# Fact Sheet
## ICT-utilisation by Non-Governmental Organisations (NGOs) in Tanzania[1]

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The early history of ICT utilisation in Africa is largely a story about NGOs and their efforts to take part in the global information society. In the late 1980s organisations and groups of individuals working, for example, on development, democracy, human rights or environmental issues, started to make use of computers, modems and telephone lines to exchange information, often under very difficult circumstances. Especially the 1992 Earth Summit in Rio de Janeiro induced a new era of international networking and a new scope of electronic communication among NGO communities in Africa and elsewhere. The summit marked a visible turning point after which NGOs where perceived as innovative and effective users of new communication technologies (c.f. Levey/Young 2002).

However, identifying NGOs as pioneers and facilitators of the information age in Africa cannot be taken as general evidence for the scope of their ICT utilisation. The many faces of NGOs prohibit such a generalising statement about a largely connected NGO community in Africa, a statement to be found in many articles. Claims such as "Most NGOs have access to the web", or "The use of technologies such as e-mail has become the norm rather than the exception within NGO communities" (Esterhuysen 2002), are clearly premature. Empirical evidence used in this fact sheet suggests the opposite. At this point, it is only a minority of NGOs that has access to the internet and among these few, effective use of the technology is rather limited – even though, in fact, overall growth and diffusion rates are impressive.

To some extent such misperceptions might be the result of a maturing debate. The early focus was on individual cases to highlight the potentials of ICT and to create pilots or model approaches. This generated a considerable amount of case studies[2] – generally success stories – that, due to their sheer mass, might have conveyed the false impression of a largely connected NGO community in Africa. It is only today that the discussion about NGO's ICT utilisation is raised to a new level of a more comprehensive and systematic approach targeting the broader picture, working comparatively or applying common terms of references.[3] This fact sheet attempts to add new input to this discussion and provides some empirical data on the actual scope and extent of ICT utilisation among Tanzanian NGOs.

Talking about NGOs, some additional remarks have to be made. The time when the first NGOs started to make use of the internet in the early 1990s coincided with an exceptional growth of newly created NGOs on a global scale, in Africa and also in Tanzania[4]. This growth has not only made it difficult to quantify exact connectivity ratios. Their mushrooming also led to the formation of very heterogeneous organisations, all of them labelled NGOs. Yet, they differ in the scope of their activities, resources and capacities. Professionally managed NGOs were increasingly consorted by small grassroots organisations, which often operate under structural, financial or organisational capacity constraints. Furthermore, the term NGO is not only used to group more or less autonomous social organisations. It is also associated with a broader concept of state-society rela-

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[1] This fact sheet is part of the ongoing research project 'ICT for Development: The Case of Tanzania' conducted at the Institute of African Affairs, Hamburg, and financed by the Fritz Thyssen Foundation, Cologne. The results are based on a NGO ICT utilisation survey, which was conducted in cooperation with UNDP Tanzania, the Dar es Salaam Institute of Technology and with assistance of the eThinktank Tanzania.

   The fact sheet aims to provide some preliminary results of work still in progress. Hence, comments are welcome and can be sent to nielinger@duei.de.

[2] This is not to question the relevance of the individual case. Case study collections like NGLS (2000) or TechKnowLogia (2001) offer a good starting point and reflect the various periods of the ICT diffusion process. But as soon as a critical mass of ICT users is reached, analyses aiming to target NGOs and their ICT utilisation in general must go beyond the individual project approach.

[3] For a good example, see Thioune (2003).

[4] For Tanzania, Mutakyahwa (2002) reports that there were over 1.000 NGOs in 1995 and now there is an estimated number of 4.000 NGOs in the country.

tions, in which NGOs have revived as a solution to overburdened or weak state capacities. In consequence, the debate on NGOs and their derivates, like civil society organisations (CSO), community based organisations (CBO) or religious organisations (RO) and the like, often lacks a clear conceptual foundation and puts high – often too high – expectations on the role of NGOs in the development process. Even though this debate will not be covered in this contribution,[5] it should be taken into consideration whilst aggregating indicators on NGO performances.

Nevertheless, in this fact sheet NGOs are treated as one entity. This is in accordance with the perspective of the Tanzanian government, and it takes into account practical considerations. Measures to control or coordinate NGO activities cannot cover every NGO subgroup in an individual policy or registration process, so that a rather broad approach is justified. According to the Tanzanian NGO Bill enacted by parliament in November 2002, NGOs are:

> „a voluntary grouping of individuals or organisations which is autonomous, non-political and not-for-profit sharing, organised locally at the grassroots level, nationally or internationally for the purpose of enhancing the legitimate economic, social and/or cultural development or lobbying or advocating on issues of public interest of a group of individuals or organisations."

Furthermore, the broad definition supports one key objective of the survey, namely, to catch as many respondents as possible in order to include the whole variety from formally incorporated associations to relatively informal groupings at the grassroots level.[6]

The data provided in the fact sheet are based on two samples.[7] The first contains 957 entries from NGOs that were randomly selected from several national, regional or sectoral NGO directories and targeted all NGOs regardless of their ICT or email profile. This sample covers the overall picture of email usage among Tanzanian NGOs and was used to prepare the data given in figures 1 and 2. Out of the 957 NGOs, 255 or 25% provided an email address. While editing the data set, a further 62 or 6.5% dropped out of the sample because of invalid, unknown or ineligible email accounts. The newly adjusted sample left 193 or 20% valid email addresses as given in figure 1.

The second sample contains 1.228 entries. Because the questionnaires had to be submitted online, and since the objective was to work with the largest possible sample, considerable research has been conducted to compile an NGO email directory from several sources such as the WWW, various discussion groups or fora as well as offline sources. Naturally, this sample was heavily 'email biased', because only NGOs that provided an email address were added to the list. This sample was used to analyse the ICT utilisation of NGOs as given in figures 3-13. From the 1228 NGOs in the directory, 526 (42.8%) provided an email contact. Again, a considerable number of 124 (23.6%) email accounts were invalid or unsuitable. Finally, the remaining sample left 402 (32.7%) valid entries, which were taken as the base of the survey. Of these, 77 or 19% submitted a completed survey form, which is a satisfactory response rate. Though the results cannot claim to be representative, they indicate some strong tendencies of NGO ICT utilisation in Tanzania.

The surveyed (connected) NGOs mirror their heterogeneity. Their sectoral focus goes through all societal issues, with most NGOs active in more than one sector. Furthermore, no particular ICT intensive working area could be detected, though NGOs working in agriculture turned out to be slightly less connected. But overall, the numbers of connected NGOs follow the overall distribution of NGO target sectors in the country.[8] Similar patterns appear with regard to the overall budget and the number of staff. Both variables show a considerable range. Annual budget starts from 500 US$ and goes up to more than 1 Mio. US$ - the median annual budget is 50.000 US$. Staff ranged from only two persons working on a voluntary basis to 100 salaried employees working in nation-

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[5]   Some basic texts covering these issues can be found in Bratton (1994), Diamond (1994), and Hadenius/Uggla (1996).

[6]   One problem of this broad approach has been the treatment of large international NGOs, which partly act like donor agencies. For practical reasons, those organisations that formally took part in the consultative process to formulate the Tanzanian policy on NGOs were added to the sample, whereas all others, which were obviously donor agencies or did not possess a Tanzania based permanent office, were left out of the sample. For an overview of members of the consultative process, see NGO Policy Forum (2002).

[7]   Many thanks are owed to Margareth Nzuki of the Economic and Social Research Foundation (ESRF), who made a large body of email contacts available.

[8]   'Sector' refers to health, education, children, women, community work, environment, democracy/human rights, agriculture, ICT and umbrella organisations.

wide NGOs, which results in 11 staff per NGO in the mean. From this general starting point, there is no identifiable pattern of ICT usage. Those who use the technology come from all sectors and do it regardless of their financial and human resources. Going beyond these general observations, figures 1-13 attempt to map the ICT utilisation of Tanzanian NGOs a little further:

**Figure 1: Email Access of Tanzanian NGOs**
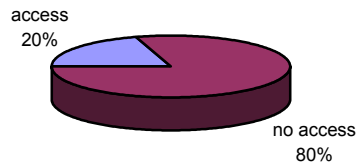
access
20%

no access
80%

Figure 1 puts into perspective the prevalent misperception of a largely connected NGO community in the country. Only 20% of Tanzanian NGOs have a working email account.

Though this might be a smaller number than expected, it should be recognised that at the same time as some NGOs started to use the technology, the total number of NGOs has also witnessed an exceptional increase. Growth in both the total number of NGOs and the number of NGOs with email access might have been at the expense of connected NGOs, if we assume that the newly established NGOs start their business with only moderate resources and weak ICT capacities. From this perspective 20% stands for a sizeable number of Tanzanian NGOs using email.

Noteworthy is the high quantity of invalid email accounts (not represented in the survey). These added to a striking fault rate of roughly one fourth of NGOs that eventually dropped out of the initial sample. These NGOs have installed or registered for an email account, but then ceased their email usage for either practical reasons, i.e. email was not considered to be of any use to ease daily operations, or the new technologies put an insurmountable burden on the financial capacities or skills of the NGOs concerned.

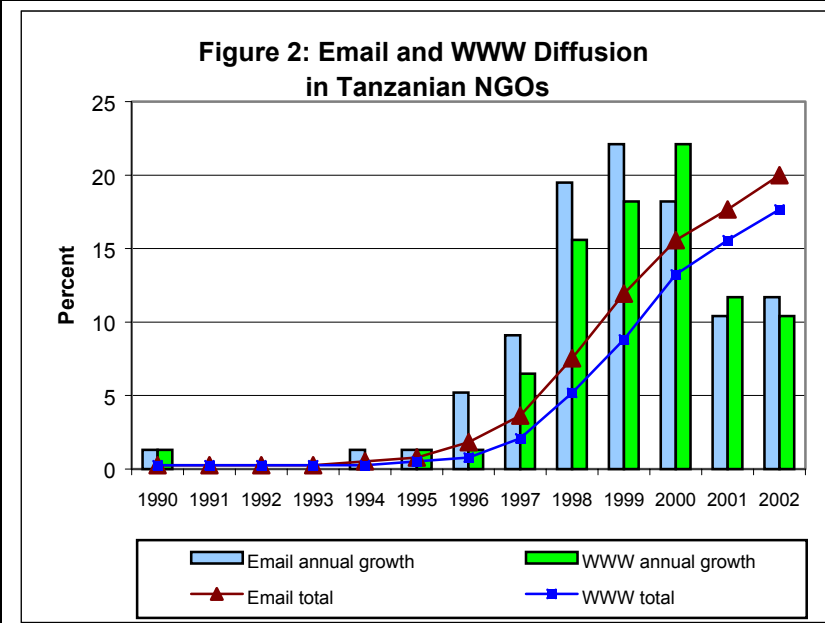**Figure 2: Email and WWW Diffusion in Tanzanian NGOs**



Figure 2 shows the (chronological) email and WWW diffusion among Tanzanian NGOs between 1990 and 2002. The line charts represent the overall number of email and WWW users; the bar charts reflect the annual growth rates of the process.

After only very little email and WWW usage in the early 1990s, technological pe- netration took off in 1996. The number of email users grew sizably for the first time and introduced a phase of accelerated ICT development, also in conjunction with constant im- provements in the provision of basic telecommunication infrastructure. Exceptional growth was reached between 1998 and 2000 – the boom time for NGO connectivity. Diffusion growth rates amounted to 15% or even 22% annually. Since 2000 growth has slowed down, but remains on a level of above 10%, while email and WWW diffusion reaches 20% and 18%, respectively.

Apparently, email applications have been the engine for growth. Their annual growth rates exceeded the WWW figures until 1999. This pattern of ICT adoption, email first and web later, changed from 2000 onwards. The 2000 peak level of WWW annual growth might reflect a WWW backlog demand of some NGOs at a time when the web has become more and more popular and an increasingly valuable source of information. It also coincides with the introduction of public access facilities, where WWW applications have been required to access one's webmail account.

Since 2001, growth patterns of email and WWW have become indistinctive. The successive phasing out of email-only services and the increased availability of the web has led to synchronous growth patterns. Synchronism, however, does not necessarily mean that the same relevance is attributed to, e.g., writing emails and surfing the web. Webmail services enjoy great popularity and are still an important driving force for continued WWW diffusion rates.

Figure 3 quantifies different means of connectivity. More than half of the NGOs have an internet connection in their office, roughly 30% connect privately and 35% use public access facilities, like internet cafes or telecentres. Some 15% rely on more than one access point and use a mix of connectivity options.

The high quantity of NGOs using their office equipment to connect to the internet might indicate that office solutions are implemented wherever available or affordable. Furthermore, the approximately 30% of NGOs that



**Figure 3: Means of Connectivity**

connect through private equipment generally also make use of the technology within the NGO's business premises. The private provision often reflects the commitment and the contribution of an NGO's director or chief executive to improve the working conditions of their organisations. The figures reveal that office access can be regarded as the most
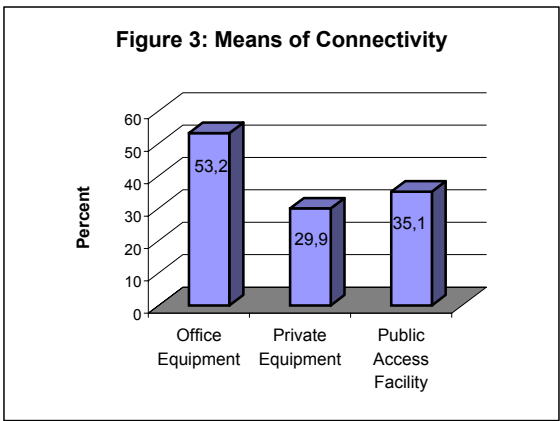
convenient option of connectivity.

Besides, a significant number of 35% use public access facilities to connect to the internet. Of these, 26% solely rely on public facilities, 9% use them to complement their office connection. This number highlights the outstanding importance of public access, especially where no alternative solutions are available (for limitations of public access see figures 12 and 13).

**Figure 4: Online Services Provided**
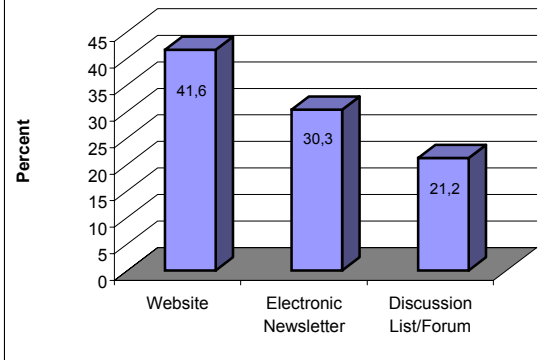
If NGOs are connected to the internet, they often develop a sizeable ICT profile, as figure 4 shows. Some 42% of NGOs have their own website (or a website under construction), 30% compile a regular electronic newsletter and 21% offer a discussion forum or mailing lists.

Though the existence of a website does not say anything about its quality—some NGOs provide only a very brief and general introduction of their organisation and some provide extensive resources, background materials and links to other sites of interest—all of them update on a regular basis.

The considerable diffusion of newsletters and mailing lists might point towards active user groups and frequent communication among its users. Both tools facilitate information exchange and can be applied as both email-only and web solutions. Their popularity also reflects the African ICT history, where internet usage had been restricted to 'email only' access for a long time. As a result, email has developed as the most powerful tool of the internet and mailing lists are still extensively used in Africa.

**Figure 5: Finance Source of IT Equipment (in %)**
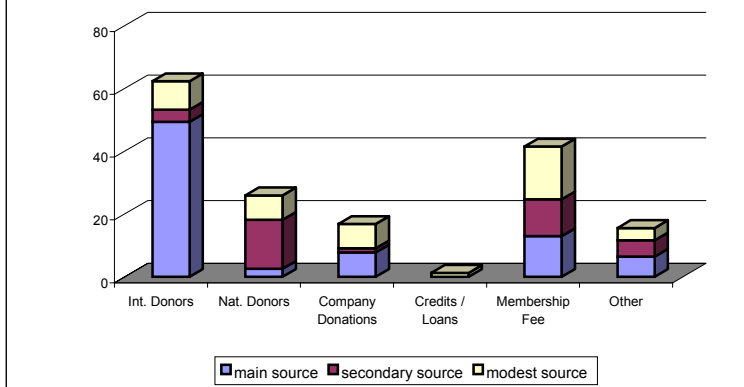


The various sources of financing IT equipment are covered in figure 5. The bars stand for the different sources, the staples within the bars quantify the extent of assistance given as 'main', 'secondary' and 'modest' contributions.

The international donor community is the largest finance source for IT equipment. Roughly 50% of NGOs rely on the donor community as their main sponsor. Only an insignificant 4% of the NGOs reported donor funding as a secondary source, and roughly 9% receive modest support from the donor community. These numbers strongly illustrate the leading role of donors as NGO supporters, and hence, as main facilitators of civil society's ICT deployment. The figures might also expose dominant donor approaches. As generally the main source, international donors tend to engage on a large scale or hardly at all. They seem to avoid acting as secondary players and might contribute modestly, if, for example, IT equipment is only one complementary part within a broader project approach.

National donors are rarely the main sponsors for IT equipment (3%), but normally a secondary source (16%) or a modest contributor (8%). Many international donors make national contributions a precondition for their funding. This might be the reason why national donors appear most frequently as secondary sources.
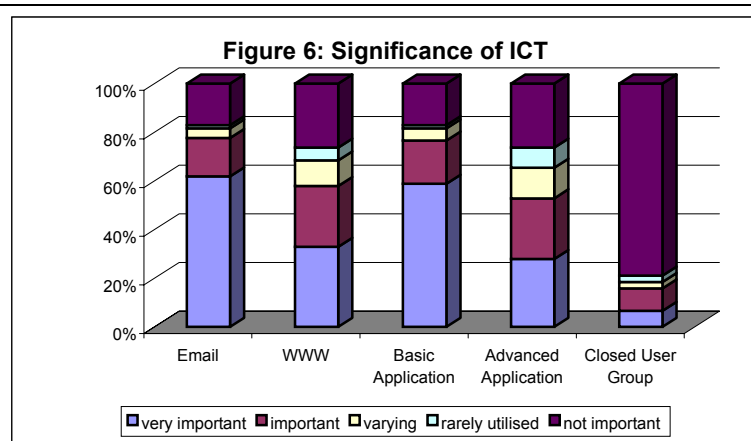
Company donations play a subordinate role in the acquisition of IT equipment. Only 8% of NGOs quote them as their main source, 1.3% as secondary and 8% as a modest source. Especially with regard to the newly emerging domestic IT market, there might be some room for new concepts of social sponsoring or models of good corporate responsibility, where companies could promote an increased provision of IT equipment in form of introducing new private-NGO partnerships (complementing private-public partnerships).

Raising a loan to finance IT equipment is virtually nonexistent. Here the bar is not so much connected to the formal banking sector, which hardly can be accessed by NGOs anyway, but to, for example, micro-finance schemes or supplementary funds designed to facilitate the work of NGOs or small enterprises. Though the usefulness of such lending facilities depends on their appropriateness and availability, their limited accessibility might mirror NGO's typical business approaches and self-conception; NGOs rather prefer to rely on donor support than to develop alternative business-like approaches to make their endeavour sustainable in the long run.

A considerable number of NGOs collect membership fees to improve their financial situation. These fees are a main source for IT financing for 13%, a secondary source for 12% and a modest source for 17% of NGOs. This is a fairly high proportion of internal resources used to acquire IT equipment. Membership fees are the most prevalent means to raise internal funds, often complementing granted donor support.

Other financial sources have a minor significance. 7% quote them as their main source, 5% as a secondary source, and 4% as a modest source. For the vast majority 'other' sources are personal contributions of the NGO's director or chief executive or individual donations.

Figure 6 represents the significance of ICT for NGO's performance. The bars differentiate various applications corresponding to different grades of complexity; the staples quantify the significance, which the surveyed NGOs attributed to the respective applications ranging from 'very important' to 'not important'.

**Figure 6: Significance of ICT**

*Categories:* Email, WWW, Basic Application, Advanced Application, Closed User Group

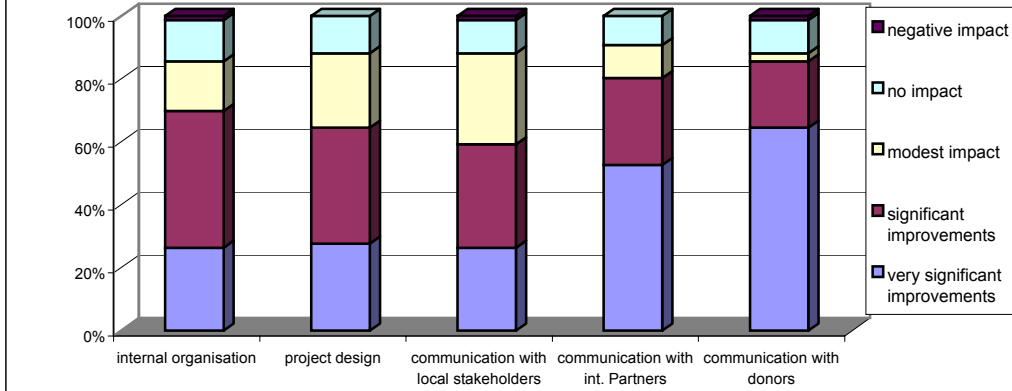*Legend:* very important, important, varying, rarely utilised, not important

Email and basic applications (word processing, etc.) are the most powerful ways to make use of the computer. Email usage is very important for 61% and important for 16% of NGOs. Roughly the same holds for basic applications; 58% emphasise they are very important, and 18% regard them as important computer tools. Thus, the two represent the most frequent applications and the main driving force of increasing ICT diffusion.

However, noteworthy exceptions appear even in these heavily used segments, that is, 17% of NGOs do not assign any importance to email usage or basic applications at all. Bearing in mind that only connected NGOs are covered in the survey, this relatively high share highlights the existence of a considerable number of NGOs for which electronic communication and data processing might not be an appropriate tool to deal with every day working routines.

A second cluster involving similar responses can be observed with regard to the WWW and advanced applications (accounting, payroll, etc.). For almost one third of the surveyed NGOs both applications are very important; roughly one fourth quote them as being important. Though to a lesser extent than in the email/basic application cluster, both the web – excluding webmail services – and advanced applications enjoy substantial popularity among Tanzanian NGOs. Still, 16% (WWW) and 19% (advanced application) of NGOs mention that they have used both tools only occasionally or have only little experience dealing with them. On the other hand, 26% state that both applications are of no importance for their working procedures, which emphasises once again the many different user profiles.

Providing closed user group applications requires complex network solutions, which in turn require modern equipment and considerable skills to operate the network. Most NGOs lack both and consequently such applications are hardly significant for the majority of organisations. However, there are 16% of NGOs that consider them very important or important tools. These supposedly skilful user groups, deliberately deploying complex ICT solutions, complete the picture of different user groups as they represent the opposite extreme of the majority of small-scale or modest ICT users.

**Figure 7: Impact of ICT on working procedures**

Legend: negative impact, no impact, modest impact, significant improvements, very significant improvements

Categories: internal organisation, project design, communication with local stakeholders, communication with int. Partners, communication with donors

Whereas the previous chart focuses on the overall significance of ICT for NGO's performance, figure 7 quantifies the impact of the technology on individual working procedures. The bars represent the working procedures, the staples show the assigned significance ranging from 'very significant improvements' to 'negative impact'.

An overall positive impact of ICT on individual working procedures is the basic message of the chart. The introduction of ICT has brought very significant and significant improvements in all surveyed working procedures, ranging from 60% positive results in 'project design' to 80% in 'communication with donors'. It is not surprising that the largest improvements of the introduction of ICT are made in long distance communication (with international partners and donors), an opportunity that did not exist before.

This positive picture also holds when we consider internally oriented working procedures, but the ratio between 'very significant' and 'significant' improvements is turned up-side down. This might indicate that software solutions to change internal working procedures are more difficult to implement and need some advanced knowledge to utilise the technology effectively. Only 20% of NGOs report 'very significant improvements' in this regard. However, there are after all some 40%, which report 'significant improvements'. Hence, even though capacities might be limited to fully exploit the technology, ICT can be utilised to improve NGOs' performance.

Responses quoting only a modest impact are higher with regard to internal working procedures, where more complex solutions are required. Modest impact decreases when it comes to easy-to-apply long distance communication. In contrast, responses quoting 'no impact' have been relatively stable at roughly 12%. The consistent percentage in each bar points towards the existence of a wide-spread low-intensity ICT approach rather than towards a distinctive value for each bar – 'we have it, but they do not make any difference'. A proposition also supported by the findings of figure 6.

Very rarely, negative impacts have been reported. It is very likely that these are random values that could appear in every working procedure, for instance, in cases where ICT utilisation has followed wrong approaches or strategies or bad investment that have hindered attempts to utilise the technology.

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In an environment where the vast majority of people have no access to the internet, provisions to share internet-acquired knowledge with non-connected stakeholders, so that the technology would benefit the largest possible number of people, becomes a critical issue. Different means to share internet-acquired knowledge are quantified in figure 8.
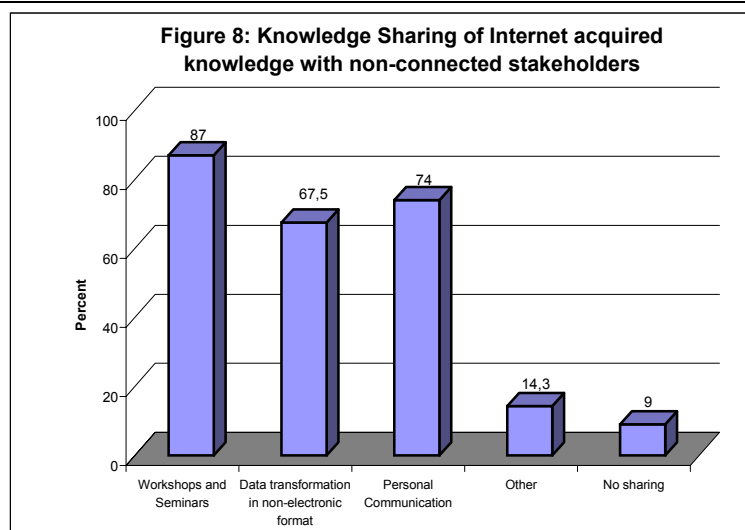
The over-whelming majority of NGOs makes use of different types of knowledge sharing. Only 9% have not introduced any means to share internet-acquired knowledge.

**Figure 8: Knowledge Sharing of Internet acquired knowledge with non-connected stakeholders**

Most commonly, NGOs conduct workshops and seminars to spread their knowl-edge (87%), usually accompanied by personal communication (74%) or transforming internet-acquired knowledge into non-electronic formats like printed reports, hand-outs or blackboard announcements, and the like (68%). The 'other means' utilised by roughly 14% mainly refers to making copies to disks, and thus to making online materials avail-able offline.

Though figure 8 does not reveal anything about the quality of the means, and in particular nothing about the difficulties for non-connected stakeholders to absorb and eventually apply internet-acquired knowledge, it clearly shows that provisions to facilitate the participation of non-connected stakeholders are high on the agenda.

**Figure 9: WWW and advanced applications significance depending on financial resources**
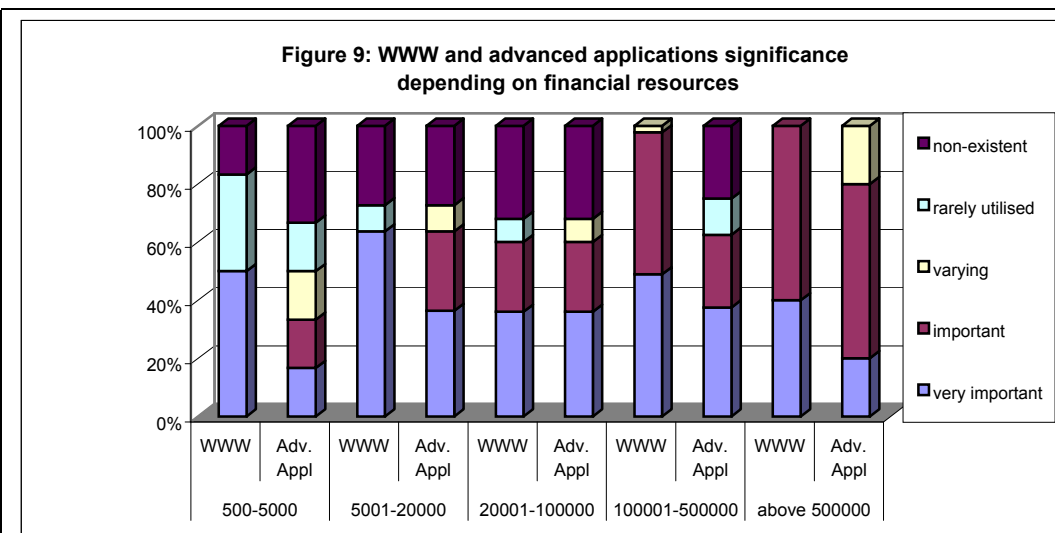
Figure 9 targets the significance of ICT applications in relation to the size of the NGOs indicated by their annual budget. The bars are organised as pairs representing the WWW and advanced applications significance and each pair relates to the given size of the NGOs' annual budget (in US$). The staples show the significance of the applications. WWW and advanced applications were chosen, because, as figure 6 reveals, these two usually require more resources to apply them effectively than basic applications or email usage. Hence, they are more suitable to test the link between ICT usage and available financial resources.

(Effective) utilisation of advanced applications starts from a modest level in the low budget segment, where roughly on third of the surveyed regard the technology as either important or very important. These figures increase to 60% plus and remain relatively stable in a central block that covers a wide range of budget size from above 5.000 US$ to 500.000 US$. This general pattern changes only in the premium segment of NGOs with an

annual budget of above 500.000 US$. All NGOs of the premium segment make use of advanced applications and almost 80% of these regard them as important or very important, suggesting that beyond a certain size, broad ICT utilisation is an understood tool for handling complex routines. In sum, there are some distinctive utilisation features at the lower and upper margin of available financial resources. In between, the majority represents a broad spectrum of NGOs that predominantly make effective use of ICT, regardless of their financial background.

The picture of WWW usage is more vague. Whereas the WWW is used extensively in all NGOs with a budget exceeding 100.000 US$ per year, the given figures in the remaining three segments are variant. Here, it is especially the low budget segment that takes advantage of the technology and counts for the least number of 'non-existent'-responses. The indistinctiveness in this segment hardly allows any clear statement. A careful interpretation could argue that at a certain size, when working procedures get more complex, better-tailored solutions and more professional approaches are required. Small-size NGOs have some choices using simple applications, but these might be insufficient to serve large-size NGOs. They have developed capacities to deal with complex procedures and have taken advantage of it. Frequent difficulties following the subsequent introduction of well-tailored software solutions, as being a characteristic feature of large-scale NGOs, might explain the (minor) drawbacks in effective ICT utilisation that can be observed in medium-sized NGOs.

**How to read a box plot…**
Figures 10-13 use box plots to analyse the survey data. Box plots combine different statistical figures. They are constructed by a box identifying the middle 50% or the 'body' of the data. The line drawn across the box locates the median, i.e. the value in the middle of the series. In contrast to the mean value, the median is inured to outliers and extreme values that would distort a dispersed data set. The body of the data (the box), sometimes referred to as the interquartile range is made of the lower and upper quartile (25th and 75th percentiles). The lines from the lower and upper quartile mark the maximum point and minimum point within a normal distribution. Values beyond these points (=more than 1.5 times the interquartile range from the end of the box) are outliers that lie in an abnormal distance from other values in the sample. Combining these different figures, box plots are useful to describe behaviour of data in the middle as well as at the ends of the distribution.

Figure 10: Connectivity Costs according to Region
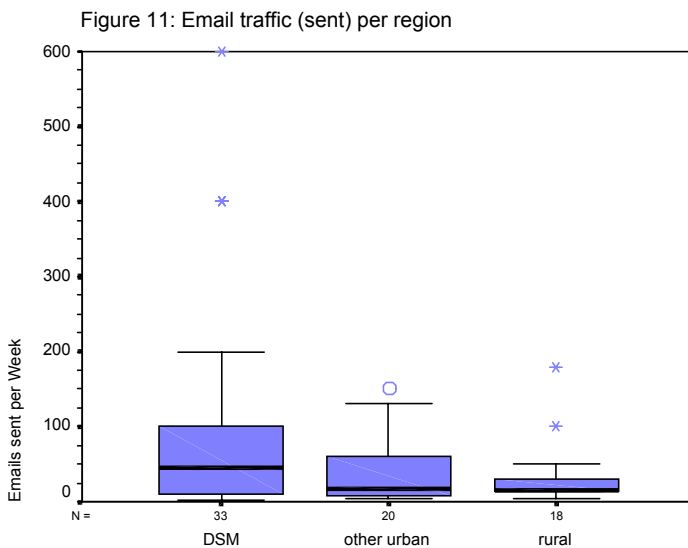
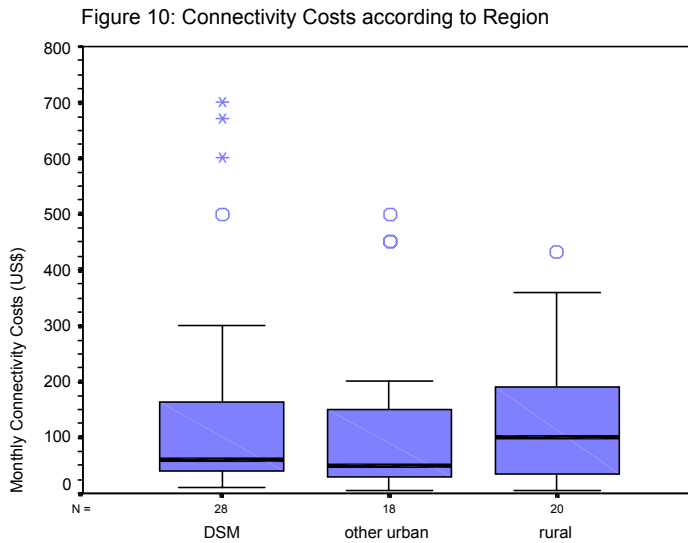Figure 11: Email traffic (sent) per region

Figure 10 quantifies connectivity costs and figure 11 shows the distribution of email traffic in Dar es Salaam, other urban centres and rural regions. Connectivity costs account for median 60 US$ in Dar es Salaam, 50 US$ in other urban, and 100 US$ in rural regions showing a clear urban bias in this regard. Generally, median urban connectivity costs correspond to average prices offered by local Internet Service Providers (ISPs) for full time monthly internet ac-cess (plus telephone costs). The median costs in Dar es Salaam even slightly exceed the costs in other urban centres, which can be explained by the considerable higher email traffic in Dar. Though subscription rates are similar in rural areas, rural NGOs have to pay higher telephone costs to con-nect to their nearest ISP.

Different regio-nal cost structures influence the pattern of the NGOs' ICT utilisation as indicated by their email traffic. Dar es Salaam based NGOs do not only represent the highest median of email traffic (45 sent), they also show the broadest distribution and some exceptional outliers with weekly email traffic (sent) of 400 emails and more. In contrast, both the median email traffic and the interquartile range of the main body of email traffic subsequently narrow from other urban centres (median 17,5) to rural regions. Especially the latter lags behind with median 15 weekly emails in a narrow range between 12 and 25. The figures reveal a significantly uneven cost benefit ratio for urban and rural NGOs. But despite disadvantageous cost effects, rural NGOs are committed to make use of the technology as indicated by the wide range of connectivity costs

For most urban NGOs, connectivity costs appear to be similar, starting at 40 US$ and going up to 160 US% for Dar es Salaam and 30US$ to 150 US$ for other urban centres. These apparently similar cost factors change if the amount of email traffic is also taken into consideration. Looking at the distribution of email traffic in figure 12, Dar es Salaam based NGOs pay slightly more for their connectivity, but email traffic is also roughly one third higher than in other urban centres. This underlines the preferential ICT environment in Dar es Salaam, where various providers are able to offer individual solutions to their customers.

The same argument applies to rural areas, where connectivity costs range from 45 US$ to high 180 US$ for most NGOs. But here, high costs correspond to very little email traffic only. The cost benefit ratio deteriorates if high connectivity costs are related to very modest data flows. On the other hand, this highlights the fact that rural NGOs are ready to take considerable hardships to make use of the technology even in a difficult environment.

Considering the end of the distributions, all regions in figure 10 show a sizeable number of extreme values. They reflect the heterogeneous range of existing NGOs' ICT profiles, but also refer to different types of connectivity. Those that run their own networks and have deployed their own connectivity (e.g., by way of a satellite link), disperse the range of connectivity costs. As a rough orientation, connectivity costs beyond 300 US$ coincide with the operation of an individual private network (the dots in the chart refer to individual cases as extreme outliers). In most cases these can be observed in Dar es Salaam. Here private networks are deployed despite the existence of alternative connectivity models, meaning that considerable significance is attributed to the technology, a fact that can also be seen in the high email traffic for some Dar es Salaam based NGOs.

High pitch connectivity costs are less frequent in other urban centres. Email traffic is also less dispersed, indicating that costs are the main impediment to expand the NGOs' ICT profile.

In comparison with the urban situation, the disproportion between costs and email traffic is very significant in rural areas. Where no telephone is available, NGOs are forced to connect through expensive connectivity solutions, generally via satellite. As mentioned above, exorbitant costs correspond to only little email traffic. In these cases even low intensity ICT usage justifies high costs and indicates the significance that is attributed to the technology.

Figures 12 and 13 show connectivity costs and email traffic depending on the type of access – through office equipment or public access facilities. Office access generally equals higher access costs – median 90 US$ in contrast to 30 US$ using public access facilities – and a higher volume of data traffic – median 45 weekly emails (sent) versus 14,5 in public access facilities. Furthermore, the range of both figures' costs and email traffic shows greater variations if the internet is accessed by office equipment.

Greater variations can also be interpreted as having more opportunities, although at higher costs. In the upper quartile of the 50%-body of NGOs, costs can rise to 200 US$ per month and a large number of extreme values and outliers even goes beyond that. Email traffic can vary between some 15 and 100 emails sent per week and even beyond that in some exceptional cases – up to 600 and 800 emails for the highest individual values. Considering both figures, office access corresponds to a broader spectrum of costs and user profiles. This also means that NGOs with office connectivity can make better use of individual well-tailored connectivity solutions as well.

Figure 12: Connectivity costs according to Access Point
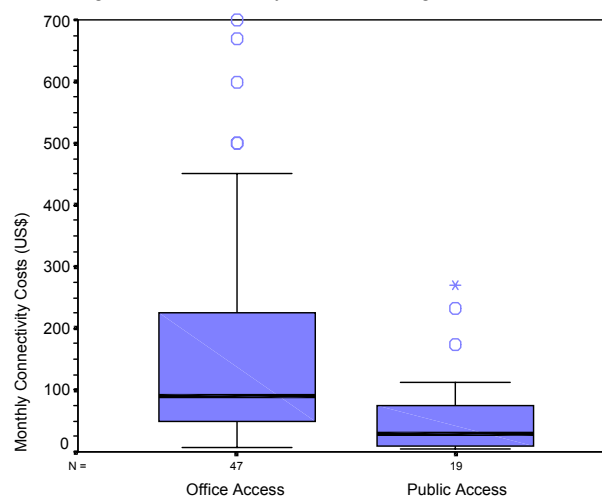
Figure 13: Email traffic (sent) according to Access Point

Such options are rarely available to public access users. Cost and time considerations limit ICT opportunities in public access facilities. Connectivity costs appear in a narrow margin between 10 US$ and 70 US$. In addition, actual email traffic in public access facilities shows only an extremely small spectrum between 5 and 20 emails. This reveals the restrictive character of public access. Those who break open these restrictions have to manage to pay for high connectivity costs for very little email traffic. In the absence of any alternatives, public access facilities play an important role in Internet diffusion. They might facilitate broader email utilisation, but they are unlikely to develop into main instruments for advanced ICT utilisation.

**NGO comments on ICT**

In addition to the close questions, the questionnaire also provided an opportunity to comment openly on the subject of ICT. 58 or 75% of the surveyed NGOs took the opportunity to do so. The submitted comments have reinforced the findings of the quantitative questions given above and contain a wide range of perceptions, obstacles and future strategies.

Summarising the open comments, two main observations can be made: Firstly, most comments combine an identification of main obstacles, i.e. a lack of funds and a lack of skills to utilise the technology more effectively, with an emphatic reference to the importance of the technology highlighting the benefits already achieved. Secondly, though the comments share some common themes, there is a need to differentiate be-

tween different NGOs and their different scope of activity, capacities and objectives. The quintessence of the open comments can be summarised as follows:

- While most NGOs suffer from financial restrictions, the implications of this observation are different. For large, well-established NGOs operating nation-wide, the main challenges are to update and upgrade their equipment and recruit the necessary skills to operate sophisticated network solutions. For them, high costs of connectivity hamper their working routines, and a lack of connectivity (e.g., difficulties to connect to their upcountry field offices) represents significant obstacles, but does not prohibit their ICT utilisation. More or less large NGOs can cope with such difficulties and they make use of the technology even under difficult circumstances.
- In contrast, for small NGOs, grassroots organisations, or single issue lobby groups especially in rural areas, high connectivity and equipment costs are a prohibitive burden to develop minimal IT capacities or to introduce basic ICT equipment. In these cases high costs segregate them from the potential benefits of ICT. The lack of qualified personnel exacerbates this situation.
- Public access facilities are only partly in a position to counterbalance such tendencies. Limitations of telecentres or Internet Cafes are identified with regard to time and cost considerations.
- Despite these difficulties, most NGOs have emphatically underlined the significance of ICT. For many NGOs the technology has opened new communication channels that simply did not exist before. Furthermore, gains of networking and the idea of joint social and political action were frequently mentioned as a key to increase NGOs' ability to play their role in the political process. Or, as one contributor put it, 'The arrival of email and the internet has made life a lot of easier'.
- (Few) critical remarks have been made on the domination of Western values and uncontrolled circulation of offensive content on the Internet.

**Conclusion**
1. The image of a largely connected NGO community in Africa is a misperception, at least if the country case Tanzania is considered. Only 20% of Tanzanian NGOs have a working email account. This number might be relativised to some extent by the fact of an exponential growth rate of newly created NGOs, especially from the beginning of the 1990s onwards.
2. The heterogeneous nature of NGOs is echoed throughout the survey and reflects a broad range of different user profiles. These can be divided into at least three main user groups: A first group consists of professionally managed, large NGOs highly visible in the political process and well embedded in large-scale networking interactions. This group uses ICT as an accepted and understood tool supporting daily working procedures. This applies to advanced applications that make administrative routines more effective, but also reflects considerable internal and external, national and international information flows. A second group, often well acknowledged in the respective working field, has also developed a considerable ICT profile. These NGOs might be less sophisticated than those in the first group, and they might not utilise the technology in all potential working areas, but within their limits they value the technology as an important tool, especially with respect to national and international networking, internet based research and the like. The third group, at the same time the majority of Tanzanian NGOs, consists of small NGOs, often focusing on a single issue, coming from both urban and rural areas, many of them working at the grassroots level. They have developed a rudimentary ICT profile that focuses on email usage and some basic application. Though low profile and low intensity usage, this group has identified their basic ICT needs and applies the applications that are available and affordable.
3. From a sectoral perspective NGOs have proved to be a prime user of ICT in Tanzania. They are responsive to technological change. Also in the low profile third user group, even limited access to the technology has shown a positive impact on daily working procedures. Thus, the NGO sector has proved to be a prime target of ICT promotion in the country.
4. All NGOs share a set of common ICT difficulties: high costs, lack of infrastructure and skills. But whereas for the first two groups these present – though sometimes

serious – business obstacles, for the third group they are often a prohibitive burden to make use of the technology.

5. Costs to connect to the internet are often exorbitantly high. Basically there are two types of internet connectivity; the first one uses a dial up account using the telephone to connect to the ISP. Here, a large proportion of costs is due to high telephone tariffs. A countrywide dial up number only charging for local calls could significantly ease the situation for many NGOs, especially in the rural areas where a telephone line is available.

6. Operating a private network depending on satellite or other wireless solutions is the alternative mode to connect to the internet. Both set-up costs for a private network and monthly connectivity fees are considerably higher than a dial-up solution and hence, can only be afforded by a very few. However, costs for private networks appear in a wide range from 300 US$ to 600 US$ and beyond. This range does not only point towards a market not yet consolidated, it also indicates the existence of unexploited opportunities for (collective) bargaining to bring the prices down.

7. For many NGOs, internet usage depends on the availability of public access facilities. These centres are main facilitators of the technology where no alternatives are available. This is the case if only little ICT supply is demanded or public access centres are the only access point available. Beyond, public access facilities have limitations to meet organisational demands. They are restrictive in the provision of necessary and affordable airtime and ignore the fact that large-scale data processing procedures are often difficult to conduct outside the office – even if we just consider data security and protection. In consequence, public access facilities are well equipped to meet the individual or small organisational demand, but they hardly offer scalable solutions to organisational demands. To strengthen the role of public access facilities, hybrid access opportunities might offer a solution. Bearing in mind that connectivity costs and a lack of necessary skills are main obstacles for increased ICT utilisation, public access facilities could go beyond their approach to provide a limited number of fully connected working places with limited opening hours to the public. In addition they could offer connectivity ports where corporate or organisational users could log in to go online, e.g. with their own laptop. Special rooms providing only the ports could be made available, even offering extended opening hours for a limited number of corporate customers. Costs could be divided into a fee for using the premises and expenses for airtime, that is, the time the users actually are online (or the amount of data traffic). Such options could meet the demands of small enterprise or NGO customers. They could connect their own computers to the connectivity ports provided and would not suffer from time limitations. Because they are mainly charged for their time online, they could save costs by connecting and disconnecting during one working session as often as they like.

8. The cost benefit ratio of ICT utilisation covers a broad spectrum. Especially when high costs result in only very little data traffic, net benefits of ICT seem to be at least questionable. Though such discrepancies might be inevitable in the process of introducing a new technology and learning processes have to take place, the gap must be narrowed in the future to make the technology affordable and sustainable. Still, there is plenty of room to reduce costs and increase benefits, but finally market-based connectivity models will hit their limitations in an environment largely characterised by wide-spread poverty. If the provision of ICT is regarded as a public goal, new instruments must be developed to realise such goals. Political commitment, well-defined objectives, the careful and deliberate allocation of resources, and a consensus that equal opportunities partly means to subsidise the supply of ICT in vulnerable target segments, are a precondition to fully exploit the potential benefits of ICT.

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