AFRICAN CONNECTION
Centre for Strategic Planning

CAMEROON

RURAL ICT
MARKET OPPORTUNITY REPORT

- FINAL -

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Cameroon – Market Assessment for Rural ICT

1 Overview

Geo-demographics & Administration		Avg for Panel	Rank in Panel
Total population (2001)	15,200,000	40,193,636	9
Land area (sq km)	475,400	1,046,499	10
Population density per sq km	32	45.2	8
Households (2000)	2,732,000	7,787,800	8
Rural population	7,767,200	22,595,202	9
% of population rural	51.1	55.2	8
Primary administrative division (Regions)	10	21	
Secondary division (Departments)	58	68	
Average population per department	262,000	328,000	

Economy		Avg for Panel	Rank in Panel
GDP per capita (US$) 2000	$664	890	5
GDP per capita 2000 (Purchasing Power Parity)	$1,700	2,640	5
GDP per capita CAGR (1996-2000)	-1.1%	-0.3%	6
GDP per capita PPP CAGR (1996-2000)	6.7%	3.3%	3
Estimated rural GDP per capita	$330	371	5
GINI index[1]	47.7	43.8	7
Urban-Rural income disparity[2]	3.1	4.0	4
UN gender-related development index value (2000)[3]	0.500	0.522	6
UN human development index value (2000)[3]	0.512	0.532	5
% population below national poverty line	40	37.7	7

[1] Index ranges from 0 to 100 where 0 represents perfect equality in income distribution and 100 represents perfect inequality.

[2] The ratio of the average urban to rural per-capita income levels.

[3] Values range from 0 to 1 with 1 representing the highest level of development

Education		Avg for Panel	Rank in Panel
Adult literacy (% age 15 and above) 2000	75.8	66.4	4
Youth literacy 2000	94.0	82.0	2
Primary school enrolment 1998	est 94.0	75.0	2
Public education expenditure as % of gov't total (1995-97)	16.9	18.2	4

ICT		Avg for Panel	Rank in Panel
Telecom revenue 2000 (M US$)	68.6	1,322.6	9
Revenue CAGR (1998 - 2000)	6%	5.5%	4
Rural telecom revenue potential 2000 (M US$)[1]	26	256.7	9
Fixed CAGR (1999 - 2001)	2.34%	2.8%	5
Main lines 2001	101,400	1,463,536	9
% residential lines 2000	87	65.4	1
Main lines per 100 people	0.67	3.4	8
Residential main lines per 100 households	3.1	13.1	6
% Digital 2000	68	82.4	8
Public phones 2000	6,550	25,864	6
Estimated Rural fixed lines 2001	9,880	211,824	9
Urban-Rural telecom disparity 2001	9.3	7.6	8
Waiting list as % of fixed lines 2000	49.3	28.2	10
Telecom revenue as % of GDP 1999	0.7	2.2	9
Connection charge (US$, residential, 2000)	42.00	36.63	5
Residential line rental (US$) 2000	2.50	4.88	3
Basket of fixed line costs[2]	76.50	95.89	4
Basket of costs as % of per capita income	11.5	15.0	4
Mobile subscribers (2002)	550,000	1,773,745	8
Mobile subscribers per 100 people (2002)	2.73	4.8	6
Mobile as % of total subscribers 2001	75.3	57.5	3
Mobile CAGR (1999 - 2001)	272.5%	107.2%	1
Number of ISPs 2001	20+	35	
ISP charge (US$) 2001 30hrs/month[3]	77.20	41.27	10
Monthly cost of 64 kbps data channel	588.00	399.88	6
Internet users 2001	45,000	482,182	9
Cities with local dialup IP POPs 2001	2	16	10
International Internet bandwidth	9,000kbps	115,514	9
PCs 2001	60,000	603,000	10
TVs 2000	520,000	3,383,455	9
Cybercafes / telecentres	100	N/A	

Notes

[1] In view of Cameroon's very low expenditure on telecommunications (0.7% using official statistics), we have used 1% of rural GDP as a *minimum* potential, on the assumption that the official figures under-estimate the potential. This is because they do not include revenues of the non-incumbent cellular operator, and because of supply constraints in the fixed network.

[2] The basket of fixed line costs comprises 25% of installation fee, 12 monthly rentals & 600 three-minute local calls (i.e. long distance & international not included).

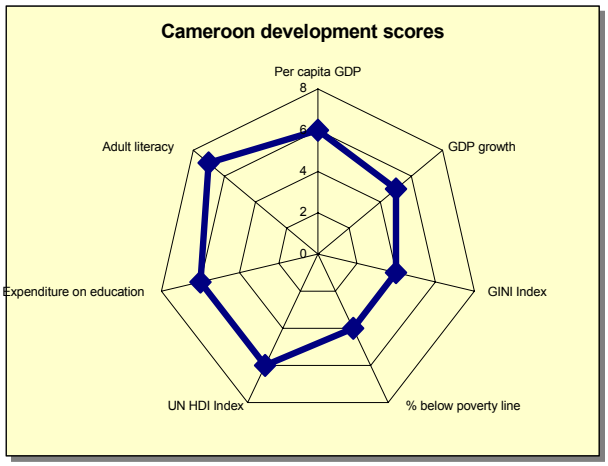
[3] The cost of telephone access is NOT included in the ISP charge.

List of Key or Major Players (not exhaustive)	
Fixed telecom operator(s)	• Societe des Telecommunications du Cameroun (CAMTEL)
Mobile operator(s)	• MTN (196,000 subs as of June 2002) • Orange (240,000 subs as of March 2002)
ISPs	• CAMTEL, provides both the International Internet link as well as selling dialup and leased line Internet access, web hosting and domain name registration under the name CamNet • ICCNET is a private ISP and is focusing on drop-in access • Cenadi is a Government ISP which competes with the private sector • SUP Telecom Interactive, Africances, New Technology Corporation, AfriCom, Cercom, CKT Distribution Informatique, Virtual Cameroon, Creolink, GlobalNet, AdsNet, ICCNET, OSL
VSAT/Satellite	• Creolink, GlobalNet, AdsNet, ICCNET, OSL, Douala1.com
Wireless Local Loop	• Creolink, GlobalNet, AdsNet, ICCNET, OSL, Douala1.com (data only)
Data/Leased Line	• CAMTEL provides both the International Internet link as well as selling dialup and leased line Internet access, web hosting and domain name registration under the name CamNet
Other	• N/A

Policy	
Independent regulator	Agence de régulation des télécommunications (ART)
Liberalisation schedule	Local: 2006 National Long Distance: 2006 International Long Distance: 2006 Mobile: 1999
Local services	Monopoly
Domestic long distance	Monopoly
International long distance	Monopoly
Mobile	Full competition
Private VSAT licenses	Full competition
Terminal equipment trade	Full competition
Public VOIP allowed	Yes
Cybercafes, telecentres	Full competition
Wireless local loop	Full competition
Leased lines	Monopoly
Data	Full competition
ISP	Full competition
National ICT policy	None

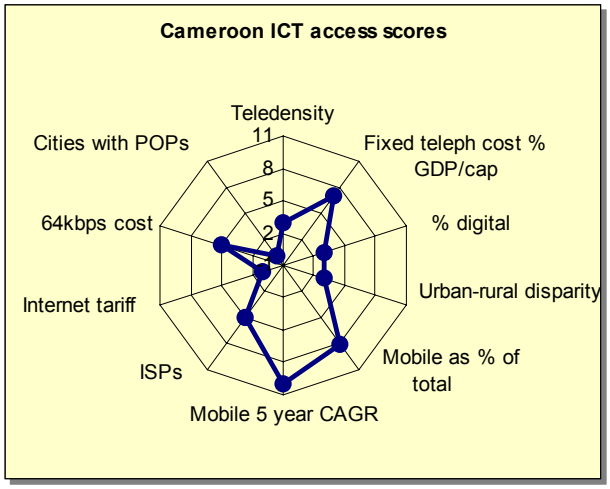
2 Introduction to the country

2.1 General



Cameroon is a relatively small country with below average population density, in the panel of countries only Senegal is smaller. It has a low-middle income level, though it has the highest in Central Africa, with a GDP of US$ 664 per capita. It is above average in the panel on literacy and education expenditure and second highest on youth literacy, though it is mid-range on UNHDI and income distribution.

In general, the telecommunications infrastructure is significantly underdeveloped, with a fixed teledensity of only 0.67 per 100 (eighth in the country panel) and a waiting list of several years based on the current rate of expansion. However, mobile subscriptions have been growing at over 270 percent per annum for the last five years and now represent well over 80 percent of all phones in the country, placing the country near the top of the panel in rate of mobile expansion.



As the Central African leader in the field of ICT development, Cameroon has various governmental agencies, institutions, private sector players and donor agencies involved in policy dialogue and project creation. Despite the limitations of the telecommunications infrastructure beyond the main cities of Yaounde and Douala, some progress has been made to encourage participation in ICT projects around the country. This includes the participation of NGOs active at the rural grass roots level. Even with the rapid growth of mobile communications, an estimated 90 percent of the rural population remain uncovered for even basic access.

2.2 Rural economy

Cameroon's rural economy, like that of most African countries, is dominated by the agricultural sector. In 2000, this sector accounted for nearly 44 percent of GDP and employed over 70 percent of Cameroon's population. The most popular cash crops for export are cocoa, coffee and cotton, with cocoa production primarily in the south of the country, cotton production centred in the north of the country and coffee grown in most regions outside of the north. Small holders dominate agricultural production in Cameroon, for instance, 90 percent of cocoa plantations are less than three hectares.

Another notable characteristic of rural Cameroon is the prevalence of the informal sector. It is estimated that 90 percent of the rural economy is in the informal sector, compared with only 60 percent in urban areas. This rural-urban disparity can be largely attributed to the focus on agriculture in rural areas. The prevalence of the informal sector in rural areas has in turn necessitated the development of informal rural financial institutions. These rotating savings and credit associations, known as njangis or tontines, are the only potential source of micro-finance assistance available to many rural dwellers, particularly women.

3 Policy & regulation relevant to rural ICT development

3.1 Fixed telecom services and the privatisation process

The fixed network of approximately 100,000 lines is run by the Cameroon Telecommunications Company (Camtel), a state-owned company that has a monopoly over local, long distance and international telephony services. It is the provider of major international bandwidth for the Internet supplier and also competes with the private sector for Internet service provision. It now competes with private VSAT owners who offer wireless local loop access to the Internet backbone directly. The fixed line network has only grown at 2.3 percent per annum over the past 5 years and is hopelessly inadequate for the country's needs; hence the mobile networks are rapidly eclipsing it.

The process of privatising Camtel began in 2000 but that has been stalled several times - first when the highest bidder (Telecel, now owned by Orascom of Egypt) walked away from the table. Since then the second-highest bidder, Mont Cameroon Communications (MCC, formed by Econet, Tunisie Telecom and BT) was until recently still engaged in long-running unresolved negotiations with the government. A major obstacle is the Cameroon government's failure to pay 10 billion CFA (US$ 12 million) of debts. However the Government has also stated that MCC's technical capacity is weak. The latest report in May 2002 is that the Government considers MCC's and other bids to be "not satisfactory".

The failure of the Camtel process, as well as that of other state-owned industries, will hold back involvement of some major investors. The Government is now looking for other bidders and is reported to have offered a mobile license as part of the deal.

In the meantime, the Telecommunications Regulatory Board (ART), which was created in 1998, has faced serious issues in its struggle with the incumbent, Camtel, which is slow to give up its former power. ART has a lack of staff with the appropriate technical skills or regulatory experience. Another issue for ART has been "lack of teeth" to enforce its decisions on the telecom law of 1998. Consequently, there have been an enormous number of violations. The ART Board is developing strategies for overcoming this.

3.2 Cellular mobile services and the impact on ICT potential

The mobile sector has two competing GSM firms:

- ORANGE, formerly Societe Camerounaise de Mobiles (SCM/Mobils), 70 percent owned by France Telecom and 30 percent by local partners, who are part-financed by the IFC.
- MTN, which purchased Camtel's mobile network in consortium with a local partner, Broadband Ltd., in 1999 (MTN owns 70 percent and Broadband 30 percent)

Orange had approximately 300,000 customers in mid 2002 and MTN about 200,000. As noted previously, the growth rate is very rapid. Well over 80 percent of all telephone connections in Cameroon are now mobile.

3.3 Satellite operators

ART has opened the door for the liberalisation of access to VSAT at least for the delivery of public Internet services. Some of the VSAT operators offer international VOIP services without ART's authorisation.

3.4 Internet

Cameroon has over 20 ISPs. However, in 2001 it had dial-up POPs in only the two main cities, Yaounde and Douala. Because of the poor microwave links to the telecom hub in Yaounde, Camnet (the Internet division of Camtel) is planning a large VSAT-based network of over 100 ground stations to create a nationally available network.

ART has defined a single ISP license effective across the entire country, as opposed to the former practice where separate licenses were issued for each city. There is no ISP Association at this stage; hence Internet data is still quite sketchy.

3.5 Universal/Rural Access Policy

At the moment, rural access is a serious issue, especially in the North of Cameroon, where voice service is extremely sparse, and there is no ISP and effectively no Internet access. The government has begun to encourage operators to deploy services in rural areas, and ART promises to support any efforts, and to speedily resolve any regulatory issues that develop. However, with Camtel enjoying a monopoly, the status of potential competitors is unclear. ART is discussing proposals to establish a Universal Service fund. It would appear that a full universal access policy is also required.

There is confidence among some observers that with the new government support, a great deal of progress can be made in rural issues. However, there is a long way to go; even in the better-served areas, the dial-up infrastructure is extremely weak, which has short-circuited the development of the Internet in Cameroon as a whole.

3.6 National ICT Policy

The process of developing a national strategy for the use of ICTs has involved a variety of government structures. This has made it difficult to reach an agreement. However, one of the strengths of ICT in Cameroon is that there seems to be active discussion of policy and regulation, with participation from all sides. NGOs, universities, companies, individuals, government agencies and international and inter-governmental organisations are all contributing to the dialogue.

There is however no official national ICT policy. To co-ordinate activities, the President created the National Information Technology Agency (ANTIC) and assigned it the mission of increasing training in ICTs at universities, schools and in the field of research. ANTIC is also responsible for formulating policy and managing the .cm domain. Organisationally, the President oversees ANTIC while the Minister of Finance is responsible for its financial control. ANTIC was formally created on 8 April 2002. It should become operational in September 2002, once the officials are appointed by Cameroon's President.

Various institutions have made proposals, but they are all held-up pending the appointment of ANTIC officials, which will harmonise and finalise these proposals and then put them back to the public for discussion and validation.

Various other structures have also been involved in the process, namely:

- An Internet working group comprising representatives from IntelCam, Ministère des Postes et Télécommunications, CENADI (Centre National de Developpement de l'Informatique), École Nationale Supérieure Polytechnique, Ministère Chargé des Relations extérieures, Ministère Chargé de la Communication and Ministère de l'Enseignement Supérieur.
- An infrastructure committee
- A training and popularisation committee
- An Internet content development committee
- A co-operation committee

CENADI, which is responsible for IT within the government – payroll, data processing, and Internet access for government agencies, especially research and academic organisations – is beginning to take an active role in policy discussions. However, CENADI's role in policy making is now being devolved to ANTIC, which has been set up in part to put an end to the in-fighting among various ministries for the control of ICT policy, a state of affairs that prevented the development of any such policy.

4 Rural Telecom Market Opportunity

4.1 Results from the modelling

According to Intelecon's model, which uses macro statistics of the economy's expenditure on telecommunications (assumed to be around 1 percent based on the available figures), Cameroon's rural market has the potential to generate minimum annual revenues of US$ 26 million. However, as noted in the overview report, this is probably a 'constrained supply' figure and the actual potential rural market, with the advent of rapid growth in communications, would be considerably higher – e.g. US$ 75 million if Cameroon conformed to just the official African average.

Cameroon has the largest rural market in Central Africa, but is ninth amongst the panel countries and in the bottom half for Africa as a whole.

4.2 Indicative investment estimates & alternatives[1]

In order to expand the cellular GSM networks to cover most of the country's rural territory, at least 150 new base stations would be required, at a cost in excess of US$ 45 million. On the other hand, basic coverage by VSAT providing fixed access (about 1,100 VSATs) to within 5KM of most inhabited communities may only cost US$ 12-15 million.

4.3 Impediments or hurdles for market development

The challenges to be overcome include the following:

Telecom sector specific

The defining features of the landscape are:

- *Regulatory uncertainty* – Camtel's slowly dying hegemony and the gradual efforts of ART and smaller competitive players to exploit new opportunities in the market have created uncertainty. Observers note that authority has not been clearly defined, and the regulator is wary of creating too much competition, which could make investment unattractive. Many of the upstarts are operating in clandestine ways, while waiting for ART to establish itself.
- *Lack of a UA or rural telecom policy* – ART is believed to have done a good job in several areas. It is working closely with industry players, both listening to their interests and defining an agenda for development. It is also streamlining the process for telecom licensing; the spectrum licensing process now brings four required government agencies together in a single session, as opposed to letting an application slowly move through all four in series. However, rural telecom investment needs to be encouraged through a definite UA policy and universal access fund.

The hurdle of import duties and tariffs has been mitigated recently. ART has been instrumental in reducing ICT hardware tariffs. The elimination of taxes and customs duties on computer and computer network equipment was legalised in the State Budget for 2001/2002 in June 2001. It was the result of a mass mobilisation that began long before ART was created in 1998. ART has also helped reduce tariffs for access to spectrum for satellite and wireless communications.

General

As in other countries, the impediments outside the telecommunications sector include:

- Poor physical infrastructure

[1] In order to provide indicative investment figures, Intelecon has modelled two different technologies, GSM as the most widespread terrestrial access technology and VSAT as a satellite technology. These were selected as being appropriate for different scenarios, e.g. GSM is cost-effective as expansion for basic access from existing networks to semi-rural and fairly densely populated rural areas. VSAT is suited for remote and more sparsely populated rural areas. This selection was made in order to model at least two different technologies for indicative investment figures, but does not imply that they are the exclusive choices for rural telecommunications. Often a mix of technologies, and major fibre or microwave backbone to regional centres, may be required, depending on the specific needs of the country and should in any case be decided by the licensed operators.

- Lack of commercial power
- Lack of rural investment incentives

4.4 Investment environment

The major incentives to invest in this sector in Cameroon are related to tax and duty exemptions on anything related to computers and computer networks.

There is constant improvement in ART's efforts to take control of the sector and to shorten the time required to process license requests for satellite and VSAT installations. Furthermore, the Government has put in place an investment code that is very favourable towards foreign investors in order to attract private foreign investment into all sectors of the economy.

Finally, the peace and political stability in the country also make the country very attractive for foreign investment and for the development of international economic and technical co-operation.

On the negative side, the country has been described as having a difficult and sometimes opaque business environment. It is often difficult to navigate the Government bureaucracy to take advantage of all the provisions of the law. The Government has embarked on a very serious anti-corruption campaign, which seems to be bearing fruit already. The most recent Transparency International report on corruption perceptions in world investment circles saw Cameroon climb six places in the right direction. If this effort is maintained, and all indicators show that it will, then the bureaucratic environment will become less of a problem in coming years.

4.5 Existing players and networks

We believe that the companies currently active in VSAT service provision could potentially be players in rural telephony for the most remote areas not covered by the mobile operators, as well as for Internet, so long as ART supports them on the right to use VOIP. The recent entrant, Doula1.com is particularly vocal about the needs of the regional and rural areas, though its financial strength is uncertain at this stage.

4.6 Summary of the opportunity

Rural Cameroon is almost a "greenfield" for rural telecoms investment, however it is not without severe risks and challenges and there does not seem to be an active UA policy or UA/US fund at this stage. Also, the incumbent operator has a monopoly over fixed services, thus the Government's desire to encourage rural investment would have to be tested.

There does seem to be the stirrings of a Government will to encourage and support investment. As elsewhere, the proof is in how ART reacts to operators' needs for support on interconnection with the incumbent, and on the need for flexible tariffing to reflect cost recovery prices.

Given the speed of advance of GSM cellular systems, the future of rural communications will be dominated by GSM solutions, though VSAT can, in principle, offer something also. As elsewhere, payphone and PCO entrepreneurial solutions based on the GSM network could provide a significant opportunity, as the payphone market is an open one.

As one observer noted "most people only require voice, and for messaging it's email or something related", for which GSM does not represent a severe constraint.

5 ICT Applications - Experience and opportunity assessment

5.1 Community development & education

Sustainable Development Networking Programme (SDNP)

This project links together a network of more than 300 members – comprising scientists, NGOs and women's organisations, academics and government officials spread out in ten provinces around the country – with an email network and other practical ICT facilities and services. Many of the members are intermediaries to the grassroots rural population and poor communities. The project thus has a significant poverty reduction impact. The project commenced in 1996 under the UNDP.

The project exemplifies the achievement of basic email and related services in a very constrained access environment. It has installed Internet servers in each province where there are member NGOs or SMEs that can host and support them. These servers intermittently exchange email with the central SDNP server every night.

One of SDNP's services is 'assisted research' through an Internet Help Desk in Yaounde. Since online Internet service cannot be made available in the provinces due to the weakness of the telecommunications links, SDNP provides off-line 'asynchronous' assistance. It receives research requests from its members by email, carries out the research from its main server in Yaounde, and then sends the results and attachments back to the member by email as soon as possible. SDNP services more than 10,000 people (presumably including clients of its member NGOs) through its Internet Help Desk.

Examples of organisations assisted and strengthened by the SDNP Internet and email services include:

- FESADE – Association for the development of Women & Health – assists women in ways related to health, education and entrepreneurial economic activity.
- SIRDEP – Society for Initiatives in Rural Development & Environmental Protection – assists, for example, research on issues related to the environment for animal raising.

SchoolNet Cameroon

SchoolNet Cameroon is an initiative of the SDNP (above), and legalised in March 2002 as an NGO called SDNP SchoolNet Cameroon, with a Board of nine members drawn from the private sector, civil society and the schools. It is affiliated to SchoolNet Africa[2].

In May 2001, the World Computer Exchange, Inc., an American organisation, shipped 380 used and refurbished computers to SchoolNet Cameroon, for installation in 34 schools with a combined student population around Cameroon of 17,000. SchoolNet Cameroon gave 203 computers to 16 schools as follows: 1 in Yaounde, 13 in Douala and 2 in Buea, which is a very rural area. The rest of the computers were not usable by the schools for technical reasons that would have required

[2] Headquartered in South Africa and governed by a nine member Steering Committee representing countries from all five sub-regions across the continent, SchoolNet Africa is the first African-based, African-led, pan-African school networking institution on the continent. In partnership with 25 national Schoolnets to date, it kicks off with a number of flagship projects. Over the next three years, SchoolNet Africa plans to:

- Connect African schools to the Internet
- Build champions to lead and develop national schoolnets
- Pilot the development of online curriculum
- Create a knowledge warehouse
- Promote the development of "world class" learners through its ThinkQuest Africa competition, and
- Lobby and advocate for cheap Internet access for schools in Africa.

Already its national Schoolnets have established partnerships with government ministries of education and telecommunications, the private sector and NGOs at the national level. It's Steering Committee has already forged partnerships with major donor and development agencies such as the Open Society Institute for Southern Africa (OSISA), the International Development Research Centre (IDRC), the UN Economic Commission for Africa (UNECA) and UNESCO.

additional investment. Another container of 400 Pentium computers and 50 printers is due to arrive in Yaounde in early September 2002.

The main achievement of SchoolNet Cameroon to date has been in raising awareness in the schools, government and international organisations about the importance of supporting ICTs in schools. Also, it has educated on the importance of using free or open source software for the purpose of reinforcing local ICT capacity, reinforcing network security and reducing the cost of software. This was done through media interviews as well as meetings with schools individually and in groups. The result has been 100 additional schools have registered with the NGO to get affordable computers.

The computers generated a need for teacher training and as a result, SchoolNet now hosts an Internet Academy for the training of teachers and students including the CISCO Programme, which is due to start training with the new school year in September 2002 with 23 students.

Other education projects

A number of initiatives exist, some of which are only partially relevant to rural ICT development, but demonstrate capacity build-up in the country:

- The University of Yaoundé 1 and ENSP operate the national academic network - UniNet, on behalf of the Ministère de l'Enseignement Supérieur.
- The Ecole Normale Supérieure (ENS), the teacher training school of the University of Yaounde 1 located off-campus, is developing a technology-based distance education programme and will be connected to UniNet with support from ACCT.
- Africavenir is an NGO aiming to build on its existing community centre/library/public access internet facilities to create a network of access points in Cameroun www.africavenir.org
- Centre Syfed Yaounde, established by the university AUPELF-UREF, provides free Internet access and web hosting for organisations in the public sector. The Centre Syfed is also planning to set up smaller Centre Syfeds at the other four major Universities in Cameroon.
- The Ministry of Higher Education is also developing a network called UNINET whose ambition is to connect all the six state universities of Cameroon by equiping them with VSATs. Four of the six universities are in rural areas (Yaoundé 2, Buea, Dschang and Ngaoundéré). Buea Universtity already has internet access but the others do not, including the University of Yaoundé 2, which is located on the outskirts of Yaounde.
- Anais-ac is building a network of Proximity Training Centers connected to the internet with the help of World Computer Exchange and SDNP SchoolNet Cameroon.
- The Agence Intergouvernementale de la Francophonie's Centre INTIF trained 40 Linux network administrators in November 2000 in partnership with SDNP and CAMTEL and has installed a Linux Laboratory at the ENSP's Département de Génie Informatique as a way of continuing the development of manpower in this area that is appropriate for poverty reduction and can produce administrators for rural nodes of major networks that operate using inexpensive equipment, as in the SDNP experiment.

5.2 Agriculture & health

The Réseau Camerounais de Documentation Agricole (REDOCAM) is being developed by l'Institut de la recherche agronomique pour le développement (IRAD) with support from the World Bank. This network will cover all the research stations of IRAD (more than eleven), which cover all of the ecological zones in the country and bring critical agricultural, livestock, and environmental information very close to the rural population.

The Institut de Recherches Médicales et d'études des Plantes Médicinales (IRMPM) is developing a network for medical plant information exchange. Like the IRAD network, it extends into rural areas through research centres spread all over the country. These centres gather, analyse and summarise valuable health information and bring it nearer to the rural population, which is usually distant from hospitals and health centres.

5.3 Central African Regional activities

The following activities are a selection of regional activities that could have a bearing on rural ICT development:

- The Sub-Regional Development Centre for Central Africa (SRDC-CA) is the UN ECA's sub-regional arm charged with supporting sub-regional electronic information exchange networks of economic experts, civil society organisations, NGOs and the private sector. The Centre has funded the Cameroon National Information and Communication Infrastructure (NICI) Plan in 2001 and is doing similar studies in the other countries of the sub-region. This study was adopted by the UN in Cameroon and submitted to the country's President as the basis for UN policy assistance to the government. The study now awaits action by ANTIC. When presented to the public and validated, this study will provide a framework for the development of serious projects to address the challenges of ICT in rural areas.
- The Organisation Africaine de la Propriété Intellectuelle (OAPI) is establishing a central information resource for the 13 central African member countries and will include the development of databases with support from IDRC. Though the information from this network will be available mostly in the cities of participating countries, it could be a valuable source of information if coupled with a National VSAT project.
- A documentation network is being established by the Institut Panafricain pour le Development (IPD), called the Réseau Panafricain D'Information et de Documentation Rurales (REPIDOR), which will encourage information exchange with other regional institutions working in the area. This network**,** like the preceding one, needs to be coupled with a national VSAT project to effectively reach rural areas. Though the information is about rural areas, the access points at this moment are only in Buea and Douala. However, it can be an important source of information about the rural Africa for potential investors.
- The Ministry of the Environment and Forestry is part of an environmental network called the Programme Régional pour la Gestion de l'Information Environmentale (PRGIE) which covers all the CEMAC countries and is primarily run online. It has developed a documentation centre for environmental information that is connected to the Internet and could reach out to rural areas.

5.4 Governance and e-Government

CENADI is one of the largest IT users in the country, responsible for government data processing and computer networks. The major task for the agency is the civil service salaries/payroll but it has also recently established a large Internet service and network operations centre to provide Internet links to government departments.

CENADI has also prepared a 5 year plan for the use of ICTs in government, and is playing a standardisation role for the use of ICTs in government. Similar plans have been developed in the Ministries of Posts and Telecommunications, of Communication, of Higher Education and of Scientific and Technical Research.

5.5 e-Commerce

ASAFE Cyber Boutique

The Association pour le Soutien et l'Appui de la Femme Entrepeneur (ASAFE) is a dynamic association of women entrepreneurs. Located in ASAFE's Resource Centre in the economic capital of Douala, the ASAFE Cyber Boutique began operating at the end of 2000. Through the boutique, ASAFE provides its membership of 3,000 entrepreneurs with information and communication technology access and training. The centre works closely with ASAFE's other entrepreneurial activities, which focus primarily on women and the development of e-commerce ventures. It also serves as a training and access centre for students from the surrounding secondary schools, and will eventually sustain itself through payment for access time.

The partners for this project are Networked Intelligence for Development (NID), International Telecommunications Union (ITU), CISCO, International Trade Centre (ITC), UN Economic Commission for Africa (UNECA), The International Development Research Centre (IDRC).

ASAFE and NID have co-ordinated investments by multiple organisations – ITU, UNIFEM, Shell, the Japanese government, Waverider and InfoDEV – to develop e-commerce capabilities for the women entrepreneurs including a cyber-boutique, a computer training facility and an ISP. This project empowers women entrepreneurs as active players in the digital economy. This internet and e-commerce activity aims at establishing a sustainable e-commerce and internet service for ASAFE.

5.6 Rural ICT projects & applications

Several of the previously mentioned projects are building capacity to be able to support and service regional-based institutions and businesses, and even rural ones. One project, SDNP, stands out as providing a service which is directly related to rural activities, using a slow and asynchronous "best possible" email solution, enhanced by a Yaounde based Internet Help Desk to serve rural based organisations and communities indirectly.

This provides a potential model for other projects elsewhere. However, it also points to the reality that as GSM network access reaches more and more regional centres and rural areas, it will become increasingly feasible to access information more directly and personally through, for example, SMS and voice messaging solutions. These would be complementary to the longer research tasks currently handled by the Help desk.

A pilot to develop such services as the SDNP project (now SDNP SchoolNet Cameroon NGO) offers, using SMS on the emerging GSM infrastructure, is presented in the Kenya market report.

5.7 Players and potential partnerships

There is enormous undeveloped potential in the Cameroon telecom and ICT market, but in addition to the bureaucracy problem, three issues limit the sector:

- Lack of financing
- Lack of capacity and world-class management talent
- Lack of a national network backbone.

The lack of financing for rural telecom and ICT projects can benefit from the leadership of a national universal access or universal service fund (UAF/USF), which Cameroon does not yet have. To date, management talent in the area of telecommunications comes mainly through private sector participation, which today is in the domain of cellular mobile, VSAT operations, and to some extent though ISP activity.

One local company, Doula1.com is seeking to address the problem of the lack of good long distance infrastructure facilities by trying to launch a joint venture with the national power company, AES-SONEL, to develop a nation-wide fibre-optic network, similar to the Nigerian project underway involving NEPA and Eskom.

Also, the Government of Cameroon is paying COTCO, the company building the Chad-Cameroon pipeline in Cameroon, to install a fibre-optic telecom network along the pipeline within the next 12 months to ensure top quality telecommunications. This international backbone connects to the internet backbone through the sea in Douala and runs from Douala to Ndjamena with eleven POPs in the country covering Douala, Yaounde and 9 other towns. CAMTEL is expected, for now, to be responsible for leasing capacity on this backbone in order to provide lower fixed-line costs and enable more Cameroonians to have Internet access, though the situation could possibly change when ANTIC becomes operational.

5.8 Potential ICT projects or applications

Creating VSAT-based Internet service to regional centres and rural areas is a near-term future potential opportunity for Cameroon. Several factors support this:

- There are untapped markets since local Internet access is only available in 3 towns and is absent in the North;
- It is easier to roll-out ISPs now that ART has defined ISP licenses as being effective across the entire country so that each new ISP need only apply for one license to serve the country rather than a number of regional licenses;
- The demand at computer and network training centres indicates a growing computer-literate population; and
- The process of obtaining licenses for private VSATs should bypass battles with Camtel since licensing is relatively open.

6 Conclusions, pilot options and recommendations

6.1 Summary of rural ICT market opportunities identified

In the area of rural telecommunications, the government and regulator need to develop a clear universal access policy and universal access fund strategy in order to provide leadership and incentive investment.

In the meantime, clearly the mobile operators will make inroads into rural areas, which establishes opportunities for GSM-based payphone and PCO entrepreneurial activity. At this stage it is not clear how well the mobile operators are doing this or whether there is a separate opportunity for a project to identify entrepreneurs who could work with a payphone technology operator, possibly in partnership with an NGO.

However, the increasing presence of the mobile network could be leveraged to make this a short-term pillar of the universal access policy. However, the policy itself does still need to be formulated by Government or the regulator.

Cameroon has a few significant ICT initiatives taking place, some of which provide ideal background and capacity for additional rural opportunities, two of which are listed below as possible pilots.

6.2 Pilot ideas

The following two proposals are linked, in that the first concerns the roll-out of Internet service using VSAT technology and the second involves a network of cybercafés to operate as the prime public access window.

Intelecon's local associate, who is the co-ordinator of the influential SNDP and SNDP SchoolNet projects, reported almost universal support for these two projects from colleagues and contacts during his research of priority ideas and project proposals.

The third describes the 'lower technology' rural market application of the popular SMS text messaging service on the GSM infrastructure, which is also proposed for Kenya. The full pilot description is provided as an annex to the Kenya report.

National VSAT based ISP service

The piloting of a VSAT service as envisaged in Section 5.8, linking key NGOs who are the members of, for example, the SDNP SchoolNet Cameroon network, with a ready-made list of users, is being put forward initially as a pilot and is described in Annex A.

National cybercafe network

Cybercafes are the chief mode of access for the vast majority of Cameroonian Internet users. The local company Doula1.com believes that a nation-wide network of cybercentres linked to ISP(s)

by VSATs, or terrestrial optical fibre where available, would have enormous potential. The company is working on this concept and would welcome support.

A potential project sponsor, Doual1.com, is a dynamic new private player in the Cameroonian ICT market, who could forge the necessary collaborative team, however the project needs strong financial and technical support in order to effectively carry out this project.

It would also possibly benefit from being the public access face of the National VSAT ISP service project, hence it is proposed to explore ways to combine the two projects under a single national infrastructure vision.

One of the main requirements would be to establish a plan that can demonstrate that a national cybercafe network would both contribute to the viability of the national VSAT network and also become viable in its own right. One way to achieve the latter is for them to have a mandate to support development activities and to derive revenues from those activities as well as from purely commercial activities. The development activities could include the provision of training and access time to SchoolNet clients, in similar fashion to the AfricaOnline proposal described in the Kenya report.

SMS and voice messaging based information services

As discussed in Section 5.6, Cameroon is a country where the experience of projects such as SDNP and of educational networking resources could be leveraged into the roll-out of a more direct messaging, 'assisted research' and Internet Help Desk content service over the GSM/SMS and voice messaging platform. A potential pilot project has been presented in the Kenya report. Such a pilot could be attempted in any country where:

- the experience, interest and capacity exists amongst both NGOs and at least one capable entrepreneur who would offer the value added service;
- one or both of the existing GSM operators has already rolled out an SMS and/or voice messaging platform that is successfully being used already in urban areas; and
- GSM coverage into rural areas is sufficient to enable targeting of a sufficiently widespread rural clientele, community organisations and NGOs.

This report has highlighted the fact that the experience and capacity appears to exist in Cameroon, and the GSM infrastructure already covers most of the country and significant rural areas. Furthermore, rural coverage can also be enhanced and extended to more communities through the use of simple antennas and higher performance terminals to enhance rural signal reception up to 35km from roadside and town-located GSM base stations. All the necessary conditions exist in Cameroon for the successful implementation of such a project, though Cameroon's market is much smaller than, for example, Kenya's. Hence, unless a strong group of players emerges to develop the content and strategy for Cameroon, it is probably best to be piloted first in a larger market.

6.3 Recommendations for "Priority Action Items"

The following are the steps that we see as being necessary to provide leadership on the acceleration of opportunities in rural ICT development:

- A clear policy on Universal Access by Government and/or ART and establishment of the Universal Access Fund which is under consideration.
- An ART position in favour of interconnection and dispute settlement that is pro-active and pro-rural.
- The development of specific pro-rural ICT policies in all areas of Government activity. For example, the Ministry of Agriculture is building local area networks for internal communication in its office in Yaounde and in all ten provincial headquarters, with ambitions to connect them together and use them to transmit and receive information about agricultural research and extension activities. This is the type of pro-rural policy that needs to be encouraged and supported in other ministries.

- The expansion of VSAT and Internet access to the rest of the country beyond Douala and Yaounde, as per the pilot suggestions.
- Attention to ICT investment in the education sector at all stages, from nursery to university, as a way of insuring the availability of manpower in the near and long term future and a growing market for ICT products. The SchoolNet Cameroon and the University Connectivity project are examples in this domain.
- Training of manpower beyond the ENSP, especially in the areas of electronic and electrical engineering, software engineering, network design and installation, network administration, free software to increase security and reduce the cost of software licenses/taxes, etc.

Introduction

The network of NGOs under SNDP's umbrella has recently expanded to include Anais.ac and Nosurdep, along with FESADE, SIRDEP and GENDER LENSES. SNDP SchoolNet is working to introduce computer LANs into school premises and civil society training organisations and will be focused on learning and teaching issues. SDNP SchoolNet Cameroon is looking for support to implement this programme. The VSAT infrastructure would serve mainly for the transmission of online learning and school administration online services as well as assisted research services for civil society organisations.

Rural focus

There are 13,336 nursery, primary and secondary/high schools in the country. 2,209 of these have electricity, which means that they can take part in the VSAT based ISP service without the need for investment in electrical infrastructure. Some 1,600 of these schools are in rural areas.

Given the existing distance learning programmes, such as the CISCO and Linux Academies available through SchoolNet Cameroon, this project will have real potential for expansion into rural areas, capacity building and training as well as local content production and export of cultural information. The private universities that are springing up in rural towns would also benefit from this project to improve their visibility, partnership development, teaching and research capacities. SchoolNet Cameroon's proposed Electronic Portal for Education Resources (EPER) could also use support as a pilot capacity building project for intelligent rural youth.

Supporting agencies

While the project owner would be SNDP SchoolNet Cameroon, this project has the support of the Ministers in Charge of Economic and Technical Co-operation and needs international financial and technical support.