, which has once again been the subject of much recent discussion, that minors may use the Internet and computers in a way that is inappropriate from an educational point of view or even harmful, competent and creative use of ICTs doubtless presents new opportunities. Admittedly, there is room for conflict between an »opening up to the world« and the preservation of local traditions. If this is given due consideration and scope is created for ensuring that people can put the skills they have acquired to good use in their professional lives in Africa, however, the positive effects should predominate. In peripheral regions there is nonetheless the risk of a kind of digital modernisation of unproductive »book-learning« that results in local chores (e.g. farming) being ignored without other employment opportunities being created (Buttschardt 2006).

> Sub-Saharan Africa has some experience of projects aimed at providing schools with computer equipment and Internet access. Projects that have a particularly beneficial effect on development would appear to be those that specifically promote the ICT skills of students while at the same time being designed for long-term sustainability (e.g. with state fixing of costs of school Internet use, the establishment of advice and maintenance services, the use of potential offered by free and open-source software, and solutions to disposal

problems). Software and hardware solutions should also permit effective use of older computers (e.g. in thin client networks), incur no costs of ownership (e.g. in the form of recurring licence fees) and involve little in the way of maintenance and administration in order to avoid putting additional strain on teaching staff.

> The trend towards strengthening African e-learning skills and content should have a beneficial effect on development provided that the Internet infrastructure (including aspects of cost) is significantly improved. In teacher training and other areas of tertiary education, e-learning already presents numerous opportunities, even if the content and courses on offer come from the »North«. Providing that they are sufficiently motivated and have enough spare time, pupils and/or their respective employers can profit indirectly. Here too, the importance of additional motivation generated by enthusiasm for technology, together with improved individual opportunities on the labour market, should not be underestimated. In the case of teachers (who tend to be badly paid), however, one must ensure at the same time that tangible material incentives are provided to encourage them to put the skills they have acquired to use in the area of education.

> The Internet is of the highest importance for academics in particular because their work situation in sub-Saharan Africa is for the most part problematic. Nowadays, the opportunities offered by the Internet for research, information, communication, networking and efficiency are not only an essential prerequisite for academic work, but could have an even higher significance in sub-Saharan Africa, if conditions of access and use were improved, than in more developed countries. Access to knowledge and information via the Internet can also satisfy a basic need among teaching staff at primary and secondary level, among those engaged in self-study, and among the various actors involved in informal teaching (including development co-operation staff). From a costs-benefit point of view, supplementing libraries with digitally available knowledge would appear to be a highly promising step (Newthinking/DIE 2006), especially when one considers university libraries. A whole host of questions remain unanswered, however, e.g. with respect to the economic sustainability of academic online publishing in Africa (Adala/Frank-Wilson 2005; Ouya 2005), to the financing of libraries and the qualification of librarians in ICT (Rosenberg 2005) and to international development, in which viable models for open access to knowledge have yet to become generally established.

> Improving networks within the African research landscape, though politically desirable, is not possible unless a variety of prerequisites are in place (Duque et al. 2005) and is inconceivable without advances in ICTs. The same is true of the objective not only of developing centres of excellence but also of promoting the broader research community. Universities can push forward the

use of ICTs by society as a whole and can contribute in the area of software to developing home-grown African technology. Besides basic infrastructural deficiencies, a lack of ICT skills and an often far from perfect style of governance (especially on the part of politicians and university authorities) are the primary obstacles. Improvements may be expected in all three areas (Newthinking/DIE 2006; Pehrson/Ngwira 2006), yet development is in many cases still rudimentary. Although free and open-source software can present particular opportunities, there is still often a lack of relevant expertise and little awareness of this kind of software.

Generally speaking, central actors appear to be justified in attributing a key role to ICTs when it comes to boosting education, research and technological development in sub-Saharan Africa. The developments and potentials outlined above show that modern ICTs, if used in a way that reflects the requirements and is conducive to development, can be a central element in realising the ideals of a »knowledge society« even in developing countries.

ICT IN THE PARTNERSHIP BETWEEN AFRICA AND GERMAN DEVELOPMENT CO-OPERATION   VII.

This final chapter focuses on the role ICT promotion plays in German development co-operation, and presents suggestions and possible future courses of action for the area of ICT4D and its strategic orientation. The first section (Chapter VII.1) provides an overview of key policy directives and of the institutions that are active in ICT4D. Different ways of dealing with the lack of strategic focus assigned to the area of ICT4D in German development co-operation in comparison to other Western countries are presented. The second section of the chapter (Chapter VII.2) proposes concrete ways of using ICT4D in certain key areas of German development co-operation. In conclusion, general principles of an ICT strategy within German development co-operation will be presented for discussion (Chapter VII.3).

GERMAN POSITIONS AND ACTIVITIES   1.

What is the Federal Government's policy on ICT4D? And what can be said about the strategic orientation of German development co-operation?

In the WSIS process, the Federal Government stressed more than once that it regards ICTs – in line with the international consensus – as important tools for global development and for the achievement of the Millennium Development Goals (MDGs) in particular. To illustrate the degree of political priority given to ICT4D, it is worth looking at where the subject is mentioned in the Federal Government's 12th Development Policy Report: there are, essentially, two pages that focus on the topic (BMZ 2005, p. 95f.) under the heading »Make available to developing countries the benefits of information and communications technologies (ICT)«, making reference to target 18 of the MDGs. Apart from this, ICTs are not mentioned at all in Part I of the report (»Development Policy – Working as Part of a New Global Partnership«). In Part II, which reports on development co-operation flows, the Internet is only touched on in a handful of cases, such as in connection with the question of how to link up experts in developing countries supported by German development co-operation. Technology in general hardly figures at all in the report. The relevance of home-grown technological development in the »South« is mentioned only with reference to an international report on the status of scientific and technological development in the Arab countries. Media development co-operation is only discussed in a single section on the work of the Deutsche Welle (Voice of Germany).

In this respect, the Federal Government's 12th Development Policy Report reflects the priority given to the subject of ICT4D in »everyday« development policy programmes (away from the spotlight of major events like the WSIS): ICT4D is regarded as a relatively narrow field of action with respect to MDG 8; it is virtually disregarded in all other fields of action, including co-operation with Africa. It is striking that the use and above all the development of technology in the »South« plays virtually no role whatsoever in development policy, with just a few exceptions (mostly in the area of the environment). These features of policy prioritisation have remained virtually unchanged since the report was published (2005) despite the fact that greater attention was paid to certain technology-related issues in the run-up to the 2007 G8 Summit in Heiligendamm, thanks above all to the initiative of non-German actors (some of them from Africa). In the documents on development policy and Africa published by the Federal Government in 2007 (e.g. BMZ 2007a), the subject of ICT4D is ignored.

The thematic marginality of ICT4D (and of almost all technology-related subjects) that is evident not only in German policy but also in that of some other »Northern« actors would appear problematic because it does not reflect the priorities of state and civil society actors in the »South«. There is a danger, moreover, that opportunities to overcome traditional »North-South« relations and establish the conditions for an »eye-to-eye partnership« with Africa will not be optimally exploited.

ICT: A CHALLENGE FOR GERMAN DEVELOPMENT CO-OPERATION   1.1

If one attempts to make a general appraisal of the subject of ICT4D in development co-operation, one must agree with a GTZ study (2006) carried out on behalf of the Federal Ministry for Economic Co-operation and Development (BMZ): as far as can be seen (and relative to its international importance), Germany is in overall terms no less active in this area than other bilateral donors, whether one considers the quantity and diversity or the quality of its activities (Chapter VII.2). Nonetheless, Germany has succeeded to a lesser extent than other countries in appropriately communicating the subject inwardly (to the German development policy community) and outwardly (to the general public and international forums). One must also agree with the assessment that little knowledge management and impact monitoring takes place within the area of ICT4D. Generally speaking, staff coverage of ICT4D among key actors in German development co-operation tends to be low (Table 9). In contrast to other countries (such as Italy or Canada), there are no fields in which Germany is regarded as playing a trailblazing role among donors in the use of ICT4D. In other words, as Nielinger (2006, p. 76), among others, puts it, Germany has »no

prominent ICT profile«. It is quite possible to view this reticence as a form of healthy scepticism towards the at times over-exuberant promises of salvation on the part of technology promoters. Precisely in the history of technical development aid, there are a whole host of examples of failed technology-oriented projects.

TABLE 9		ORGANISATIONAL ANCHORING OF ICT4D ISSUES
Actors	**Staff**	**Duties**
BMZ: Division: Co-operation with the business sector	1	Coordination of ICT issues within German development co-operation and representation in international bodies
GTZ: ICT4D coordination office and interdepartmental network	approx. 10	Coordination of all enquiries relating to ICTs; ICT4D contact persons in the sectors; procurement of external funds for ICT-related projects
BMZ/GTZ: Sector project on use of media and ICTs in development co-operation	2	Knowledge management (documentation and analysis of international and German experience); strategy development (sector-specific promotion concepts); implementation of pilot measures; provision of know-how for German development co-operation and international discussion
InWEnt: Sustainable business development department, business development and infrastructure division	3	Conceptualisation and implementation of projects relevant to ICT4D (capacity development and network creation)
InWEnt: Social development department	8	InWEnt-wide service function in e-learning sector (mainstreaming of e-learning at InWEnt); promoting e-learning skills in developing countries
KfW Entwicklungsbank, transport and communication competence centre	12	KfW-wide service function for technical questions relating to transport and communication
BMZ and others		Working group on ICTs and informal networks

Source: TAB, based on GTZ 2006, p. 61

However, if a strategic gap exists in the area of ICT4D, this must be regarded as a shortcoming until such time as the underlying considerations are explained and a declared development policy consensus is reached on the subject.

In this context, one must take account of two framework conditions in German development co-operation: for one thing, national policies in this area are embedded to a very great extent within international structures and programmes (e.g. Nielinger 2006, p. 73). Germany in particular supports a number of impor-

tant multilateral ICT4D programmes such as »infoDev« and »Development Gateway«. In principle, this multilateral orientation can be seen in a positive light, as the majority of bilateral and uncoordinated programmes often do more harm than good – partly because they are sometimes influenced more by national interests than by the needs and interests of the countries they are supposed to support. For another thing, German development co-operation is organised in a highly decentralised manner (Nielinger 2006, p. 76); this can be praised as one of its strengths, or criticised as splintering, although there have been many voices in recent years calling for better coordination. The individual institutions in the area of development co-operation have their fixed areas of focus and mature competencies in the area of ICT4D as elsewhere (Table 9). A more binding strategic orientation in ICTs, however, does not need to conflict with the historically developed and proven structures. Given this situation, the following strategic approaches would currently appear to be an appropriate way to reflect the cross-sectional character of ICT in German development co-operation:

> ICT mainstreaming,
> anchoring of ICTs at the level of regional programmes,
> greater support for »Knowledge for Development« programmes,
> coupling of ICT4D strategies to specific focal issues and partner countries of German development co-operation.

The ICT mainstreaming approach currently pursued in development co-operation is based on regarding ICTs as »enablers« (Chapter II). In contrast to an approach that primarily sees ICTs as a branch of industry, the mainstreaming method stresses that ICTs can be used on numerous levels and in numerous fields of development co-operation. It is hoped that this will result in technology being used in a way that will achieve the goals of development policy, especially in terms of the MDGs. As with gender mainstreaming, this approach relies on systematic checking for ICT-relevant issues in all policy areas. One major weakness of the ICT mainstreaming approach is the problem that it has no independent, centralised »power base«. Because of this decentralised orientation, ICT experts are needed in principle in all departments, policy areas and development co-operation institutions to evaluate the relevant usage issues – a requirement that will presumably be difficult to meet (Nielinger 2006). Accordingly, Heeks (2005) believes that ICT mainstreaming is equivalent to a »first-class burial« of the subject of ICT4D. Nielinger (2006), on the other hand, describes the anchoring of ICT4D in regional strategies as an »elegant solution«. All the same, these goals will not be achieved given the existing shortage of staff. In a study by the GTZ (2006), Goetzke and Stamm propose that a German ICT4D strategy be based to a greater extent on the international discussion of »Knowledge for Development« (K4D; e.g. World Bank 1999). The main advantage of this approach is that ICTs become a secondary priority after the acquisition, processing and communication of knowledge. The choice of technology must thus be suitable for reaching the strategic development goal of

»knowledge and communication«. Finally, Nielinger (2006, p. 79 ff.) proposes in his expert report that the strategic positioning and prioritisation of ICT activities be linked to existing focal issues and partner countries (Table 10).

TABLE 10 — TARGET COUNTRY MATRIX FOR PRIORITISING ICT ACTIVITIES

	Democracy/ civil society/ public administration	Peace building/ crisis prevention	Education	Health	Water management	Food/ agriculture	Environmental policy/ natural resources	Sustainable business development	Energy	Transport/ communication	Regional development
ICT affinity	◑	◔	●	◑	◐	◔	◐	◕	◐	●	◐
Ethiopia	x						x	x			
Benin	x					x	x				
Burkina Faso	x				x	x					
Côte d'Ivoire						x					
Eritrea						x					
Ghana	x						x	x		x	
Guinea				x							
Cameroon	x					x	x				
Kenya					x	x		x			
Lesotho							x				x
Madagascar	x						x				
Malawi	x		x	x							
Mali	x					x	x				
Mozambique			x					x			x
Namibia							x	x		x	
Niger											x
Nigeria								x			
Rwanda	x				x			x			
Zambia	x					x		x			
Senegal	x	x						x			
South Africa	x		x								
Tanzania	x				x	x					
Chad			x	x						x	
Uganda						x		x			
Recommended dev. co-op. priority	+++	0	++	+	++	0	+	+++	+	++	+

Source: Nielinger 2006, p. 85

In a target country matrix for sub-Saharan Africa, he evaluates the suitability of a particular focal issue for ICT use and the importance attributed to the respec-

tive focal issues by the partner countries. One reason for selecting specific focal points is the need to concentrate on areas in which the greatest impact is likely to be achieved. Nielinger sees particular opportunities in sub-Saharan Africa in the areas of »Democracy, civil society and public administration« and in »Sustainable business development«, as well as in education, water management and transport/communication. He believes that the areas of education and transport/communication are very well suited in principle to ICT use but are not prioritised because they are less relevant to German development co-operation in Africa.

These four strategic approaches are not necessarily mutually exclusive, and initially provide orientation in the necessary discussions about giving the subject of ICT4D a higher profile within the framework of German development co-operation.

GERMAN ENGAGEMENT   1.2

The observation that the subject of ICT4D has been assigned low or ill-defined priority in the programmes of the Federal Government and German development co-operation should not, however, lead one to ignore the extremely varied activities that are pursued by German development co-operation in the area of ICT4D, as they are remarkable both in quantity and in quality. After all, one strength of the ICT mainstreaming approach, potentially at least, is precisely that ICTs are deployed as a matter of course, so to speak, in all areas where this appears to make sense from a development policy perspective. This is also reflected in the handful of policy statements regarding ICT4D to be found in the 12th Development Policy Report: in its comments about the ICT-related MDG target 18, the Federal Government names ICTs as tools to help achieve four objectives in poverty reduction (BMZ 2005, p. 95), namely freedom of information and opinion, good governance, improved education and promotion of peripheral areas. (On the first point, the report refers solely to the Internet.) As focal areas for German ICT promotion, the report mentions »e-government as a component of the modernisation of states, the training of ICT experts, and Internet use to strengthen civil society and modernise the economy«.

How does the scope of official German ICT4D activities compare with that of other actors? Generally speaking, one has few opportunities accurately to assess the achievements of »Northern« development co-operation in the area of ICT4D (OECD/DAC 2005). Attempts were made during the course of the WSIS process to determine the level of investment in this area, and information about relevant projects was gathered online (www.itu.int/wsis/stocktaking). However, the ICT mainstreaming approach, in which the ICT components within development co-operation tend not to be separately itemised and quantified, not to

mention the varying duration of projects and programmes and frequent multilateral partnerships, make it more difficult to precisely assign ICT investments to individual donors. Certain figures are nonetheless available (OECD/DAC 2005) for ICT projects: according to these, Germany spent a total of 180 million US dollars in 2005 on ICT applications within the framework of bilateral Official Development Assistance (ODA); Japanese development co-operation (official and non-official development aid combined) invested three billion US dollars per year between 2000 and 2005 to overcome the global digital divide; for the years 1999 to 2005, the EU made investments in this area totalling 1.1 billion US dollars. Canada estimated that it spent at least 33 million US dollars on this in 2005, while Sweden invested 18 million US dollars in 2003. One clear trend is the sharp decline in ICT infrastructural funding in bilateral ODA since the end of the 1980s, a problem that has however recently been raised, for example, by the EU. Germany, the biggest donor in this area after Japan (and before France and the EU), invested 178 million US dollars in 1993, for example, a figure that fell to just 19 million in 2002. The proportion of total investments spent on ICT infrastructure since the end of the 1980s also dropped significantly in comparison with other infrastructure-related expenditure (transport, drinking water, waste water, energy): in the years 1999 to 2002, donor investments in ICT infrastructure accounted for only 3 % of total infrastructural expenditure (in comparison to 7 % in the years 1990 to 1998). Even though sub-Saharan Africa's share of total infrastructural support increased roughly four-fold (from 10 to 40 %), a reduction in the proportion spent on ICT infrastructure is also apparent in that region.

Traditionally, Germany's ODA investments in special ICT projects focus on projects in rural regions where market failure often blocks rapid improvements in ICT connectivity (OECD/DAC 2005). Furthermore, Germany contributes to activities of the EU (see box) and of the World Bank in the area of ICT4D. In sub-Saharan Africa as elsewhere, German bilateral ODA has long centred on improvements in telecommunications and radio use, particularly in rural areas, and on various ICT applications in education and for strengthening civil society. One should note here that, on account of the ICT mainstreaming approach, ICTs play an important role in numerous other projects, but that bilateral engagement in the area of infrastructure has fallen significantly. Moreover, support was given in the first half of this decade to research activities concerned with designing ICT4D projects aimed at achieving the Millennium Development Goals. Relevant activities in sub-Saharan Africa since 2000 include the following (Bundesregierung 2005; Catenhusen 2001; www.gtz.de; www.inwent.org):

> projects for e-learning, e-business, e-health and e-government (primarily in southern Africa, but also in West and East Africa),
> various projects relating to geographic information systems for land or environmental management (e.g. Ethiopia, Malawi, Mali, Kenya, Zambia),

> support for non-governmental organisations working on ICT4D in sub-Saharan Africa (Bridges.org and Kabissa; cf. Chapter IV),
> support for an Internet- and text message-based agricultural information system focused on Benin and for other ICT applications intended to bring about improvements in the area of food
> advice and support for pan-African actors (AU, NEPAD, UNECA) on ICT topics among others.

SELECTED RELEVANT EUROPEAN UNION ACTIVITIES

Whereas Africa was a central focus of the EU's formerly significant funding of the telecommunications infrastructure in developing countries, it was largely ignored in the EU's support, beginning in 2000, for information society programmes (with the exception of states bordering the Mediterranean). In sub-Saharan Africa, as is generally the case in the area of science and technology, South Africa is the main partner, although its neighbouring countries profit in some cases from the activities. There are currently plans to intensify co-operation with sub-Saharan Africa not only on science and technology in general, but also in relation to ICTs as a result of the WSIS process (EU Commission 2006; for an overview, see www.esastap.com/esastap/opportunities/africa.php). The most prominent ongoing or announced activities include the following:

> greater support in the areas of telecommunications regulation, broadband networks and non-commercial e-services (e-government, e-learning, telemedicine, research and development networks) within the framework of the EU-Africa Partnership on Infrastructure (EU Commission 2006), based on a preparatory phase of support for national ICT programmes in African, Caribbean and Pacific countries (with a total of 20 million euros);
> support for the creation of regional research and education networks in eastern and southern Africa (by interconnecting national research and education networks) and for the linking of these networks to the high-performance European research and education network GÉANT2 (www.geant2.net);
> the Euro-Africa ICT Initiative (www.euroafrica-ict.org) that was launched as part of the EU's START project and aims above all to help shape European-African co-operation in the area of ICTs and create the networks it requires. In this project, which is run by a French company, the South African Meraka Institute and PANOS Senegal (Chapter IV.3) are the partners.

In the course of some of these activities, Internet links in rural regions have been improved or indeed made possible in the first place, software has been developed for use in various fields of work (e.g. government administration, environ-

mental and water management) and the web presence of companies and government institutions has been improved. A further facet of German ICT4D activities is the training and continuing education of experts.

A central actor among the implementing organisations in terms of the range of issues covered by its ICT4D projects is the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), which has funded over 150 projects in this field since 2000. The GTZ currently attributes great importance to the questions of e-government and education. KfW Bankengruppe funds ICT infrastructural development in sub-Saharan Africa out of its own resources, as well as pursuing individual accompanying measures using budgetary funds. For example, KfW Entwicklungsbank supports the Eastern African Submarine Cable project EASSy, while the Deutsche Investitions- und Entwicklungsgesellschaft mbH (DEG) supports a whole series of telecommunications projects (particularly in the area of mobile telephony). The Internationale Weiterbildung und Entwicklung gGmbH (InWEnt) is likewise active in a number of ICT4D fields, focusing especially on the continuing education of journalists and of specialist managers and young managers in companies and government administrative departments. InWEnt activities relating specifically to sub-Saharan Africa include funding of a network to improve ICT use in southern Africa (Southern African Network on Information Technology in African Business, it@ab); training and continuing education courses for specialist and young managers in financial and customs administration departments and in small, medium-sized or export-oriented enterprises; a project in the area of hospital management; and courses in online journalism. In the area of continuing education for journalists and media development co-operation in general, political foundations, the German Development Service (Deutscher Entwicklungsdienst, DED), ecclesiastical actors like the Germany-based Catholic Media Council (CAMECO), and various NGOs are active. Political foundations, NGOs and ecclesiastical actors are likewise active in supporting sub-Saharan civil society actors, an area in which ICT use also plays a role at times. To this may be added the ICT4D activities of other foundations, Germany's federal states (e.g. Rhineland-Palatinate's support in Rwanda of ICT use in education) and businesses that participate in ICT4D projects. Furthermore, a number of Germany's federal ministries are involved in areas of relevance to ICT4D. German companies such as Siemens (e.g. in the area of e-government) and German universities (e.g. on the subject of information ethics) are also active in the WSIS follow-up process, which continued, e.g. in May 2007, in the form of several smaller conferences on individual action lines.

POSSIBLE COURSES OF ACTION IN THE
AFRICAN CONTEXT   2.

The current status of the ICT4D question in German development co-operation would indicate that there is a need to take stock, discuss and possibly revise the situation; some suggestions will be made in this context at the end of this chapter (Chapter VII.3). As far as Africa is concerned, and sub-Saharan Africa in particular, the results of the TAB project also include a range of possible courses of action with regard to the use of ICT4D. These will be discussed in the following section, with a focus on the areas of »good governance, democratisation and strengthening of civil society«, »the perception of Africa in Germany and the role of the diaspora« and »education, science and ICT skills«. One should remember that improvements to the ICT infrastructure (Chapter III) and improved ICT skills are of vital importance in all fields of application for ICT4D – and that other infrastructural needs (e.g. power supply) and basic requirements are in many cases not covered. The diversity of ways in which ICTs are already used under difficult conditions and the widespread enthusiasm for technology in sub-Saharan Africa are striking. In some countries, there are examples of early home-grown initiatives in areas such as the Internet. It is true that middle classes with an affinity for ICT and the »virtual class« with a vocational interest in ICTs tend to be small in sub-Saharan Africa; nonetheless, strategic partners for ICT4D activities certainly exist. Furthermore, pan-African institutions, numerous states and organised African civil society have stressed on various occasions, even after the end of the WSIS process, that they regard improved access to ICTs and greater use of this technology in Africa to be a key field of action in development policy.

As far as promoting the use of ICTs for development in Africa is concerned, the broad political consensus in the German Bundestag with regard to the following points should be remembered (e.g. Bündnis 90/Die Grünen 2007a; CDU/CSU/SPD 2007a and 2007b; CDU/CSU et al. 2007; FDP 2007b and 2007c):

> As Europe's neighbouring continent, Africa is a strategic partner of the EU and Germany; within this co-operation, the new political momentum in Africa is the central point of political reference. In this respect, African »ownership« is of vital importance as the basis for an »eye-to-eye partnership«.

> A more nuanced and realistic perception of Africa among the German public should be the goal, a perception that takes account not only of the continent's serious problems but also of its positive developments. Key examples of such positive developments are the processes to strengthen democratic statehood and cross-border integration, activities pursued by civil society actors and advances in various socio-economic areas.

> Processes to strengthen good governance and democratisation should con-
> tinue to be supported by German development co-operation on a number of
> levels (AU and NEPAD, regional economic communities, nation states, local
> politics, civil societies etc.). In this context, promoting parliamentarianism is
> of particular importance, as is the battle against corruption.
> For Africa's development to be sustainable in economic and ecological terms,
> joint activities need to be intensified. The goal should also be to improve co-
> ordination within the EU and between the countries of the »North« and to
> assign a greater role to the African diaspora.

The high level of importance attributed to development in Africa has been re-
flected to some extent in the Africa-related activities of official development aid,
especially in terms of debt relief (Bundesregierung 2007), but also in the record
level of bilateral gross ODA funding by the BMZ (approx. 845 million euros in
2005) and investments (worth at least 80 million euros in total in 2005) made
by other parts of the Federal Government. (The Bundestag invested 13,500 eu-
ros in this area in 2005.) In addition, there is the German share of net ODA
investments by multilateral organisations in Africa; in the years 2001 to 2005,
this amounted to nearly one billion euros on average. Bilateral net ODA pay-
ments earmarked specifically for sub-Saharan Africa (investments within the
framework of financial and technical co-operation; grants to subsidise the work
of NGOs, churches and political foundations, and debt relief) came to at least 1.9
billion euros in 2005 and averaged approx. 1.08 billion euros in the years 2001
to 2004 (Bundesregierung 2007).

The African policy consensus outlined above corresponds in its key points to
resolutions of the Bundestag that were proposed by the coalition parties (CDU/
CSU/SPD 2007a and 2007b). The observations contained in the proposals and the
demands of the Federal Government and the EU, as well as a number of demands
and questions in motions brought by opposition parties, will be reviewed in the
following section to identify what positive contributions can be made by ICTs,
and the Internet in particular. Specifically, the following topics will be discussed:
pan-African co-operation, parliamentarianism, the fight against corruption, de-
velopment of rural regions and local governance, support of civil society actors,
democracy in the political public sphere, the perception of Africa and the Afri-
can diaspora in Germany, teacher training and ICT use in schools, expertise in
the implications and consequences of ICT use, ICT use in universities, and soft-
ware development. When possible courses of action are presented in these areas,
examples of activities of German development co-operation will also be cited in
which the use of ICTs appears particularly promising or has already been success-
fully implemented. By way of introduction, some possible courses of action will be
discussed, as will areas in which action is needed with regard to the basic prereq-
uisites for ICT use to promote development.

BASIC PREREQUISITES FOR ICT USE TO PROMOTE DEVELOPMENT   2.1

There is broad agreement that without considerable improvements in infrastructure and without additional attempts at regulation, many of the hopes that ICT use will promote development in sub-Saharan Africa will fail to be fulfilled.

The foremost task would appear to be to improve basic infrastructure. This concerns both the underlying infrastructure that makes the use of ICTs possible in the first place (especially the supply of power, but also transport and educational infrastructure, for example) and the ICT infrastructure itself. Activities in the area of regulation are also of central importance, especially with respect to fixed line, mobile and Internet telephony. Generally speaking, each country requires its own tailor-made regulation policy in order to make the most of the existing potential of ICTs for wide-ranging social development.

POSSIBLE COURSES OF ACTION

Germany has already given consideration in various ways to the fact that improvements to infrastructure and to associated regulatory areas are of fundamental importance to the use of ICT4D. Through KfW Entwicklungsbank, KfW Bankengruppe will for example support the Eastern African Submarine Cable project EASSy with its own resources, while budgetary funds were made available to finance the project's environmental compatibility testing. On the German side, particular importance was also attached in the case of EASSy to preventing monopoly structures from becoming consolidated as a result of restrictive access and participation regulations. This will be the job of the West Indian Ocean Communications Company, a special purpose entity that smaller providers can join. There are also plans to link sub-Saharan landlocked countries to EASSy. It would thus appear sensible for Germany to continue to support the EASSy project; if the project proves successful, it may be wise to assess whether such support would also make sense in similarly important ICT infrastructure projects. Even though the EASSy negotiations dragged on for long periods without any visible results, with differences of opinion in spring 2007 between South Africa and NEPAD on the one hand and the EASSy consortium on the other, the project has already brought about positive effects at an early stage. For example, other projects and initiatives, in both the private and the public sectors, have been launched to improve broadband links within sub-Saharan Africa, and representatives of African civil society have examined this issue in detail. Development policy engagement in the area of ICT infrastructure, which has in recent decades been substantially stepped down, can thus potentially not only contribute to ensuring that similar projects are designed in a way that is conducive to development, but can also help stimulate other activities. Infrastructural support

can also make sense in mobile telephony, an area of great importance to sub-Saharan Africa. For example, the Deutsche Investitions- und Entwicklungsgesellschaft mbH (DEG), a company of KfW Bankengruppe, supports the creation and expansion of mobile phone networks of private African operators through investments and loans. Here too, one finds examples of development policy actors launching and promoting private sector initiatives.

In the domain of regulation, a general reduction in the costs of ICT use and equal access for African landlocked developing countries are likewise primary development goals. One particularly interesting option is to bring about an improvement of the situation in rural regions and socio-economically peripheral areas in general. Basic prerequisites to achieve these goals include strengthening civil society actors, dismantling monopoly structures at all levels, and the political will to react appropriately to market failure. In this respect, development co-operation can play an important role. This also applies to fundamental improvements in the regulatory domain, especially when it comes to supporting the relatively young regulatory authorities, which often have little in the way of real skills or experience. Germany's experience in this area could also be of interest for sub-Saharan Africa. There is a particular need for advice in »Voice over Internet Protocol« (VoIP) regulation. The major importance of this technology for international telephone calls in sub-Saharan Africa should be remembered, and steps should be taken to ensure that the observable trend towards legalising VoIP in sub-Saharan Africa is accompanied by a further dismantling of monopolistic structures and greater consideration of aspects such as service quality, security and consumer protection (Southwood 2007). If regulation that promotes VoIP use were put in place, this could create incentives for further improving the provision of broadband (Rawson 2007).

Development co-operation can help create the basic conditions for use of ICT4D, especially in cases where the market is not able to achieve this on its own. Co-operation with governmental partners in Africa allows the strengthening of carefully selected bodies which are interested in dismantling monopoly structures and can contribute to ICT use that will promote development in society as a whole.

GOOD GOVERNANCE, DEMOCRACY AND STRENGTHENING OF CIVIL SOCIETY   2.2

The use of ICTs is widely regarded as an effective development policy tool to promote good governance (e.g. Bundesregierung 2005a): according to this view, ICTs can be used to improve the efficiency of a government, e.g. to speed up administrative processes or make particular services available to target groups, such as information on health-related issues. The following are cited as the focal

areas of Germany's promotion of ICTs, ahead even of modernising the economy: e-government as part of state modernisation, training of ICT experts, and use of the Internet to strengthen civil society. According to the Federal Government, more than 180 million euros was invested in programmes for developing countries in 2005, e.g. to finance the telecommunications infrastructure in Algeria, Nigeria, Tanzania and Uganda, and for Internet training of local NGOs with a view to promoting democracy in western Africa. The Internet, the Federal Government says, plays an important role, especially in relation to the issue of freedom of information and opinion: as a virtually inexhaustible source of information and as a medium it increases the opportunities for participation in knowledge and debates of a private, national or higher-level nature and thus potentially improves the ability of individuals to take decisions.

The following section deals with the starting situation and possible courses of action for ICT use with the aim of intensifying pan-African co-operation (Chapter VII.2.2.1), strengthening parliamentarianism (Chapter VII.2.2.2), fighting corruption (Chapter VII.2.2.3), developing rural regions and improving local governance (Chapter VII.2.2.4), supporting civil society actors (Chapter VII.2.2.5) and strengthening democracy in the political public sphere (Chapter VII.2.2.6).

PAN-AFRICAN INSTITUTIONS AND INITIATIVES   2.2.1

The pan-African initiatives and institutions that have emerged since the beginning of this decade have given rise to great political hopes. Supporting them is seen by Germany, too, as an important task. In this respect, the GTZ programme »Co-operation with Pan-African Institutions in South Africa« (commissioned by the BMZ), which was launched in 2006, is of particular interest as a landmark project of German development co-operation in the area of good governance. Its African partners are the Pan-African Parliament, NEPAD (especially its secretariat), the APRM secretariat and those states that have begun the APRM process (Chapter IV.1.2.1) or plan to do so. (The AU Commission is supported by India in the area of ICTs.) Germany already plays an important role, in a primarily conceptual and consultative capacity, in technical co-operation with African partners, partly as a result of previous GTZ projects. Furthermore, it is currently helping to coordinate the various bodies acting as donors in respect of pan-African institutions (the number of these bodies has recently expanded to include the EU, Great Britain and Italy, among others), and is supporting co-operation between African states committed to the APRM process. The GTZ also works together with regional organisations and with UNECA, especially on the creation of ICT consultancy capacities.

POSSIBLE COURSES OF ACTION

For pan-African institutions, the fact that modern administrative bodies and international and supranational information and communication structures are being created concurrently with the introduction of ICTs and the Internet appears to present a special opportunity. The challenges otherwise typically associated, in the »North« as elsewhere, with adapting ICT strategies to mature administrative and communications structures, therefore pose virtually no problem at all. Furthermore, the Internet and ICTs are the ideal choice precisely in those situations where international information and communication processes have to be organised with a large number of different partners. African partners, as well as representatives of German development co-operation, have established a considerable demand for ICT in this domain. The Internet could achieve the goal of providing both the relevant national actors and interested members of the general public and civil society with direct access to the documents of African Union institutions (Kane/Mbelle 2007).

German development co-operation could step up its support by identifying and formulating ICT demand in pan-African and regional institutions and by coordinating donors. It would also make sense for it to maintain its current supporting role in designing and implementing national APRM processes (Chapter IV.1.2.1), for example with regard to the use of ICTs in impact and process monitoring, the consideration of specific administrative and dialogue cultures, and the involvement of national civil societies. Given the efforts to combine technical and financial co-operation more closely in German development co-operation, it would appear appropriate for its role in implementing ICT solutions to be extended beyond a merely consultative one.

PARLIAMENTARIANISM   2.2.2

Strengthening African parliamentarism at all levels is one of the priorities of a policy for Africa. Generally speaking, Germany should coordinate its activities with other donors, especially within the framework of the EU, and take part in international and EU activities while at the same time ensuring that the particular expectations of African partners with respect to Germany are met. As an institutional actor, the Bundestag potentially has an important role to play here.

The AU's Pan-African Parliament (PAP) is a new central actor on the pan-African stage whose competencies, it has been announced, are to be rapidly expanded. The PAP is currently made up of delegates of the national African parliaments; this gives rise to particular needs for international coordination, information and communication, as the parliamentarians rarely meet. Similar challenges are presented by the physical separation of the AU Commission (Ethiopia) and the PAP (South Africa), and by the existence of other relevant political actors be-

sides the nation states (e.g. the NEPAD and APRM secretariats and the institutions of the African regional organisations). There is scope for improvement, for example, as regards the web presence of the PAP, rapid transmission to members of parliament and administrative staff of the information they need, internal information and communication structures and cooperation with national parliaments and other relevant political and civil society actors.

Moreover, as far as the national African parliaments are concerned, there is still in many cases a need to generate greater awareness of the relevance of modern ICTs for the work of parliamentarians and administrative staff. Especially if one is envisioning the ideal of a transparent, citizen-centric and independent parliament, however, some African parliaments would not yet appear to be suitable partners for development co-operation on account of democratic deficiencies in their national political systems.

POSSIBLE COURSES OF ACTION

Through the ongoing activities of the GTZ, on behalf of the BMZ, Germany has so far played a key role in co-operation with the Pan-African Parliament (PAP) (Mongella 2006). Special knowledge, competencies and contacts exist in this respect, and it would appear sensible to promote these in a targeted and more intensive manner. The issue of knowledge management is particularly important. Specifically, this is about things like providing parliamentarians more quickly with better information about internal parliamentary processes and relevant political issues, organising communication with national parliaments, and other efforts to build pan-African networks. The Internet and ICTs would appear to be essential if the PAP is to live up to its self-defined role as the »voice of Africa«. Not only could Germany further contribute its expertise in the area of conceptual consultancy; it could also provide greater support for qualification measures undertaken by its African partners and play an active part in implementing ICT solutions. Close co-operation with other interested donors would appear useful, for example in view of the Italian parliament's intention to become active in the area of ICTs in particular.

In accordance with the resolution proposed by the coalition parties, the Bundestag expects the Federal Government and the EU to put concrete measures in place to support the role and activities of Africa's democratically elected national and regional parliaments and an inter-parliamentary exchange with them (CDU/CSU/SPD 2007b). The Bundestag believes it is particularly important for the Federal Government to encourage the governments of its African partner countries to inform their parliaments directly of development aid provided by Germany. In this respect, the Internet would be an obvious way to increase transparency for everybody, including the general public.

One important option for strategic action is to give greater support to parliaments not only in robust democracies, but also in deficient ones: the precarious position of parliaments, and the fact that they are often dependent on national governments, is regarded as a structural weakness of African political systems. A targeted promotion of the use of ICTs by parliaments could reduce the negative impact of this structural weakness and strengthen the ability of parliaments to act independently. The focus should be on improving internal work processes, partly through involvement in international activities (e.g. Vitali/Zeni 2006 and 2007), interaction with organised civil society and control of the executive. As far as e-participation and the transparency of parliamentary work are concerned, there should be promotion or initiation of online services for citizens (such as Mzalendo, see Chapter IV.2.2.2) which already play a positive role in other countries (Grunwald et al. 2006). Political foundations could also serve an important purpose in promoting inter-parliamentary exchange.

SPECIAL COURSES OF ACTION FOR THE GERMAN BUNDESTAG

The Bundestag has already become active in this respect; vice-president Susanne Kastner, for example, visited the Pan-African Parliament and announced co-operation between the Bundestag and the PAP (as well as a 500,000 US dollar contribution by the BMZ to the PAP trust fund) (Massoi 2006; Mongella 2006). Furthermore, the Bundestag recently reaffirmed its partnership with democratically elected national and regional African parliaments (CDU/CSU/SPD 2007b) and announced its intention to investigate the possibility of setting up its own parliamentary exchange programmes with African states.

The German Bundestag has long been an international leader in the domain of parliamentary ICT use (Grunwald et al. 2006) and recently reaffirmed its trailblazing role with activities in the field of electronic petitioning. With regard to the use of ICTs by African parliaments, there are thus three possible courses of action:

> tangible measures in the near future relating to administrative co-operation with the PAP, which could be prepared, for example, by inviting a PAP delegation (including experts in the area of administration) to Germany;
> an ICT-led intensification or revitalisation of inter-parliamentary activities of the Bundestag in relation, for example, to democratically elected parliaments in Africa that have already demonstrated their clear will to interact with civil society and to monitor the government (e.g. through sustainable administrative exchange programmes in which networks of former administrators are also encouraged, and the provision of ICT advice and support for partner parliaments);

> greater consideration of other actors in inter-parliamentary co-operation such as the Inter-Parliamentary Union (IPU), which is involved in relevant WSIS follow-up activities (Chapter IV.2.2.2).

CORRUPTION   2.2.3

Fighting corruption is widely seen as a key prerequisite for progress in developing countries, particularly in Africa. In this connection one should remember that e-government as a rule cannot compensate for management deficits, and that good management is rather a condition for efficient e-government (IfG-CC 2006a). For this reason, the experience a state has gained in putting successful administrative reforms into practice can also have a positive effect on the implementation and progressive reform of e-government. The administrative reality south of the Sahara, however, is still largely characterised by practices and structures that present an obstacle to development. Official bodies are isolated to a large extent because neopatrimonialism and centralism virtually prohibit effective horizontal communication structures. Distinctive social and cultural features that are historically determined influence politics and administration; in turn, the way these function, especially as regards the central problem of corruption, provokes corresponding reactions and expectations on the part of citizens. To break through this vicious circle, the first step is to take realistic stock, on a more scientific and empirical basis, of the current situation in each case. Next, tailor-made solutions have to be developed and finally implemented, with the involvement of civil society and taking account of the special needs of the poor.

POSSIBLE COURSES OF ACTION

One noteworthy activity involving significant German participation is the online reporting of corruption cases in Kenya that was described in Chapter IV. The experience gained by German actors participating in this project could also be put to good use in other contexts. For this to happen, the experience would have to be evaluated and checked to ensure that it is suitable for transfer to other countries. When implementing measures intended to combat corruption, an awareness of the problem in government, business and civil society, and appropriate anchoring of the projects in political and organisational terms by the partner countries, are decisive factors in achieving a successful outcome. A favourable environment can be created by implementing basic administrative reforms such as those introduced in Ghana for the GCNet customs system (Chapter IV.2.1.4) (IfG-CC 2006a). Where at least an average rate of ICT penetration exists in the general population (and especially in NGOs and commercial enterprises), the use of ICTs within the framework of targeted administrative reforms is the obvious choice. The situation in South Africa, for example, also appears

favourable; the country is already using e-government to fight corruption (Public Service Accountability Monitor, PSAM; IfG-CC 2006a).

Especially in areas where government actors have a particular interest in keeping their financial activities secret, as in Nigeria's Niger Delta region, for example (HRW 2007), steps should be taken, given the increased risk to critics, to ensure that ICTs can be used for anonymous whistleblowing and critical reporting. In this respect, support on the national level is an important factor; this would have to be stressed during co-operation with African governments, as otherwise there is a risk of increased repression of anti-corruption activists (SDN 2007).

Corruption is not a problem of individual malpractice, but a structural feature even of post-authoritarian governance in sub-Saharan Africa (e.g. Bako Arifari 2006), which is why cross-sector and cross-border studies of the corruption problem are helpful (e.g. www.lasdel.net/spip/article.php3?id_article=91). As far as e-government projects are concerned, the challenge is that precautions have to be taken against corruption at all levels. Development co-operation would do well to focus first and foremost on actors practising good governance and to involve suitable civil society actors to a greater extent in designing and implementing projects. In this context, ICTs, and above all the Internet, present opportunities for increasing transparency and improving the scope for monitoring of state and administrative action. The projects cited in Ghana and Kenya could serve as models, providing their specific features were taken into account.

RURAL REGIONS, THE LOCAL LEVEL AND DECENTRALISATION   2.2.4

One central problem faced by the larger states of sub-Saharan Africa in particular is how to create efficient and democratic statehood at the local level and in the regional entities of the nation states. This is precisely where there are great hopes for ICTs and the Internet, and for civil society actors. One basic prerequisite is to ensure the acquiescence of the state, especially with regard to such elementary matters as tax revenues and fundamental planning data; this can be achieved above all through efficient, citizen-centric and democratic structures at the local level. It is a question, for example, of initiating measures to dismantle the centralist structures that exist in many states (primarily as a result of the colonial legacy and the political agendas pursued by post-colonial regimes). Modern statehood is something new in many remote areas, and is only gradually replacing traditional governance structures there. In such areas, on the other hand, the use of modern ICTs represents yet another striking characteristic of modernisation, a kind of cultural revolution in the sense of opening a door to the modern world. As on the pan-African level, albeit under quite different starting conditions, the situation at the local level and, in particular, in peripheral rural regions, is in principle favourable to the extent that modern political

and administrative structures can be set up concurrently with the introduction of modern ICTs.

The field studies conducted for the project show in exemplary fashion (especially with respect to Benin) how modern ICTs and the Internet in particular become part of the local culture in rural and other peripheral areas (Buttschardt 2006; University of Hamburg 2006). A particularly important role would appear to be played by private actors (e.g. owners of cyber cafés), media community centres (mostly financed by the »North«), educational institutions, various development co-operation actors (effective in many cases only on account of their own use of ICTs), and local administrative bodies. Admittedly, the latter also fall back on private sector services in the absence of infrastructure. Some have argued (e.g. Bundesregierung 2005a; FDP 2007a) that mobile phone networks, which are expanding fast in many developing countries, could potentially link rural regions in particular to global electronic networks more quickly than could other technologies. Various development aid projects, as well as »bottom-up« initiatives, show that ICTs can be used in rural areas to strengthen civil engagement and the scope for political action on the part of local communities, to communicate with political leaders who live far away, and to articulate interests on a supra-regional, national or transnational level. Women have played an especially active role in various projects. Furthering their cause, economically and in other ways, is generally regarded (in the African context as elsewhere) as a key success factor for development measures in peripheral and rural areas.

POSSIBLE COURSES OF ACTION

It is precisely in rural regions that a fixation on the Internet should be viewed with great scepticism. Old ICTs like the radio are often the more obvious choice in such areas, ideally in combination with the Internet so that awareness can be raised, if necessary, beyond the borders of the region in question. However, even traditional oral communication, entirely without the use of ICTs, can play an important role, for example where use is made of travelling information-carriers. Projects run by state-funded German development co-operation also often support political and social participation in rural areas without using much in the way of ICT.

All the same, modern ICTs can play an important role in strengthening local governance: they have already achieved considerable significance in German development co-operation through the support they provide for regional and local administrative bodies in African states (e.g. Benin, Ghana, Mali and South Africa), especially where decentralisation is the target. Besides improving the online presence of local communities with the support (in Benin for example) of the GTZ and the German Development Service (DED), numerous areas of action at the local level are well-suited to the use of ICT4D (e.g. finance and taxation; land administration; fighting corruption; intercommunal co-operation;

community development planning; land registration; local business development; organisational development; support of national poverty strategies and participatory local monitoring of their impact). In addition, ICTs can be used to strengthen regional authorities that oversee local councils in their consultative capacity vis-à-vis communities. One model example is the Mauritanian cyber commune project of the GTZ (Altmann 2003): it proved that an Internet strategy for a governance project in a poor and remote region can be successful, invested in women as key civil society actors – who then formed a national and transnational network using the Internet – and stimulated pan-African interlinking in the area of local e-governance.

Community media centres, including cyber centres, can help bring about positive changes to internal communication in peripheral areas and improve the scope for action of rural populations and of those who represent their interests, in relation to supra-regional actors. What is more, centres of this kind often present the only opportunity for government administrative personnel to use the Internet. As such, they would also appear to be a first step towards strengthening civil society vis-à-vis the state and towards political decentralisation.

In the economic sector, one finds examples of the coupling of microfinance and ICT4D activities such as the Grameen Bank and Foundation of Nobel Peace Prize winner Mohammed Yunus. The idea behind the Grameen Foundation's »village phone« project is to provide people, above all women, with microloans (backed up by technology and infrastructural activities) to help them create small and micro-enterprises in the area of mobile telephone services. The role of ICTs here is threefold: they are used to make the work of the lenders themselves easier through automation, to serve as a springboard out of poverty for the service providers and their families, and to meet ICT needs in rural areas (primarily business calls, procurement of information about nearby markets, and exchanges with friends and family members living in cities or the diaspora). Using microloans to support these village service providers and privately run cyber cafés is an obvious step in the right direction. Cyber cafés often need support when their connection to the Internet is interrupted for weeks at a time, as this can drive the café operators into bankruptcy. Such support would appear particularly important in cases where the closure of a cyber café would threaten to deprive a large area entirely of Internet access.

More systematic use of the potential offered by various ICTs, including mobile telephony, to improve local governance and develop peripheral regions would appear sensible, and would reflect the political priorities of German development co-operation in this area (e.g. decentralisation, and the strengthening of civil society and, in particular, of women). There should be greater German collaboration with relevant initiatives such as the »LOG-IN-Africa« project (www.loginafrica.net) supported by Canadian development co-operation, and a

more intensive exchange of experience with those in charge of the UN's »pro-poor e-governance« activities (e.g. Bestle 2007).

STRENGTHENING CIVIL SOCIETY   2.2.5

The trailblazing role played by civil society and other non-governmental actors worldwide in the early phase of the Internet boom can currently also be observed to some extent in Africa. The upswing in non-governmental ICT use in Africa is by no means attributable solely to strong support from the »North«: even if there are numerous examples of such effects, a genuine African dynamism is evident on various levels in this area, especially as regards the emergence of an Internet public sphere in Africa (Chapter VI.2.1.6). Nonetheless, the Internet's influence in the strengthening democratic and civil society structures is still very limited at present in most states south of the Sahara (University of Hamburg 2006). German development co-operation has also already launched a number of noteworthy activities in terms of ICT use to strengthen African civil societies. One example is the support given to the civil society ICT connectivity and training organisations Bridges.org and Kabissa (Chapter IV; Bundesregierung 2005; University of Hamburg 2006). Among the relevant fields of action in German development co-operation in which the use of ICTs and of the Internet in particular can play an important role is the strengthening of co-operation between state and civil society in African states, for example with a view to the APRM processes (Chapter IV.1.2.1) that are supported by German bilateral development co-operation in many countries (BMZ 2007b). The ICT support of political opposition forces and election observers in individual cases by German actors is also worthy of mention here. Despite these and other activities, however, there are additional possibilities for using ICTs as well as an urgent need for ICTs among civil society actors in Africa.

POSSIBLE COURSES OF ACTION

Best practice models for ICT4D projects in this area are those that fulfil specific sustainability criteria, such as a gradual move away from dependency on initial funding; continuity in terms of personnel; political independence; multiple ownership and work transparency; constant advances in both technology and contents; institutional consolidation; and continuous adaptation to changing target group needs and framework conditions (University of Hamburg 2006). The Internet can serve to improve the political involvement of organised civil society, for example by enabling online registration of non-governmental organisations (NGOs) and by making available on the Internet databases or online consultations on APRM processes (Chapter IV.1.2.1) and other relevant political processes.

NGOs in sub-Saharan Africa that already make considerable use of ICTs increasingly need additional modern ICT resources to fulfil their socio-political

remit and achieve their goals (University of Bonn 2006): this affects on the one hand the efficiency of their internal structure (organisation and internal communication), and on the other their impact on the outside world (networks, politics, society) and their access to and requirements for information. A comprehensive German ICT4D strategy should therefore accord greater priority to promoting the use by NGOs of ICTs and the Internet in particular. Conceivably, this could be linked to activities to promote democracy. Support of ICTs for NGOs should be designed specifically to secure ICT infrastructure (hardware and software, electricity, network access, services etc.), provide training and continuing education for personnel, and assist with financing, by setting up, for example, an ICT fund for civil society organisations in the form of a Public Private Partnership (PPP). The Internet in this context is becoming an important element of ICT strategies. In the area of development co-operation, there could be more support for PPPs between individual NGOs or associations of NGOs and the private sector. The Federal Government could encourage its partners to support appropriate model projects and propose at international level an ICT fund for NGOs in the poorest countries. Given that there is a marked need to create networks for NGOs among themselves, there could additionally be support for measures that contribute to making network structures more efficient (e.g. Internet portals, group mobile phone tariffs etc.). Support for ICT4D associations that bundle the interests of several NGOs is also relevant here, for example as collective negotiation partners in the area of ICT access charges. Because a not insignificant number of NGOs access the Internet via Internet cafés, information kiosks etc., funding for such structures is also worthwhile, and likewise has interesting potential for PPPs. As far as continuing education for NGO staff is concerned, e-learning offers considerable potential, which is why German development co-operation could promote special courses for NGOs in this area. Finally, use of ICTs by NGOs in developing countries could also be tackled more systematically on the international level, e.g. in the WSIS follow-up rounds and by exerting influence on the programmes of international development actors like the World Bank.

The African women's movement is already an important partner for German development co-operation. It is an example of a well-established social movement that has recognised the special benefits offered by new ICTs, and the Internet in particular, for its work, and has increasingly adopted these technologies. A great deal of importance is generally attributed in development policy discourse to improving the life situation of women and girls. Despite the variety of independent and donor-funded initiatives pursued by African women's organisations and individual women, however, many challenges remain on account of the gender-based digital divide. Because the partner organisations obviously have a great interest in ICT4D and because they already have a strong commitment to a pan-African orientation which is widely regarded as desirable, Ger-

man development co-operation in particular should intensify those activities that attribute the highest priority to promoting women in general. Examples of possible partners among NGOs are Femnet (e.g. Muthoni Wanyeki 2005), which is already supported by German development co-operation, and Fahamu (Chapter IV).

POLITICAL PUBLIC SPHERE AND STRENGTHENING OF DEMOCRACY   2.2.6

When it comes to strengthening the political public sphere in democratic African states and promoting the oppositional public sphere in dictatorships, mass media and civil society organisations are the most important points of reference. African journalists and NGOs stress here that greater assistance in the area of ICT equipment and Internet access would be desirable in addition to the important and extensive support that has already been provided for training and continuing education. The Internet already plays an important role in this context: journalists, who in many areas south of the Sahara are among the pioneers of Internet use, now find it almost impossible to cope with their everyday work without Internet skills and access. Online portals and communities, and the websites of various actors in civil society and journalism have now become forums for political information and discussion of a variety of cross-border issues, including the creation of a kind of pan-African public sphere that critically monitors the activities of NEPAD and the AU. A major contribution to the available online information and communication about the continent is made by African newspapers, magazines and academic journals with Internet editions. Africa's growing political blogosphere (that is to say all blogs dealing with political issues), moreover, raises not only central political problems in Africa and the continent's role in the world, but also specific disputed issues that are neglected in most African mass media (such as the institutionalised homophobia that exists in many African states). Addressing and engaging the diaspora, to whom much of the online content is tailored, is of particular importance for the Internet public sphere in Africa. There are already examples that show that a critical Internet public sphere and online journalism have attained importance in national political processes (e.g. University of Hamburg 2006). Some even express the view that precisely in Africa, with its problematic or poorly developed mass media structures, the Internet is likely to have greater political relevance than in the »North« (e.g. Limberg 2006). The Internet is used to make information available to political actors in their own countries; this information is then transferred to other media forms and thereby enters into social discourse. Especially in countries under authoritarian rule and in all situations where repressive measures against journalists are the order of the day, the Internet represents one means of inexpensively making information from the opposition available to

interested parties within the country, of holding critical discussions and of providing the global public with quick and comprehensive information about the problems in African countries. In some countries, steps have therefore been taken to prevent the use of the Internet for political ends. Many independent NGOs and opposition groups with an online presence, however, operate from a base in exile. Sub-Saharan Africa likewise already has some experience of e-activism, that is to say the use of modern ICTs for political campaigns and protests. Given the number of mobile phone users, which is relatively high compared to the number of Internet users, and in view of the successful use of mobile phones by opposition forces in China and other Asian countries, text messaging probably offers the greatest short- and medium-term potential for e-activism, especially in African countries under authoritarian rule, where the Internet can play an important supplementary role alongside radio.

POSSIBLE COURSES OF ACTION

The first World Summit on the Information Society (WSIS), which took place in Geneva in 2003, reached consensus on a final declaration that underlined first and foremost the importance for the information society of free and independent media. This was deemed a success, particularly by democratic states and civil society actors. Corresponding support for free and independent media in sub-Saharan Africa as elsewhere would thus appear politically desirable. In this connection, it is above all media development co-operation that should contribute to strengthening democracy in the political public sphere. In German development co-operation, media development co-operation is pursued mainly by political foundations and NGOs, alongside the work conducted by Deutsche Welle and InWEnt (especially in the area of training and continuing education for journalists) (University of Hamburg 2006). In view of the central importance of democratic mass media and a critical public sphere, it would be alarming if the World Bank proved correct in its assessment that media development co-operation in recent years has been stepped down in overall terms worldwide (AMDI 2007). It would appear appropriate for media development co-operation to be upwardly revaluated within German development co-operation, for it to adopt a more open attitude towards the Internet and, in particular, towards exploiting the potential for combining tried and tested ICTs and media (such as the radio), and for there to be greater support in the area of ICT equipment and Internet access. Reporting of political ICT issues in sub-Saharan Africa, the promotion of which is one of the focal areas in the work of some »Northern« actors in Africa, could also receive greater attention in German media development co-operation: even in important states in this region, such reporting would still appear to be severely restricted in the established mass media, and is rarely critical and analytical in style (Berger 2006). Furthermore, media- and ICT-led research in African studies and other disciplines should be promoted in a tar-

geted manner. Global implementation of freedom of opinion and the press on the Internet is particularly important, and the Federal Government should seek to exert its influence in this context on governments that suppress freedom of opinion and the press (CDU/CSU 2004).

An e-activism pilot project, restricted to just one country, would also be a conceivable way of supporting civil society and democratic structures with a view, for example, to promoting democratic elections. A project of this kind has already been proposed for Nigeria in a study carried out on behalf of the Gates Foundation (Res Publica 2007). The goal of such a project should be to use a concerted approach to improve the ICT skills and equipment of journalists and NGOs, to promote specifically those ICT applications that are particularly useful for e-activism (e.g. text messaging systems linked to the Internet), and to improve the technical possibilities for civil society information and communication (by means, for example, of the radio) during elections and in remote or crisis-stricken regions. A political basis for such a project is already in place in Nigeria, whose governing party has itself expressed its intention of making the next national elections fairer and more correct than in the past. Generally speaking, a less expensive or free use of text messaging, and the availability of software to allow mass text messaging, would appear very important for e-activism. ICTs and media could potentially play an important role in war-torn areas where steps need to be taken to prevent social conflict or to ensure a better information basis during wars. Providing at-risk communities with an ICT-based warning system would only appear to make sense, however, if scope exists for such communities to escape or defend themselves and if precautions are taken to prevent panic from breaking out.

THE PERCEPTION OF AFRICA IN GERMANY AND THE ROLE OF THE DIASPORA   2.3

Given the low level of knowledge about sub-Saharan Africa in Germany, and the predominance of purely negative views of the region's development, the need for political action has been regularly identified in recent years by the German Bundestag and others. The same applies to an upwards revaluation of the role of the diaspora by the global »South«, which is increasingly being recognised in the »North« as being an important partner for development (CDU/CSU/SPD 2007a and 2007b). To date, however, the opportunities that greater involvement of the diaspora offers in terms of creating an improved and more realistic public perception of Africa in Germany have remained virtually unexplored. Improving the German public's knowledge of Africa and consolidating German academic expertise on Africa are desirable objectives for a number of reasons.

Although Africa is one of Europe's neighbouring continents and a major point of departure for migration to the EU, very little space in Germany's media public sphere is devoted to reporting on Africa – beyond focusing on crisis phenomena – especially in comparison to reporting on Africa in countries whose colonial past is of more recent date. Specifically, African views of the relations between Africa and Europe are rarely put forward; there is also a lack of any continuous reporting, above and beyond the specialist media, of central issues (such as African efforts to achieve unity and national democratisation processes). Sub-Saharan Africa in particular is often reduced to the role of aid recipient. While it is true that this may encourage private individuals to make donations, during famine crises, for example, it also makes it easy to ignore positive developments south of the Sahara. The same can be said of certain aspects of relations with Africa in which the continent suffers from »Northern« measures rather than benefiting from them, as for example in the case of »Northern« agricultural protectionism and the export of highly subsidised goods, which makes life difficult for many national economies south of the Sahara. Furthermore, reducing sub-Saharan Africa to crisis phenomena, as is widely done in the media public sphere, is to communicate an image of African people that is characterised by misery, helplessness, irrationality and violence, which in turn can exacerbate racism. The diaspora can play an important positive role as cultural mediators. Besides the perception of Africa in the mass media, the (considerable) academic expertise on Africa that exists in Germany could also be expanded, especially through greater promotion of African studies and taking account of the information needs of development co-operation. Another worthwhile course of action would be to make better use of the expertise of the academic diaspora and of African scholars working in their home countries.

POSSIBLE COURSES OF ACTION

The Internet, being an ultimately global network for information and communication that is also widely used by the African diaspora, represents in many respects an important means of reporting and communicating on African themes, of communicating with actors south of the Sahara, and of strengthening the relations between the two neighbouring continents.

One possible line of approach would be to establish an online portal (perhaps entitled »Neighbouring Africa«), operated either by or on behalf of the Federal Government, which could serve as a source of information for members of the public with an interest in Africa. Efforts would have to be made to bring together information from different ministries about Africa-related activities pursued by the government, to provide information and links to sites on non-governmental German activities (including those of German businesses in Africa) and to couple the site to online content provided by African partners (including civil society actors, businesses and the mass media). This would also help

make the diverse Internet public sphere in Africa more accessible in Germany, especially to journalists and experts with an interest in the subject.

Not only in this respect, but also with a view to strengthening African journalism, it is worth considering how to create or promote opportunities for African journalists to publish on European websites as a means of improving their earnings potential. Given their generally very low income levels, which have a negative effect on their working conditions and journalistic independence, the costs are likely to remain at a reasonable level. At the same time, African online content would be created and knowledge of Africa in Europe would increase. Once again, the African diaspora in Europe and experts in African studies would be the strategic partners for German politicians and development co-operation here.

Following a British example, the Federal Government already has plans to make it easier for immigrants to transfer money inexpensively to their home countries by setting up a website offering constantly updated information about financial service providers in this area. Until now, the charges for such transactions have been relatively high. This kind of website could also provide other information that is of interest to the diaspora. Cultural and development policy could promote Africa-related online content more intensively, as well as involving the diaspora to a greater extent. The diaspora already plays an important role in sub-Saharan civil society discourse and in making expertise available for local activities relevant to development (e.g. in the area of healthcare). It would appear appropriate to promote the African diaspora in Germany, in order above all to interconnect the various actors, also through increased advertising of the diaspora's activities which could be done, for example, by development co-operation institutions and, in particular, by the relevant foundations and NGOs.

One project that could serve as a model for improving knowledge about Africa via the Internet is the multiple international award-winning »Ch@t der Welten« (http://gc21.inwent.org/ibt/de/site/cdw/ibt/xhtml/index.sxhtml). This is a project initiated by InWEnt and funded by the BMZ in which online learning platforms relating to global issues are set up, school projects are provided with back-up, chats take place between pupils and experts, and German development co-operation projects are linked to educational projects in Germany. The project's partners are the Landesinstitute für Lehrerbildung (Germany's teacher training institutions at federal state level), NGOs, commercial enterprises and research institutes.

EDUCATION, SCIENCE AND ICT SKILLS   2.4

German development co-operation actors are active in a number of projects related to education, science and technology skills in sub-Saharan Africa; in the course of those activities, they also take advantage of the possibilities offered by modern ICTs. One key focus is e-learning, in which different target groups (pupils, students, teachers, company staff etc.) are addressed. German development co-operation actors like the GTZ and InWEnt are involved in areas such as promoting the use of free and open-source software and ICT use by companies, and in e-learning. They claim that the use of ICT4D in education offers particular opportunities for teaching in schools and universities and for correspondence courses and distance learning. The following section outlines a number of possible uses of ICTs in schools and teacher training (Chapter VII.2.4.1), skills relating to ecological, ethical and social aspects of ICT use (Chapter VII2.4.2) and ways in which ICTs can be used to strengthen African universities and software development (Chapter VII.2.4.3).

CONTINUING EDUCATION FOR TEACHERS AND ICT USE
IN SCHOOLS   2.4.1

International expectations regarding the use of ICTs in school education are high. At the same time, there is a relatively large number of evaluations of ICT4D projects in this area, and very specific questions are asked about the advantages and disadvantages of the various ICTs (e.g. Gaible/Burns 2005). In principle, a distinction can be made between projects in which ICTs are primarily used by teachers, and projects in which pupils use ICTs themselves.

POSSIBLE COURSES OF ACTION

As far as the E-Schools Initiative of NEPAD's e-Africa Commission is concerned, German politicians could encourage small and medium-sized German enterprises (especially those in the ICT industry and in education) to get involved alongside the already participating larger German corporations. NEPAD's Information Society Partnership for Africa's Development (ISPAD) is already in place as an organisational framework. The Federal Government would also do well to push for greater interlinking of the various European and German activities pursued in the area of e-schools (Chapter VI.2.2.2): examples of possible partners here, besides NEPAD's E-Schools Initiative, are the African School Network, with which German actors have already co-operated (Gründel 2005), and the Gesci project (www.gesci.org); companies that support activities in this area (Gründel 2005; Spinger 2004); a variety of NGOs, for example those that send second-hand computers; and German federal states and local authorities that promote ICT use in their co-operation with African partners in the area of

education. It would make sense to organise the exchange of experience on the basis of the results of completed evaluation and monitoring projects. Greater political stimulation of German-African school co-operation initiatives via the Internet, possibly in the specific area of ICT, could likewise be considered. Once again, the »Ch@t der Welten« project initiated by InWEnt and run partly in co-operation with African partners could serve as a role model here. In this case, however, the focus would have to be on an exchange between schools in the »North« and »South« and on the use of the Internet for communication between pupils.

The support already being given to African partners by ICT experts in German development co-operation (in Ethiopia) in testing the use in schools of the so-called »100 dollar laptops« (XO) deserves to be continued and expanded. In addition to the provision of advice and support during the tests, the purchase by sub-Saharan countries (like Nigeria and Rwanda) of larger quantities of the laptops would result in further and very extensive need for support and advice; in this respect German development co-operation could likewise play an important role (cf. Chapter VII.2.4.2). The same applies to rival initiatives and products.

In its diverse activities in the area of continuing education for teachers, German development co-operation could involve non-governmental actors to a greater extent, for example through Public Private Partnerships (Africa Drive Project; Chapter VI.2.2.2). A key factor in determining the success of ICT-based continuing education for teachers is a realistic assessment of the teachers' individual time resources and motivation, and of the general situation in schools. The advantages and disadvantages of using various different ICTs in this area (Gaible/Burns 2005) should be weighed up in each case and experience from various projects should be systematically compared. ICTs also serve a useful purpose in the approach followed, for example, by InWEnt, namely for supporting the training of university lecturers in the area of continuing education for teachers.

ECOLOGICAL ASPECTS, INFORMATION ETHICS AND TECHNOLOGY ASSESSMENT   2.4.2

In order to make the most of the opportunities offered by modern ICTs, it would appear sensible to promote African skills in the area of information ethics, technology assessment and the ecological effects of ICT use. In these areas, capacity building in Africa is still very much in its infancy, though pressure to act is growing quickly in some cases.

POSSIBLE COURSES OF ACTION

So-called »green electronics« merits special attention, while the question of how to dispose of waste electrical and electronic equipment is an aspect of development co-operation action that should move higher up the agenda (www.step-initiative.org). German actors are already involved in relevant initiatives (www.pb.izm.fhg.de/ee/DE/060_projects/36_StEP.html). German development co-operation is pursuing activities to provide support on issues of waste disposal, albeit to a lesser extent in Africa than in other continents (Bundesregierung 2006a). In Nigeria in particular, there appears to be considerable need for action to deal with scrap computers from the »North« which, according to press reports, are in some cases declared as »used equipment for reuse« (Bündnis 90/Die Grünen 2007b) (BAN 2005). If the »100 dollar laptops« or rival products were to come into large-scale use in Africa, the problems of disposal could be exacerbated even if the machines are supposed to be relatively eco-friendly. As Germany has relevant skills, greater development co-operation engagement should be considered in this respect also.

Besides the problem of electronic waste, consideration should also be given in the development policy context to working conditions in the ICT industry, the power consumption of computers and other devices, and social aspects of the exploitation of raw materials needed for the ICT industry. The industry has addressed these aspects of ICT4D, which are relevant from an ethical perspective, in an Electronic Industry Code of Conduct (www.eicc.info), among other measures. NGOs active in the area of development policy, however (such as Germanwatch), believe that further action needs to be taken.

Ethics is nowadays widely regarded as an essential and institutionalised element of political discourse on science and technology. Africa has much catching up to do in this area. This is also true of information ethics which, like any other branch of technology ethics, should provide a scientifically grounded basis for a pluralistic socio-political discourse. Many of the questions raised in this report are already being discussed and analysed with regard to aspects of information ethics. In 2007, for example, the South African government, with the participation of UNESCO, staged an international conference on information ethics in Africa (Capurro et al. 2007). This resulted in the establishment of the African Network for Information Ethics (ANIE), an academic network on the subject (www.africainfoethics.org/default.html). Experts from other regions of the world are involved in the initiative, and German universities are among the co-organisers. Support for activities of this kind, which also play a role in the WSIS follow-up process, could be considered.

Besides evaluating scientific and technical developments, socioeconomic, ecological, political and cultural aspects should also be taken into account, as hap-

pens in Technology Assessment (TA), for example. Generally speaking, giving African politicians and, in particular, parliaments a better basis for scientific decision-making would appear desirable. The British Parliamentary Office of Science and Technology, which has also already worked on ICT4D (POST 2006), is planning to launch activities in this direction in 2007. The Bundestag could consider supporting such activities.

UNIVERSITIES, ICT USE AND SCIENTIFIC-TECHNOLOGICAL CO-OPERATION   2.4.3

It is true that increasing attention is being paid to tertiary education and the development of science and technology in Africa by international and »Northern« actors. Overall, however, there still appears to be an imbalance between the priorities of African partners and the concrete activities of »Northern« actors. This imbalance did not change in the wake of the 2007 G8 Summit in Heiligendamm, despite a number of moves in this direction on the African side in the run-up to the summit (Editors of Research Africa 2007). Activities pursued by the EU (Chapter VII.1.1) and the UN in the follow-up to the WSIS process, together with focal activities on the part of various »Northern« states (e.g. Great Britain, Canada, Scandinavian countries, France, Italy) are nonetheless helping to support African aspirations.

At the 2002 G8 Summit in Kananaskis, the G8 and their African partners from the AU and NEPAD agreed on a package of measures to reduce poverty and violent conflict. This Action Plan on Africa was confirmed in principle at the 2005 G8 Summit in Gleneagles. One element of the plan involves strengthening the continent's academic system and tertiary education; particular weight is attached to this by Canada and Great Britain (Benn 2005; IDRC 2005b; Stamm 2007). The 2006 G8 Summit in St. Petersburg also added momentum to the discussion of this issue by placing the so-called »knowledge triangle« (education, research and innovation) in the context of sustainable development. One prominent follow-up activity to the summit was the World Forum organised by Italy in co-operation with UNESCO on »Education, Research and Innovation: New Partnership for Sustainable Development« (May 2007 in Trieste), in which a special session was devoted to the topic of »Science, Technology and Innovation: Perspectives for Africa«. At the forum, the Italian Prime Minister Romano Prodi complained that the announcement in Gleneagles of considerable support for building scientific capacities in Africa had not been followed by action. Before the summit in Heiligendamm, the Network of African Science Academies (NASAC), which is also one of the EU's partners in the area of scientific and research co-operation, called for the promises made in Gleneagles to be fulfilled (Editors of Research Africa 2007). Furthermore, various UN organisations are concerned with strengthening science and technology in developing countries,

especially with regard to ICTs and Africa. In the years 2006 and 2007, UN organisations set their agendas accordingly, mainly as WSIS follow-up activities. Apart from the CSTD (Commission on Science and Technology for Development), UNESCO is a noteworthy example in this context; at the end of 2006, it launched a project, in co-operation with Hewlett-Packard, that was designed to build capacities in the area of advanced ICTs and reduce the brain drain effect. In the area of ICTs, however, the plural character of which necessitates a coordinated approach between many different actors, there is clearly a great deal of unexploited scope for co-operation within the UN (UNCTAD Secretariat 2006).

Essentially, German scientific-technological co-operation at the Federal Ministry of Education and Research (BMBF) is limited in sub-Saharan Africa to South Africa as a partner, although ICTs are the first of several focal issues to be named (www.bmbf.de/de/5861.php) and are the object of several projects. A strategy for sub-Saharan Africa is currently being discussed at the BMBF, with the involvement of the relevant research promotion institutions and representatives of development co-operation. The goal is to combine and better coordinate the wide range of activities, with respect to relevant EU activities among other things. In this context, the International Bureau of the BMBF is keen in particular to explore which other states could be potential partners in the area of scientific-technological co-operation. In addition, there is to be more effective coordination of the activities of the Deutsche Forschungsgemeinschaft (German Research Foundation), the German Academic Exchange Service (DAAD), the Humboldt Foundation, the Volkswagen Foundation and other institutions. The Humboldt Foundation (2006) has called for technical and financial co-operation with Africa to be supplemented by scientific-technological co-operation in the interests of a strategic »foreign scientific policy«. The DAAD is the only institution, however, which explicitly pursues the goal of capacity building in developing countries. Although these institutions implement a wide range of activities relating to sub-Saharan Africa, ICT-relevant disciplines and topics have to date played a role worthy of mention only in co-operation with South Africa (Müller 2006). There are nonetheless other projects that are exemplary as far as ICT use in co-operation is concerned (Buttschardt 2006). What is more, the BMBF promotes specialist programmes with partners south of the Sahara within the framework of joint international projects, e.g. on water technologies and urban development (Müller 2006, p. 3). Co-operation between German and African universities, which in certain cases is already promoted by scientific-technological co-operation and development co-operation, can also contribute to consolidating ICT capacities and structures at African universities, even if they tend not to be focused on ICTs (Müller 2006).

POSSIBLE COURSES OF ACTION

Strengthening academic and civil society initiatives to reduce the costs of ICT access and use would appear particularly relevant. German actors can contribute to this by setting up appropriate co-operation agreements, and by promoting and giving political support to the corresponding African networks (Pehrson/Ngwira 2006). »Northern« initiatives aimed at making scientific information available free of charge or inexpensively are worth supporting. Targeted activities to improve university libraries, which have very variable equipment levels in Africa (Rosenberg 2005), support for sustainable models for online academic publishing in Africa (Adala/Frank-Wilson 2005) and the promotion of Africa's own skills in the area of e-learning (Newthinking/DIE 2006) would appear particularly important, however.

Another prerequisite for more rapid progress in terms of ICT use in the sciences in Africa, besides improvements in infrastructure and appropriate setting of priorities by governments and science management in Africa, is to improve links to the international scientific community. Potentially, university co-operation and scientific-technological co-operation can play an important role here. So far, both the EU and Germany have focused particularly on South Africa as a partner, as scientific-technological co-operation is concentrated on relatively well-developed countries. There are attempts, however, to expand and better coordinate activities with respect to sub-Saharan Africa, bearing in mind also the role played by development co-operation and the BMBF's intention of using research co-operation to help solve global problems (Müller 2006). Opportunities arise here both from and for the use of ICTs, drawing on experience gained by German universities and research institutions in their co-operation with African partners (Buttschardt 2006; Müller 2006; Ruf 2003). The conditions under which African academics live and work, however, are relatively difficult in comparison to those of their »Northern« colleagues. Scope offered by ICTs for improved research can therefore not always be used to increase productivity where time-consuming international co-operation is in place (Duque et al. 2005).

The greater support for Africa in the area of science and technology already announced by the G8 is meant to encompass the emerging network of African centres of excellence. Even though there is a risk of »oases of excellence« being created, so to speak, in a scientific desert, these centres are particularly well-suited partners for scientific-technological co-operation. An initial examination of possible African co-operation partners (both states and centres) conducted on behalf of the BMBF (Müller 2006) listed two research institutions specialising in ICT: the Kigali Institute of Science and Technology (KIST) in Rwanda, which co-operates with German universities and is promoted by the GTZ and the state of Rhineland-Palatinate, among others, and the Ghana-India Kofi Annan Centre of Excellence in ICT in Ghana. To this list may be added institutes in South Af-

rica (e.g. the Meraka Institute). If co-operation with centres of excellence in the realm of ICT were to be explored, a co-operation which ought not to be limited to centres specialising in ICT issues, there would, however, not only be great potential for those African institutions directly involved (and perhaps for their German partners), but also the challenge from the development co-operation viewpoint of deriving an additional benefit in terms of development policy. Assuming they are suited to the purpose, results of co-operation of this kind - especially arising from Internet use – should be made available to other sub-Saharan actors, or these actors should be involved directly in the co-operation even in cases where it is based in other countries of sub-Saharan Africa (Müller 2006). Furthermore, ICT use opens up possibilities in fields that are suitable for more intensive co-operation between scientific-technological co-operation and development co-operation, for example the training of research and development personnel in businesses (Müller 2006).

An example of a project which is designed specifically to meet basic needs at the same time as strengthening research in the »South« is the Federal Government-funded »Rural Universal Network« (RUN) (University of Hamburg 2006; www.runetwork.de). With its participatory and transnational orientation (with farmers and »Southern« agricultural experts acting as information recipients and suppliers), its sensible use of the Internet in a variety of contexts, its involvement of African ministries and the EU and the target-oriented co-operation of three federal ministries (BMVEL, BMBF and BMZ), this project can serve as a model for similar knowledge network projects in other areas (e.g. education, health, culture, civil society). A noteworthy example of university co-operation (and a Public Private Partnership at the same time) is the co-operation funded by the GTZ between the Lübeck University of Applied Sciences (Fachhochschule Lübeck) and the University of Science and Technology in Kumasi/Ghana (Ruf 2003). The goal of the project, which was launched at the beginning of this decade, was to improve the ICT infrastructure and ICT skills at the university in Ghana. Ghanaian software developers were trained, partly with a view to possible German-Ghanaian private sector co-operation.

The Internet is also used to send detailed information at high speed to researchers in the »North« who are working on African topics (in the widest sense). Their research, in turn, can benefit development at the local level, as well as »Northern« development co-operation. Examples range from medical research into diseases that occur only or mainly in Africa, via examples in the area of plant biology to research in cultural studies. In some cases, the work of »Northern« researchers can be made easier by the establishment of long-term communication with African experts or other locals via the Internet, making on-the-spot research in part superfluous.

The particular opportunities presented by ICTs for the development of home-grown software technology with comparatively little in the way of material resources are seen as one of their advantages. Newthinking/DIE (2006) conclude that it makes sense to provide targeted financial backing for software development at universities and for the associated development of co-operation structures. It is also worth considering co-operation with governments that have already made a commitment in principle to free and open-source software, in order to stimulate additional engagement in this area. Universities can potentially make a contribution in the area of software to sub-Saharan Africa's development. Given the low level of innovation in the private sector, a trailblazing role for academic actors would appear sensible. For this role to have an impact on society beyond the confines of the handful of high performance universities and centres, however, additional measures are needed. There is scope for action here in development co-operation even in countries that largely lack the basic prerequisites for scientific and technological excellence. There too, it may make sense to promote the establishment of technology-oriented businesses and the Internet-based and Internet-related training of experts from various segments of society.

AN OVERVIEW OF THE POSSIBLE COURSES OF ACTION IN THE AFRICAN CONTEXT   2.5

In light of the results of the TAB study, the following possible courses of action relating to Africa appear particularly promising:

> *Regulation*: Intensification of advice for and support of African partners for development-friendly telecommunications and media regulation. The BMZ has already signalled its intentions in this area.
> *Large-scale infrastructural projects*: Continuation of activities to support the development-friendly realisation of ICT infrastructural projects. The planned East African submarine cable EASSy is particularly relevant here.
> *Promotion of deprived areas*: Maintenance of the spotlight of ICT4D projects on rural and other peripheral areas. A more systematic exploitation of synergy effects for ICT4D during development co-operation projects in a particular area would appear to be desirable.
> *Reproduction of success stories*: Propagation and geographical expansion of successful ICT4D projects, though without ignoring local specifics.
> *Mobile communication*: Greater exploitation of the diverse potential for mobile communication in fields such as industry and trade, and in democratic and civil society engagement, with special attention being given to the scope for combining mobile communication with the Internet, radio and other ICTs.

> *e-Government*: Continuation and intensification of government use of ICTs for administrative reforms and development, and particularly for combating corruption. The focus could be placed on government partners (and especially parliaments) that already practise good governance, and on pan-African and regional actors.

> *Civil society*: Intensification of support for NGOs and other civil society actors in the area of ICT (particularly in view of the APRM process, women's organisations and civil society groups in trouble spots and endangered democracies). Possible activities in this domain could be the (co-) promotion of a cross-media e-activism pilot project and of ICT-based warning systems for populations in war zones.

> *Media and the political public sphere*: Increased activities in the area of media development co-operation, particularly in equipping editorial offices and improving the working conditions of journalists (including meeting ICT needs and opening up possibilities for professional publication by African journalists on European websites), as well as intensified appeals by the German government to governments that practise censorship and take reprisals against Internet public spheres.

> *The perception of Africa in Germany*: Promotion of a nuanced view of Africa, increasing the scope for action by the diaspora, and intensification of cultural exchange and cultural trade via the Internet.

> *ICT for education and ICT skills*: Expansion of demonstrably successful forms of ICT use for continuing education (especially e-learning) and expert support of African partners (e.g. in schools, if the 100 dollar laptop is introduced, in small and medium-sized enterprises, the healthcare sector, NGOs and public administration).

> *Information and knowledge society:* Strengthening of the sub-Saharan higher education and research environment through more intensive German and European activities in and for ICTs, co-operation with industry (e.g. on ICT services) and the intended closer coordination of scientific-technological co-operation and development co-operation.

ICT STRATEGIES IN GERMAN DEVELOPMENT CO-OPERATION: PROPOSALS FOR DISCUSSION 3.

Because the strategic importance of ICT use has not been sufficiently clarified in German development co-operation, the dialogue on this subject should be intensified and should involve politicians, development co-operation actors, academics, business leaders, civil society representatives and actors from the developing countries and the diaspora. The objective would be to draft an appropriate ICT4D strategy for German development co-operation on the basis of a com-

prehensive analysis and discussion of the current situation. The following section puts forward some initial general principles for discussion.

INITIAL FOCUS: MILLENNIUM DEVELOPMENT GOALS

The concentration on the Millennium Development Goals should continue in order not to jeopardise the international consensus that has been achieved. Increased and more systematic consideration should be given in the ICT4D context, however, to the three other fields of action – besides »Development and Poverty Eradication« – laid down in the Millennium Declaration. These are: »Peace, Security and Disarmament«, »Protecting our Common Environment« and »Human Rights, Democracy and Good Governance«. Against this background, the contributions that ICTs are to make to achieving the MDGs must be defined in concrete terms by the developing countries themselves to reflect the specific needs of their national economies and civil societies.

DEMAND-DRIVEN ICT USE

The use of ICTs is subordinate to the strategic development goals and must be justified by concrete demand. The interests of the respective target groups should be addressed in co-operation with these groups to ensure development policy participation. However, the official development goals do not always correspond directly to the specific interests of users in developing countries. One must give sufficient scope to these varied interests in order to promote motivation in the sense of »ownership« and to identify genuine needs at the local level.

PREREQUISITES FOR USE AND SELECTING SUITABLE TECHNOLOGIES

The prerequisites for the use of ICTs tend to be poor in developing countries, and as such present a particular challenge. Clarifying the basic possibilities for ICT use would appear to be an obvious first step, yet this is often neglected. It is of little use to establish these prerequisites artificially, so to speak, in selected pilot projects, if these cannot be guaranteed in the long term. Technologies should be chosen that adequately reflect the respective prerequisites for use; the Internet is not always the best choice, although it can be useful or indeed essential when it comes to meeting specific needs. In certain situations, a »technology mix«, in which the particular advantages of the Internet come to the fore, may be the best way forward.

TAKING CARE OF MONITORING SYSTEMS

ICT-related measures must provide a demonstrable justification of their usefulness for development policy goals and, as a rule, must be formulated in terms of a clear operational plan so that their success can be periodically monitored on

an ongoing basis. Because complex methodological requirements have to be met here, steps must be taken to ensure that the appropriate skills are developed and extended. Both »contained« and »open impact« effects (e.g. in promoting democracy) should be taken into account. The diverse evaluation and monitoring activities in the area of ICT4D could be better coordinated; there should at least be systematic sharing of experience and results.

LONG-TERM OUTLOOK, PUBLIC IMPACT AND SUSTAINABILITY

From past evaluations of the impact of ICT use it is known that ICTs are particularly effective when the use of technology goes hand in hand with a reorganisation of processes. The coordination that this necessitates, however, takes time. All short-term measures designed to achieve rapid success are thus at risk of failure, especially if there is too much reliance on highly motivated staff or activists at the local level. Projects must therefore be planned with a long-term outlook, and must prove sustainable despite what may in some cases be only a short period of initial funding. The network effects of ICTs can only come into play if applications are designed for wide-scale public use rather than for isolated projects. Where successful home-grown initiatives or development co-operation projects are already in place, their sustainability should be secured before new activities are started.

CONSIDERING SIDE-EFFECTS

Even ICT applications that are successful in terms of their own immediate goals do not necessarily contribute to development in the sense of the Millennium Development Goals. Indeed the opposite may be the case if the use of ICTs serves to intensify existing inequalities or to satisfy non-transparent individual interests. Accordingly, the intended and unintended side-effects of ICT use must be assessed when planning any application and weighed up against the postulated goals.

USING SYNERGY EFFECTS

Because projects in the area of development co-operation and scientific-technological co-operation often present opportunities for partners to be introduced to ICTs and for insights into local information and communication structures to be obtained, greater use should be made of synergy effects and basic information should be collected organisation-wide about existing demand for possible ICT4D projects. The basis for the systematic collection and analysis of relevant project experience could be the existing coordination structures of the various development co-operation actors, whose expansion and merging would appear appropriate.

COORDINATION, CO-OPERATION AND TRUST

A coordinated approach and common standards are essential, particularly in the area of ICT networks. An uncoordinated and piecemeal approach between the donors and within the respective developing countries is particularly harmful in this context. As a rule, giving one-sided consideration to national interests in the »donor countries« is counterproductive to development goals, which is why attempts should be made to generate »win-win« situations. Truthfulness and trust are valuable commodities, particularly in the relationship between developed and developing countries. Programmes with a multilateral orientation, even if they make fewer concessions to national vanities or to the interests of politics, business and civil society organisations, warrant particular support.

THE INTERNET: NEITHER EUPHORIA NOR CONTEMPT

In developing countries, the Internet tends to play an important role only for a handful of actors. It should therefore not be promoted to the detriment of ICTs and skills that are currently of greater use at the local level, although it should be remembered that the Internet can have an enabling or complementary function (e.g. in Internet telephony, media co-operation projects or civil society campaigns). The forms of local appropriation of modern ICTs deserve more attention: greater advantage could be taken, for example, of the relevant scientific expertise and of the participation of development co-operation target groups. In less-developed regions, however, there are without doubt groups of actors for whom the Internet is already extremely useful or indeed indispensable. It can improve the opportunities for democratisation, help bring about structural changes and drive forward integration in processes of cultural, economic and political globalisation. Social change and greater participation in globalisation processes, however, also involve new challenges. If the developing countries and their partners fail to face up to these challenges, the spread of modern ICTs threatens to contribute to a further intensification of social inequalities.

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ANNEX

LIST OF ABBREVIATIONS 3.

APC	Association of Progressive Communications (an association of NGOs in the field of ICT4D)
APRM	African Peer Review Mechanism (a NEPAD programme)
AWZ	Ausschuss für wirtschaftliche Zusammenarbeit und Entwicklung (Committee on Economic Co-operation and Development, German parliament)
AU	African Union
BMBF	Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research, Germany)
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (Federal Ministry for Economic Co-operation and Development, Germany)
EASSy	Eastern Africa Submarine Cable System
EU	European Union
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Co-operation)
ICT4D	Information and Communication Technologies for Development
ICT	Information and Communication Technology
ICTs	Information and Communication Technologies
InWEnt	Internationale Weiterbildung und Entwicklung gGmbH (InWEnt Capacity Building International, Germany)
ITU	International Telecommunication Union
LASDEL	Laboratoire d'Etudes et de Recherche sur les Dynamiques Sociales et le Développement Local (social science research centre in Benin and Niger)
MDGs	(UN) Millennium Development Goals
NEPAD	New Partnership for Africa's Development
NGO(s)	Non-Governmental Organisation(s)
OECD	Organisation for Economic Co-operation and Development
OLPC	One Laptop per Child (name of the foundation which promotes the »XO« or so-called »100 dollar« laptop)
PAP	Pan-African Parliament (parliament of the AU)
TAB	Büro für Technikfolgen-Abschätzung beim Deutschen Bundestag (Office of Technology Assessment at the German Parliament)
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	UN Development Programme
UNECA	UN Economic Commission for Africa
UNESCO	UN Educational, Scientific and Cultural Organization
WOUGNET	Women of Uganda Network
WSIS	(UN) World Summit on the Information Society (2003 and 2005)

TAB

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