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INFORMATION AND COMMUNICATION INFRASTRUCTURE OF THE ESCWA REGION

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The information and communication infrastructure of the ESCWA region

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The convergence

1- Information and Communication Technologies (ICT) are central to the creation of a global knowledge–based economy and society. ICT are usually understood as pertaining to computers, networking and electronic data processing, as well as rapidly improving communications technologies, including mobile telephony, satellite communications multifold expansion in bandwidths for voice and data-carrying capacity by the use of materials such as fiber-optic as well as the software for new, more efficient and more widespread applications. This phenomenon is driven by converging information and communication technologies. Thus creating new platforms for further and more rapid advances.

2- Nations and corporations are transforming themselves into a networked world economy where everybody can communicate directly with everybody else, where hierarchies lose in importance and where popular participation is becoming increasingly widespread and influential. [1]

3- ICT can shape and enhance a wide range of development applications. One of the most important amongst such applications is electronic commerce, the technological vehicle for trade facilitation. Electronic commerce reduces the importance of physical distance and transportation costs as barriers to entry into international product markets, making it possible for even small firms to market their products and services around the world in a competitive manner.

The ICT infrastructure

4- One of the most important prerequisites for the spread of electronic commerce, particularly in developing countries, is the availability of a robust ICT infrastructure in these countries. The availability of inexpensive and powerful hardware and software reduces the costs of setting up an electronic commerce activity regardless of the geographical location. However, the relatively high cost of connection to Internet in many developing countries, most ESCWA member countries included, undermines their competitiveness in this regard.[2]

5- Internet is considered the main engine for the promotion of electronic commerce. The ECOSOC report states that fifth of the world's people living in the highest income countries have 86% of world's GDP but 93% of Internet users, whereas the bottom fifth have 1% of GDP and only 0.2% of Internet users. Nearer to this region, the Middle East population is about 3% of world population has no more than 0.8% share of Internet users, as shown in chart (1). [3]

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[1] Report of the Secretary General on the role of information technology in the context of a knowledge-based global economy
- ECOSOC substantive session of 2000 – July -August 2000

[2] See (1) also.

[3] Source Nue Ltd. (2000) For people online; US Bureau of Census (2000) for the population estimates.

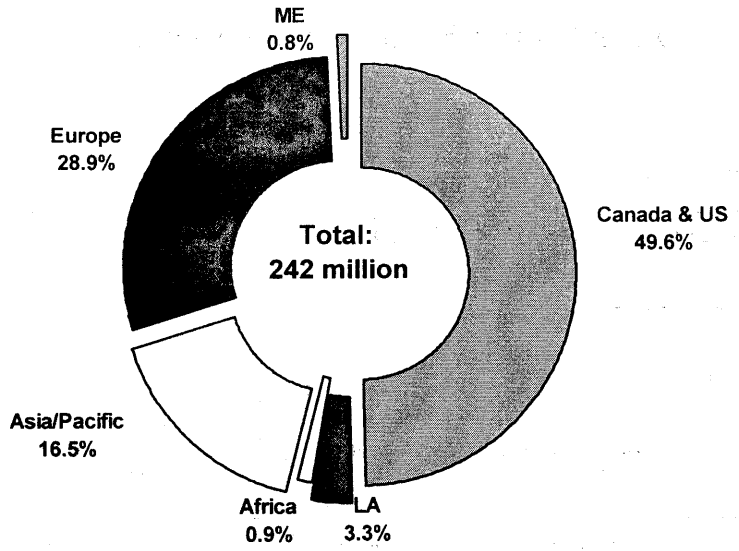

Chart (1) Internet population distribution worldwide (January 2000)
(US Dept. of Commerce)

6- The ICT are the main technologies surrounding e-commerce continues to expand exponentially. While wired Internet access passes from analog and Integrated Services Digital Network (ISDN) telephones to cable TV, Digital Subscriber Lines (DSL) and fiber optic connectivity, the wireless community is exploding with Personal Digital Assistants (PDAs) cellular technology, and satellite data delivery. An example is the upcoming Teledesic constellation of 288 low-earth-orbit satellites (LEO), which signaled the death of primarily voice-only players, such as Iridium.

7- On the regional scene Thuraya launched its first GEO satellite on 20 October 2000. Though its initial services were directed to voice communications, Thuraya will be moving swiftly to data services as soon as possible. Thuraya will cover the whole of the Middle East, Eastern Europe and a good part of the Far East.

8- The wireless infrastructure is strategically important to mobile users. It will enable day-to-day applications of individuals to be carried out over the cell phone. Applications like paying a parking meter or buying a soft drink or reading the menu of the nearest restaurant with, perhaps, a PDA will be the order of the day.

9- Wireless Application Protocol (WAP) will help define information exchange over mobile and wireless links, and Bluetooth connectivity standard will enable close-proximity connectivity of Internet applications.

Mobile commerce

10- Electronic commerce continues to see phenomenal growth, but so far most e-commerce development involves wired infrastructures. The emerging wireless and mobile networks will provide new avenues for growth, creating opportunities in mobile commerce.

11- The exponential growth of wireless and mobile networks has brought vast changes in mobile devices, middleware development, standards and network implementation, and user acceptance. More than 350 million mobile devices are in use worldwide. Analysts expect this number to rise to 1 billion in the next few years, exceeding the total number of computing devices by several folds. [4] It is expected that by 2004 at least 40% of consumer-to-business e-commerce will come from smart phones using WAP. The annual mobile commerce market may rise to $200 billion by 2004. This

[4] Mobile Commerce: A new Frontier, IEEE Computer, October 2000

trend is encouraging to most developing countries and in particular the ESCWA member countries as the growth in mobile cellular use exceeds the growth in Internet.

The telecommunication sector in the ESCWA region

12- Most ESCWA member countries are at a critical juncture in the evolution of their telecommunication network. While the availability and diversity of the telecommunication networks in the GCC countries compares to the world's best networks, other ESCWA countries have not achieved their potential. [5]

13- Although many developing countries went through accelerated growth for telecommunications during the first half of the 1990's, growth in most Arab States (ESCWA countries included) was not as high as other regions such as Asia or Latin America. Thus, telecommunication networks in the region, with exception of some GCC countries, grew at a relatively slower rate than other developing regions of the world.

14- The telecommunication sector in the ESCWA member countries is dominated by state-owned monopolies in basic networks and services. In most cases, these monopolies are self-regulating and operate under traditional public management systems. Telecommunications is often viewed as an extension of the states' social service tradition, making a reform a highly charged political issue.

15- In the second half of the 1990's and more specifically since 1998, modernization of the telecommunication sector and reform of the regulatory environment is under discussion in most, if not all, ESCWA member countries. Some countries, like Jordan, have already initiated restructuring efforts and have begun to reform their legal frameworks. Other countries have corporatized their state-owned operators and few partially privatized their operators and few more are planning similar actions in the near future. [6]

16- Countries in the ESCWA region could be categorized in 4 economic income groups; low income (Yemen), lower middle (Egypt, Iraq, Jordan, Lebanon, Palestine, Syria) upper middle (Bahrain, Oman, Saudi Arabia) and high income (Kuwait, Qatar, UAE).

The relative position of ESCWA in ICT indicators

17- Table (1) shows the value of five basic ICT indicators for the ESCWA countries. The table also shows aggregates for the ESCWA region and its two sub-regions, the GCC and non-GCC sub-regions.

The five basic ICT indicators that were selected are:

- Number of fixed telephone lines per 100 inhabitants
- Number of mobile cellular lines per 100 inhabitants
- Number of Internet hosts per 100 inhabitants
- Number of Internet users per 100 inhabitants
- Number of PC's per 100 inhabitants

Their values were extracted from ITU website for the ESCWA countries and the world averages.

18- Chart (2) shows a radar diagramme of the five ICT indicators for the world average. The relative position of the ESCWA region with respect to the world averages is

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[5] Arab States Telecommunication Indicators, ITU 1996.

[6] Telecommunication Reform, ITU, 1998.

shown in chart (3). It is evident from this chart that the ICT infrastructure of the ESCWA region is inferior with respect to the world average.
Chart (4) shows the relative position of the non-GCC countries within the ESCWA region with respect to the world averages, which indicate yet further degradation of the ICT indicators for the sub-region.

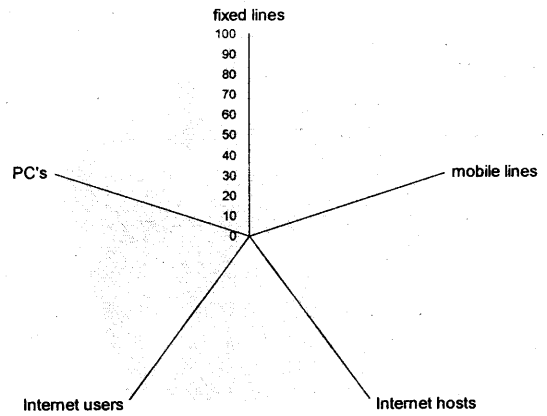

Chart (2) Radar diagramme for world averages (Reference points)

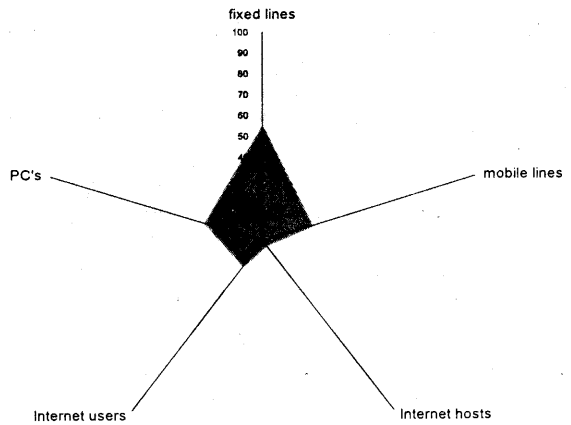

Chart (3) ESCWA region with respect to world averages

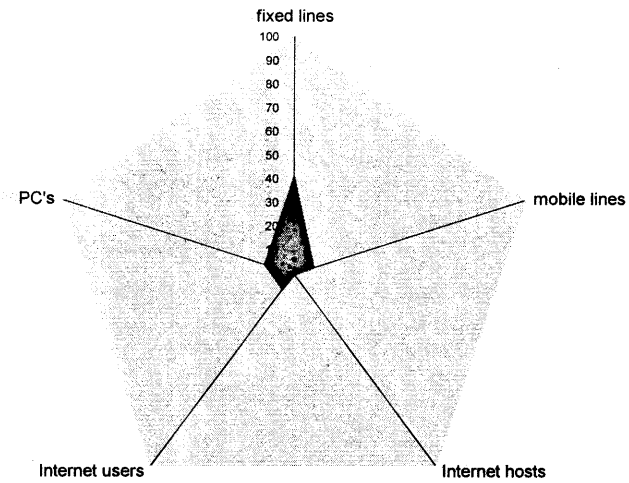

Chart (4) Non-GCC sub-region in the ESCWA region with respect to world averages

Chart (5) shows GCC countries position in the radar diagramme with respect to the world averages. And although the values for fixed and mobile lines for the GCC countries are higher than the world averages, the PC's, the Internet hosts and users are well below world averages. Charts (6), (7), (8), (9) and (10) show country diagrammes for UAE, Bahrain, Lebanon, Egypt and Jordan. It is easy to assess the state of ICT infrastructure in these countries from the positioning of their radar diagramme with respect to that of the world.

It is evident that growth in mobile and Internet in some countries in the ESCWA region is increasing at very fast rate, however, it is felt that the region has still far to go to reach the rate of growth being achieved in other regions of the world.

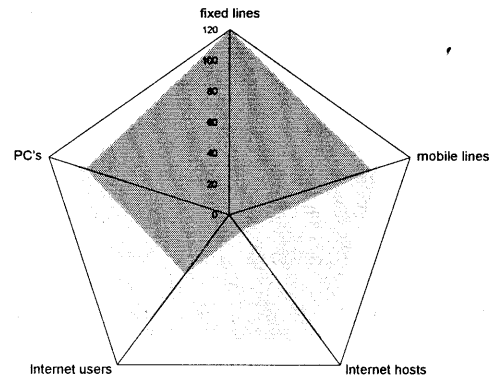

Chart (5) GCC sub-region in the ESCWA region with respect to world averages

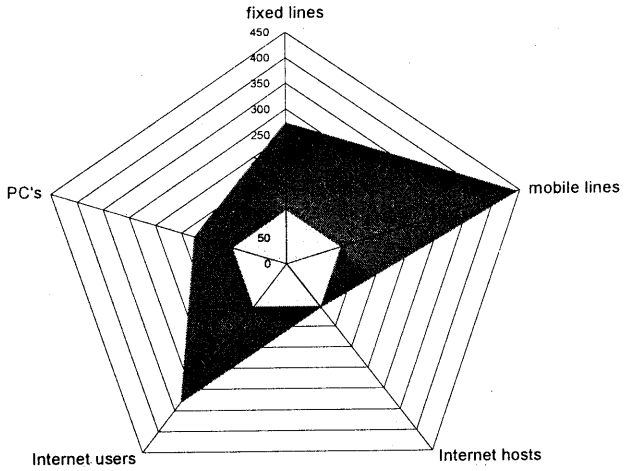

Chart (6) UAE with respect to world averages

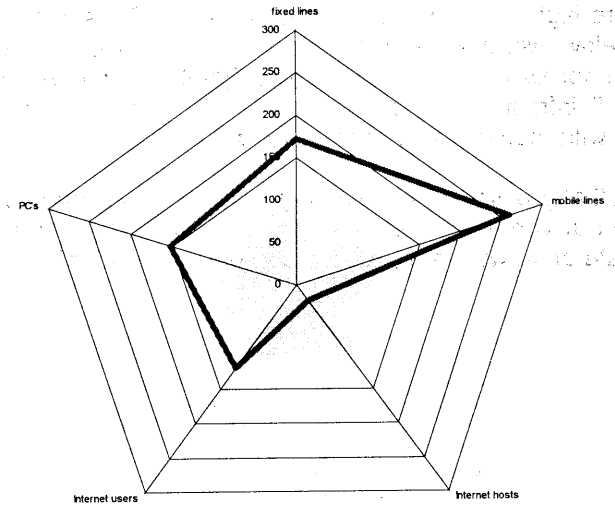

Chart (7) Bahrain with respect to world averages

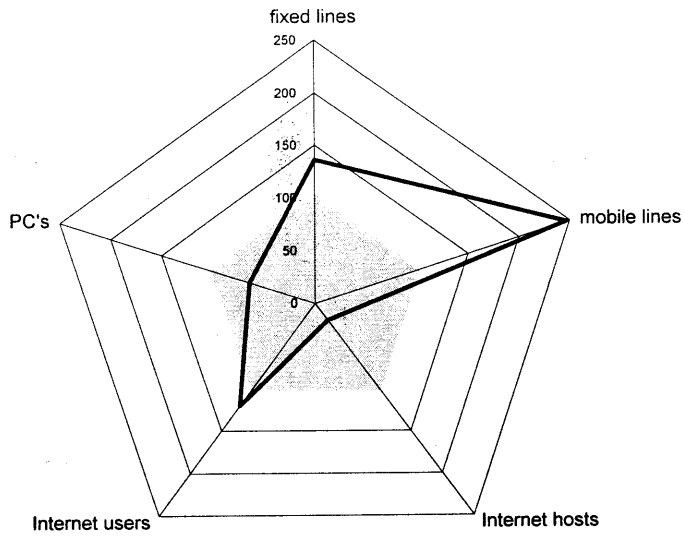

Chart (8) Lebanon with respect to world averages

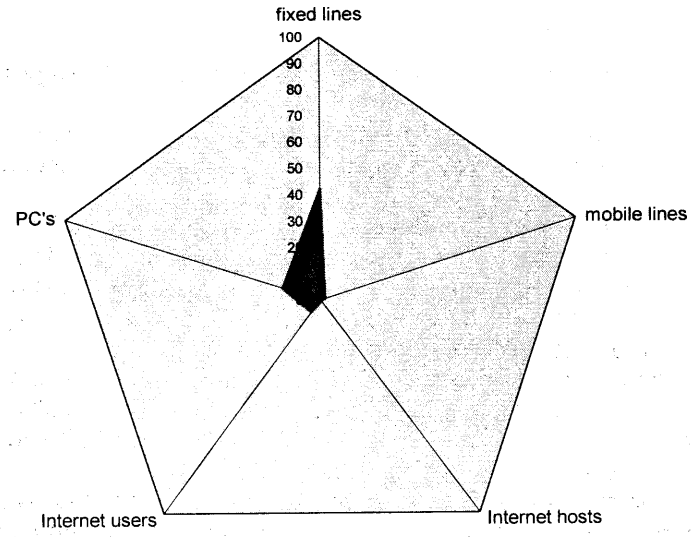

Chart (9) Egypt with respect to world averages

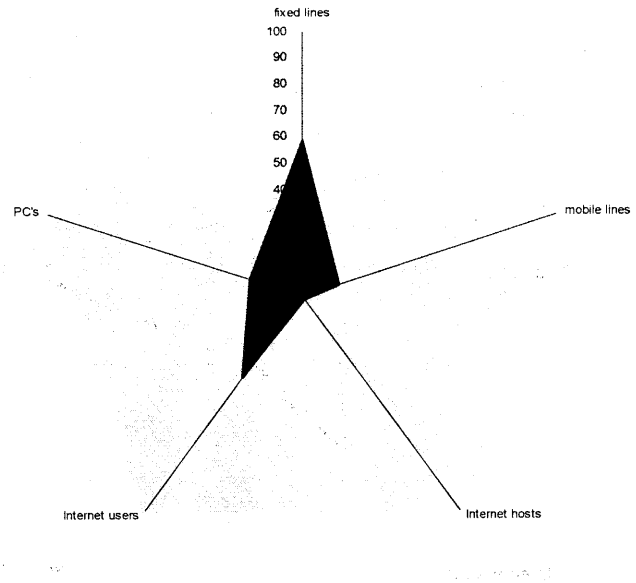

Chart (10) Jordan with respect to world averages

19- Telecommunications in the Arab States has traditionally been a government undertaking [7]. There is not always a direct link between the type of ownership of the telecom operator and performance. In the ESCWA region, some of the fastest growing networks are government owned. However, the region's telecommunication infrastructure cannot be raised to its full potential with the present resources of most of the region's governments.

Directions for development in the ESCWA region

20- The following steps are identified that could be taken by countries in the region in order for the telecom operators to adapt to global telecom changes.

- ***Diversification***. Most of the region's telecommunication operators are reliant on telephone service, and particularly international telephone calls for the bulk of their revenue. They need to diversify and expand their offerings in areas such as mobile cellular, directory advertising, broadband data communications and broadcasting.
- ***Rebalancing***. Many countries in the region subsidies local telephone service from international calls. The trend for international calls is downwards. The region's operators must gradually rebalance their tariffs to bring them into line with costs.
- ***Customer-orientation***. In most ESCWA countries, with the exception of certain GCC countries, demand for basic telecommunication services has outstripped supply, so there has been little attention to customer requirements. New revenue streams will require closer customer interaction. In some ESCWA member countries the waiting list for a telephone line can be as long as 7 years.
- ***Partnering***. Country operators in the region will find it difficult to face the future alone. Forming regional and international partnerships would lower costs in many areas.

[7] See (4)

- ***Performance oriented***. The need to become more commercially oriented dictates that the region's operators should be conscious of their performance. Tracking and comparing their performance against other operators can help identify weaknesses and result in efficiency increase, lowering costs and making service more affordable.

21- There is general recognition in the ESCWA region that establishing an efficient and responsive regulatory structure is a prerequisite for a viable telecommunication development strategy. Reforms are getting underway in most ESCWA countries, with liberalization proceeding outside fixed-line networks such as mobile operators and Internet service providers. Overall the WTO's Basic Telecommunication Agreement will influence liberalization. In light of these developments, it is expected that the telecommunication sector in the ESCWA region will undergo a profound institutional, structural and legal transformation over the next few years. Such transformation should lead to the growth of the ICT sector, which should improve on the relative positioning of the region with respect to the world averages of the five ICT indicators.

Country/ Region	Population (million)	Fixed lines/ 100 inhab.	Mobile lines/ 100 inhab.	Internet hosts/ 10000 inhab.	PC's / 100 inhab.
Egypt	65.98	6.02	0.14	0.35	0.91
Iraq	21.80	3.10	0	0	0
Jordan	6.13	8.34	1.15	0.94	1.26
Lebanon	3.19	19.43	19.84	14.61	3.92
Syria	15.33	9.54	0.03		1.30
WB&G	2.90	5.78	2.07		
Yemen	16.89	1.48	0.16	0.02	0.12
Non GCC	**132.22**	**5.79**	**0.67**	**0.58**	**0.77**
Bahrain	0.64	24.55	20.86	16.80	9.34
Kuwait	1.81	23.59	16.57	21.45	10.49
Oman	2.38	9.23	5.08	2.76	2.10
Qatar	0.58	25.99	14.48	0.54	12.09
KSA	20.18	14.26	3.11	1.35	4.96
UAE	2.35	38.80	35.42	82.24	10.62
GCC	**27.94**	**17.00**	**7.51**	**10.18**	**5.80**
ESCWA	**160.16**	**7.75**	**1.86**	**2.26**	**1.65**
World	5924.49	14.27	8.05	119.70	6.11

Source: www.itu.int

Table (1). ICT indicators for 1999 and 1998

To Conclude

22- In conclusion, the following points could be highlighted:

- 30% of the Arab countries have introduced private capital participation in their national carriers and a number of countries – including Egypt, Jordan, Kuwait, Mauritania, Morocco, Oman, and Saudi Arabia
- By end of 1999, some 30% of the countries allowed competition in mobile services, while competition in Internet services was permitted in 60% of the countries
- In both the mobile and the Internet markets consumers were not gaining the full benefits in terms of lower prices
- Prices to end-users remain considerably high due to the lack of competition in the leased lines market
- No country in the region allowed competition in leased lines services
- Internet growth calls for a set of new policies to aim at addressing the opportunities and challenges that the Internet presents
- The basic ICT indicators in the region have values well below world averages. Despite the encouraging growth that is taking place in the region in the last two years, it is felt that the region requires faster and more homogeneous growth in ICT services geared towards the masses of population in most countries of the region.
- Finally, we need a clearer vision on:
    - Private sector role
    - Government role as a facilitator and a regulator
    - Private sector participation in the policy making process
    - Regional coordination