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**ICT INFRASTRUCTURE IN THE
ARAB REGION**



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**ICT Infrastructure in the
Arab Region**

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ICT Infrastructure in the Arab Region

The purpose of this report is to present an assessment of the information and communication capabilities of the Arab countries. This report analyses the state of the Arab countries in terms of some of the most important indicators of ICT infrastructure, how it has evolved over the years, and how it compares among countries and sub regions of the Arab world and - when the information is available - against the world. The report also outlines the strengths and weaknesses of the different sub-regions.

The report concludes with an appraisal of the digital divide in the region, considers the factors that are hindering the development of the region, and at the same time, regional initiatives that have been implemented in the region in the application realm, that can be considered as success stories.

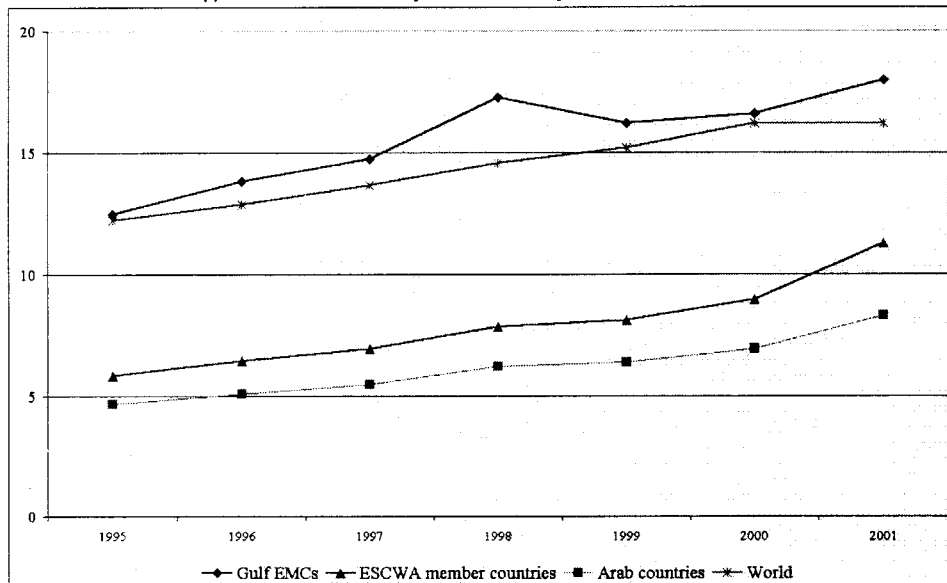
ICT Infrastructures in the Arab Countries

Information and communications technologies (ICTs) are capable of profound benefits for socio-economic development. By going beyond the social, economic and geographical barriers, they enhance access to educational and training material, health services and political empowerment and create new employment opportunities.

Inadequate demand and meagre public funding are issues that tend to limit technology-based opportunities for many segments in Arab country populations. In general, institutions concerned with the adaptation and dissemination of ICTs have tended to respond to the needs of high-income consumers. The following paragraphs provide a summary of the status of ICT infrastructures in the Arab countries.

Telephone lines: While the world average of main telephone lines was 16.19 per 100 inhabitants in 2001, the Arab countries' average was 8.31 per 100 inhabitants. ESCWA member countries possess a slightly higher average at 11.26 per 100 people, while GCC countries enjoy the highest proportion in the region with a ratio of 17.99 per 100 inhabitants, which is slightly higher than that of the world. Smaller values for this indicator are found in countries as Mauritania and Eritrea, where the values stands at less than 1 per 100 people. Figure 1 indicates growth rates in the numbers of main telephone lines per 100 inhabitants during the period 1995 – 2001. Growth rates in all groups of countries included in this figure are comparable to the world average growth. The fact, however, that the Arab and the ESCWA member countries have started from much smaller densities is clearly evident.

Figure 1- Main telephone lines per 100 inhabitants

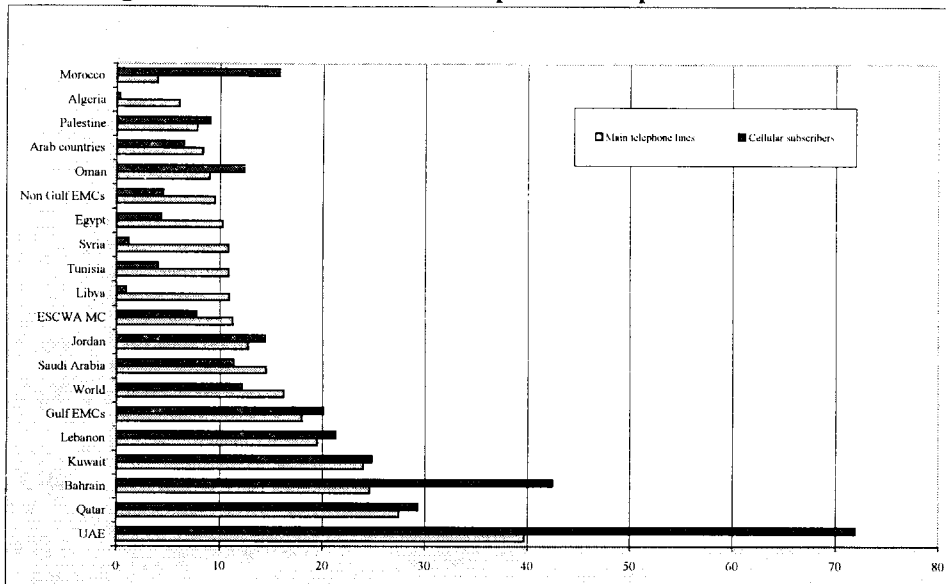


Source: Arab States Telecommunication Indicators (ITU 2000) and ITU 2002

On a more positive note, significant investments in upgrading fixed line networks appear to have been committed in all but three of the ESCWA member countries. Additionally, digital networks have also been introduced in the majority of the Arab countries' networks.

With regard to mobile telephony, the number of cellular subscriptions reveals significant variation from one ESCWA member country to the next. In absolute numbers, Egypt is at the forefront with around 3 million numbers, having doubled the number in the last year. Relative to populations, however, the revised figures supplied by the International Telecommunications Union (ITU) for the year 2001 indicate that the GCC member countries, and Lebanon, come on top in terms of the number of fixed and mobile phones per 100 inhabitants. It is interesting to note that all GCC countries (except Saudi Arabia), Lebanon, Jordan and Morocco have reached a situation in which they have more mobile subscribers that fixed telephone lines. See Figure 2.

Figure 2 – Cellular and fixed telephone lines per 100 inhabitants

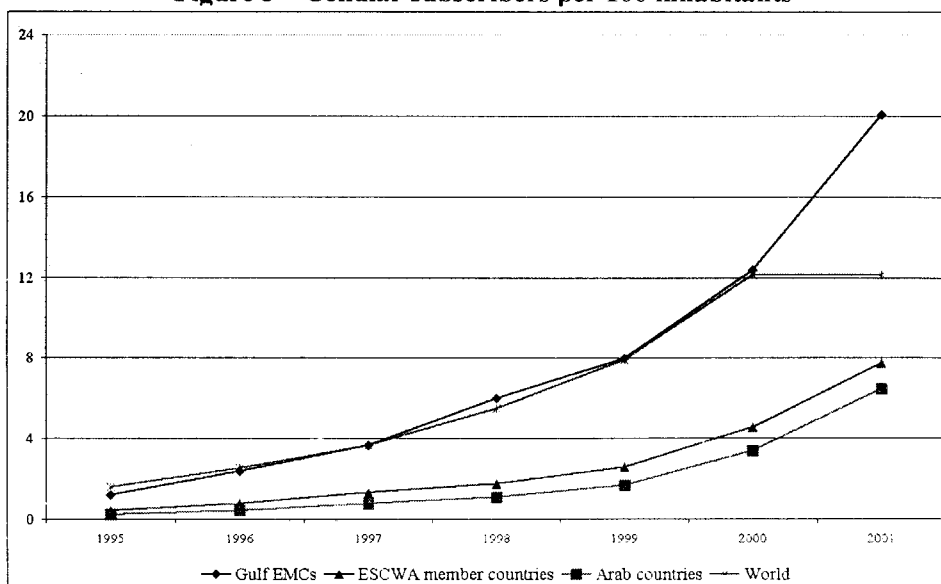


Source: ITU 2002

Figure 3 indicates growth rates in the numbers of cellular subscribers per 100 inhabitants during the period 1995 – 2001. This figure indicates that the ESCWA member countries and the Arab countries possess inferior growth rates to world and GCC ESCWA country averages during this period. The fact that the Gulf ESCWA member countries have maintained growth rates comparable to world averages is also evident. The world average growth stagnated during 2001 while GCC ESCWA countries experienced an even faster growth than in 2000.

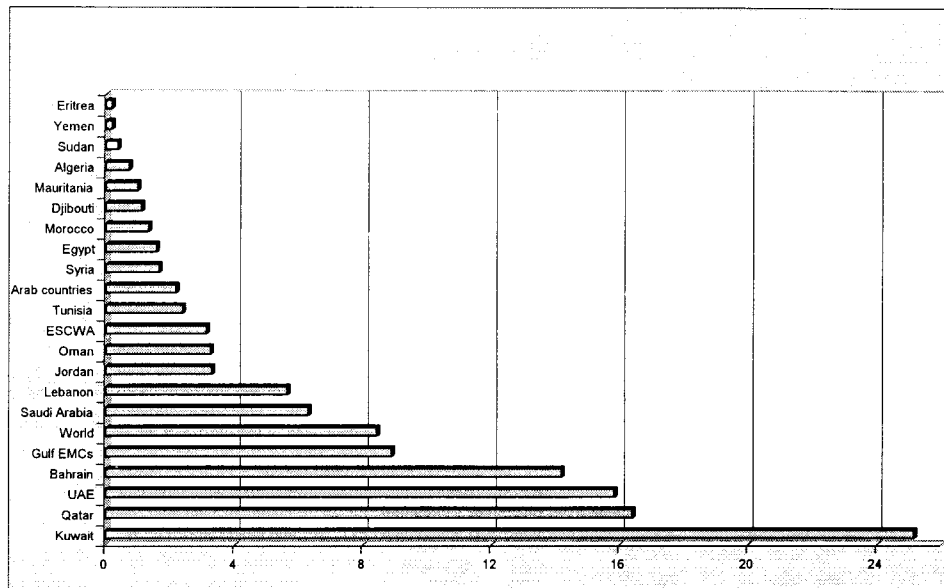
Personal computers (PCs): In 2001, the number of PCs per hundred inhabitants in the Arab countries averaged 2.16, around one fourth of the world average of 8.42 for that year. ESCWA countries averaged 3.1 per 100 people and the GCC member countries possessed an even higher average of around 8.8 per hundred. See Figure 4. As can be seen, the situation in the GCC member countries is remarkably better with one in every four inhabitants being in possession of a personal computer in Kuwait.

Figure 3 – Cellular subscribers per 100 inhabitants



Source: Arab States Telecommunication Indicators (ITU 2000) and ITU 2002

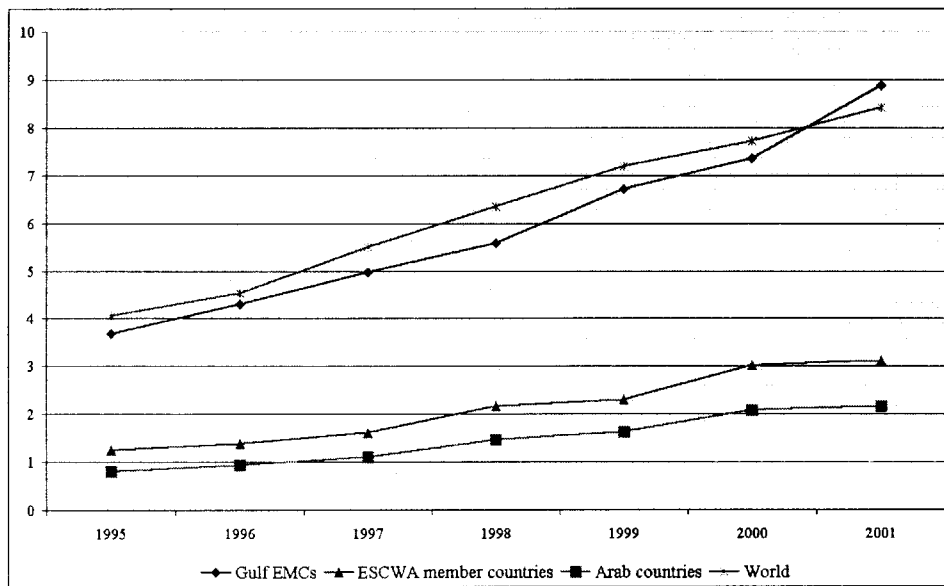
Figure 4 – Personal computers per 100 inhabitants (2001)



Source: ITU 2002

Figure 5 indicates growth rates in the numbers of PCs per 100 inhabitants during the 1995 – 2001 period. Up until 2000, the GCC member countries, the ESCWA member countries as a whole and the Arab countries in general had maintained inferior growth rates than the world’s average. Nevertheless, in 2001 the situation changed considerably in the GCC countries, having achieved an average of 8.88 PCs per 100 people that is higher than the world’s average (8.42).

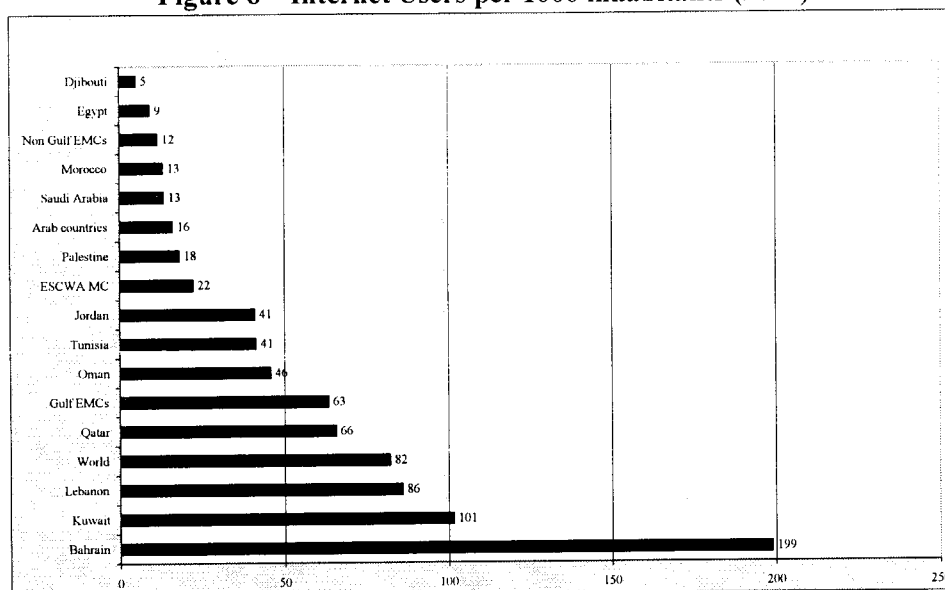
Figure 5 – Personal computers per 100 inhabitants (1995-2001)



Source: Arab States Telecommunication Indicators (ITU 2000) and ITU 2002

Internet access: Naturally, telephone densities and the number of computers available place an upper limit on Internet access using “conventional” wire-based technologies. Nevertheless, government policies clearly play an important part in facilitating access to the Internet. Thus, in Syria, for example, Internet use is still in a nascent stage, with a density of about 3.61 per thousand people, whereas it reaches a high of 339 per thousand inhabitants in the United Arab Emirates. The average number of Internet users in the Arab countries and in the ESCWA countries is 16.12 and 22.23 per thousand people, respectively; while the world average is around 82. See Figure 6.

Figure 6 – Internet Users per 1000 inhabitants (2001)



Source: ITU 2001

Internet, or cyber, cafés are estimated to number 3,336 in 136 countries, with around 2% of this total in the ESCWA member countries. This percentage could increase significantly should one include smaller facilities that offer Internet connectivity without the retail and entertainment features available in the “standard Internet café.”

Internet service providers (ISPs): Private sector Internet service providers are prevalent in most ESCWA member countries. There are many more licenses than is the case of mobile phones and a much more competitive market is in evidence.¹ In Syria, the public Syrian Telecommunication Establishment is the only Internet provider open for the public², with price and access believed to be constraining growth in the number of users. Sole providers are available in four other ESCWA member countries, namely UAE, Yemen, Oman and Qatar. In Saudi Arabia where Internet has only been provided for around five years, there are already 28 ISPs, whereas Lebanon has 15. Egypt tops the other Arab countries with 35 ISPs.³

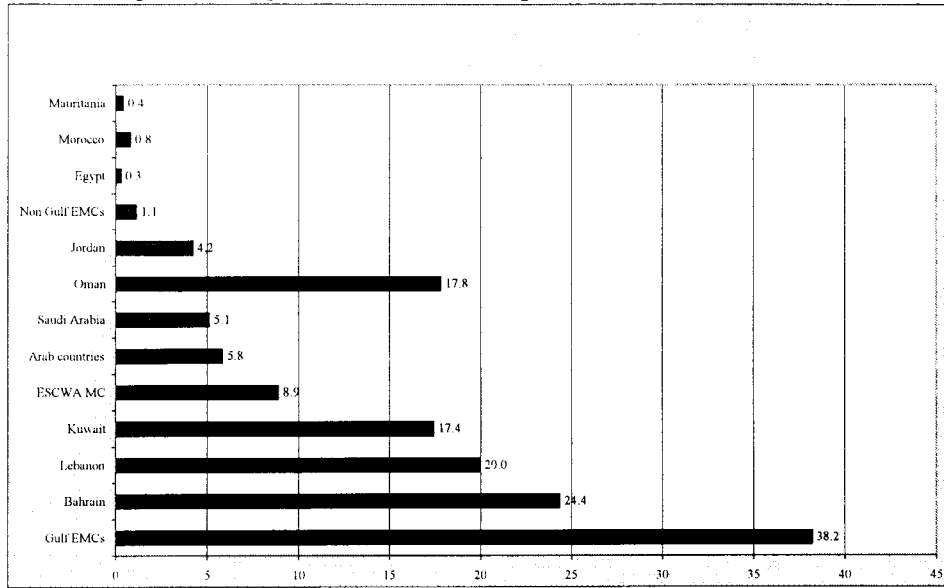
Top-level domain names (TLDNs): The revised ISC figures for 2001 reveal that the number of top-level domain names per 10,000 inhabitants was around 5.8 in the Arab region, it averaged 8.9 in the ESCWA member countries, while it was around 38.2 in the Gulf countries. The average for the Arab represents roughly 2.5% of the world average, of around 232.6 TLDNs per 10,000 inhabitants. See Figure 7.

¹ In Lebanon, there have been numerous price wars between the ISPs, whereas little activity in mobile phone operators.

² The Syrian Computer Society is providing Internet services to its professional membership.

³ Source: IT News, Feb. 2002

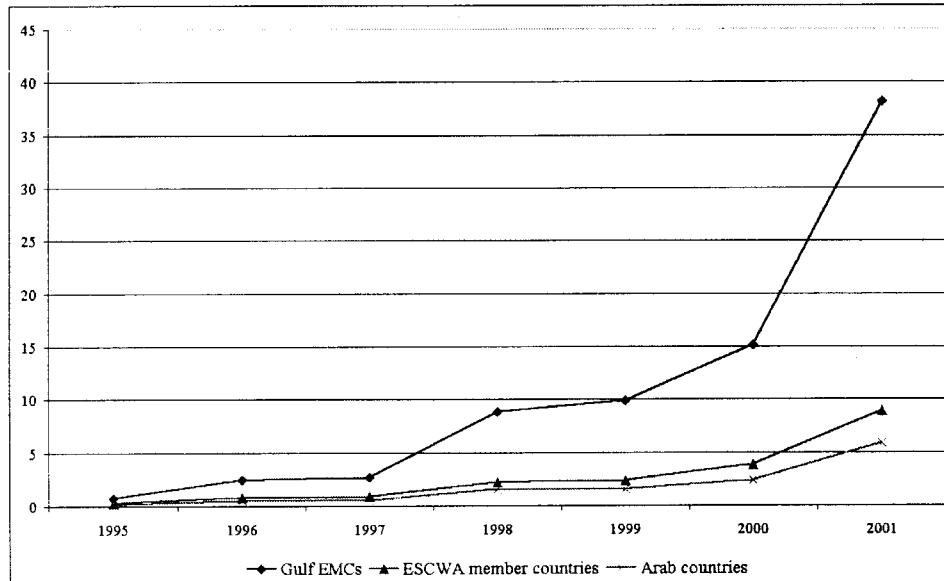
Figure 7 – Top level domain names per 10,000 inhabitants (2001)



Source: ITU 2001

Figure 8 indicates growth in the number of top-level domain names per 10,000 inhabitants. The high rate of growth in the GCC ESCWA member countries is largely due to phenomenal growth in just one country, namely the United Arab Emirates. Growth in the ESCWA countries taken as a whole as well as the Arab countries is comparable and relatively low as compared to world averages.

Figure 8 – Top-level domain names per 10,000 inhabitants (1995-2001)



Source: Arab States Telecommunication Indicators (ITU 2000) and ITU 2001

Local content: Government sites, Arabic portals, discussion sites, and hobby sites have recently proliferated in the ESCWA member countries. Numerous sites from Saudi Arabia, Kuwait, Egypt, and Lebanon offer services of libraries, newspaper articles, encyclopaedias and information on religious affairs.

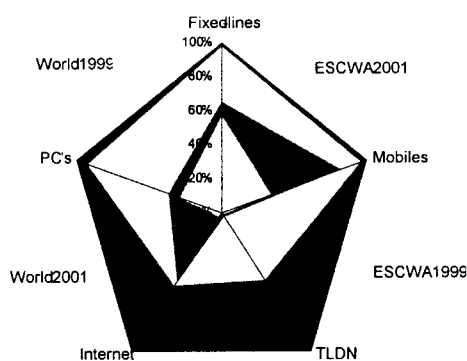
Language: English is the first language for 92% of web users while Arabic language users account for 0.07% of the total. This is a much smaller percentage than the Arabic speaking world population of around 4.4%. The Arab web-surfing contingent is thus underrepresented by a factor of 63.

Satellite systems: In terms of satellite communications, it may be noted that Egypt has launched its first communication satellite with the second due up imminently. Arabsat, on the other hand launched a third generation satellite in 1999 with several features. This satellite is, however, dedicated to the diffusion of television programmes over all the Arab countries and large parts of Europe. The United Arab Emirates launched the services of the Thuraya satellite system in 2001, with the aim to provide seamless and borderless coverage for mobile telecommunications in more than 99 countries from Europe, North and Central Africa, the Middle East, and South Asia. The second satellite, Thuraya-2, will be launched in January 2003⁴.

The Digital Divide

Bridging the digital divides between the region and other, more developed, regions of the world continue. However, the pace is not impressive. Figure 9 shows the relative positions of 5 basic ICT indicators for the region in the years 1999 and 2001 with respect to world averages for the same years. It is clear that while growth in fixed and mobile telephones and Internet subscribers' penetrations have been satisfactory, growth in top-level domain names (TLDN) has been far from satisfactory, contrary to the growth achieved worldwide. This is due to the fact that most organizations in the region prefer to host their websites outside the region for lack of data centers in the region as well as lack of trust.

Figure 9 – Top-level domain names per 10,000 inhabitants (1995-2001)



Statistics that compare the digital divide between rural and urban areas within each country in the region, and the region as whole, do not exist at present. When they do, then further light will be shed on the state of the regional infrastructure.

Issues of concern about the digital divide in the region are not limited to the low penetration of the five basic ICT components. There are other issues of concern that include:

- Limited availability of broadband access.
- The state of monopoly of the telecom sector in most countries in the region.
- The high tariff rates, particularly for special services like broadband, leased lines and satellite communications.
- Resistance of monopolies to the introduction of new services (e.g. voice over IP)
- Regional hosting and peering.
- Lack of Arabic content and Arabic tools for the average citizen of the region.
- Cost of terminal equipment for the average citizen.
- The state of e-banking, credit cards, electronic signature and transaction authentication.
- Other legislative and regulatory issues.
- Cultural and politically sensitive issues.

⁴ Source: Thuraya Satellite Telecommunications Company website (<http://www.thuraya.com>)

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Initiatives to overcome some of these issues are underway in countries such as Egypt, Jordan and UAE. However, not enough coordination, know-how exchange and regional initiatives have been taking place so far. Furthermore, most initiatives do not involve creating an indigenous base for manufacturing or developing ICT components. Most of these initiatives may make the region even more dependent on imported technology than now. Also, initiatives with no regional dimension may not have sufficient chances for success. For example, in the area of ICT component manufacturing (hardware, telecom and software), a viable target market cannot be limited to one or two countries. Thus, investment and venture capital thinking with a regional vision becomes mandatory.

Simple and rough calculations of the deficiency in the regional infrastructure show that an investment of around \$60 billion is needed to bring up the penetration rates of the five basic indicators up to world average. A possible target for bridging the digital divide in the infrastructure would be to initiate ICT projects that could provide the components and services associated with upgrading the infrastructure.

Investment opportunities and recommendations that could lead the way to bridging the digital divide rely on the availability of data and statistics about each country and thus the region as a whole.

At present, ITU is one of the very few sources of data about ICT indicators for countries of the region. However, a closer look at the ITU tables shows that information about the region is sparse and when available, is outdated. Therefore, the need to collect, process, analyze and disseminate data that reflects the state of the ICT sector in a precise, comparable and timely manner is necessary.

ESCWA has previously proposed a project for the collection and dissemination of ICT indicators to be executed in close collaboration with ITU. The project consists of an internet-based solution that will benefit countries in the region, as well as regional and international agencies, international and local private sector companies. It is hoped that a project like this will see the light in the near future.

On the application front, there are several interesting and novel initiatives that have been, either observed in the region and could be considered as success stories. Some of these ideas are actually proposed by ESCWA:

- The introduction of IT facilities and education for schools in South Lebanon through the donation of secondhand PC's for computer laboratories and training teachers,
- Internet access in South Lebanon through microwave and satellite links to Internet cafes,
- A major mobile operator in Egypt is providing call center services for visa applications to popular embassies that were previously crowded with applicants that created serious congestions in vicinities,
- In Iraq, the Federation for Women extended its micro-credit programme to include the purchase of a PC for women working from the home offering typing services and Internet access,
- In Yemen, PC software has been developed to manage regional micro-credit centers for rural areas. The PC is also used to assist applicants in the formulation of feasibility studies for the proposed projects,
- In Syria, a labour market information system (LMIS) is proposed to the network of employment offices that belong to the Ministry of Social Affairs,
- In Jordan, a telecom fund was created for IT based social and cultural applications. One of the fund's projects is the Internet Tent, which is a large community telecentres with PC's, Internet via VSAT connection, fax and training facilities. An other project is the Internet Bus which offers the same services as the Tent on a vehicle,
- In Lebanon, a famous shop for selling Lebanese sweets extended its business over the Internet by offering home delivery worldwide. Orders are placed over the Internet, paid for through credit cards and delivered through a well-known courier service.