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National Dependability Policy Environments

CYPRUS

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Overview of the Country's Information Infrastructure

Cyprus is today a major tourist destination, a services centre – for mainly banking and shipping – and a telecommunications node. It has a standard of living that is higher than some European Union Members States and the performance of the economy compares favourably with that of most EU countries.¹ In July 1990 Cyprus applied for full membership of the EU. Accession negotiations began in 1998.² Cyprus' economy is market oriented, with the private sector playing the dominant role and the government fostering an entrepreneurial climate.³ Within this context, a New Industrial Policy to promote high technology industries in Cyprus has been adopted. The government also aims to attract foreign direct investments to facilitate technology and expertise transfer.⁴ Overall, the Cypriot economy follows the European model of liberalising its information and communication sectors.

In 2000, the Cypriot IT market achieved a significant growth of 25.8 %. This was mainly due to good results in the fields of services, as well as in PC and computer peripherals markets. A slow down is estimated for 2001, although the growth rate is to be preserved at 14 %.⁵ With regard to the Internet market in Cyprus, the distributions between software and hardware and the creation of new companies to install programmes and to maintain PCs have enhanced Internet penetration. Although the annual growth rate in this market has fallen over the last few years, a rate of 20.3 % is still predicted for 2001.⁶

The Cypriot telecommunications market is characterised by high rates of growth in both product penetration and total volume. In 2000, the total value of the telecommunication market was EUR 380 million, compared with CYP 340 million in 1999. In this context, mobile telephony has been the major driving force.⁷

According to the Cyprus Telecommunication Authority (CY.T.A), PC penetration in households was 28 per cent in 2000 whilst Internet penetration was 15 per cent. In 2001, Internet penetration in schools was 100 %. There has been a noticeable growth in mobile telephony in recent years, with penetration increasing from 13 % in 1997 to 44 % in 2001.⁸

The telecommunications market is only partly liberalised in Cyprus. All voice telephony and mobile communications rest under the monopoly of CY.T.A, a semi-governmental organisation. The provision of

¹ According to the World Development Indicators 1999 published by the World Bank, Cyprus holds 16th place world wide in terms of per capita income. The average annual rate of growth in the past five years was about 3.8 %, while inflation stood at 2.9 % and unemployment at 3.4 % over that period.

² For more information, see also European Commission (2001) '2001 Regular Report on Cyprus' Progress Towards Accession', SEC(2001) 1745 - Brussels, November 13.

³ Official web site of the Republic of Cyprus, <http://www.cyprus.gov.cy/cyphome/govhome.nsf/Main?OpenFrameSet> (visited on 15.12.2001)

⁴ Foreign investors benefit from tax incentives and the relatively low level of taxation in Cyprus in general. Official web site of the Republic of Cyprus, <http://www.cyprus.gov.cy/cyphome/govhome.nsf/Main?OpenFrameSet> (visited on 15.12.2001).

⁵ Strategic International / K. Kataras S.A. (2001) 'New Technologies create a new horizon for Cyprus', press release, November 5th.

⁶ Ibid.

⁷ Ibid.

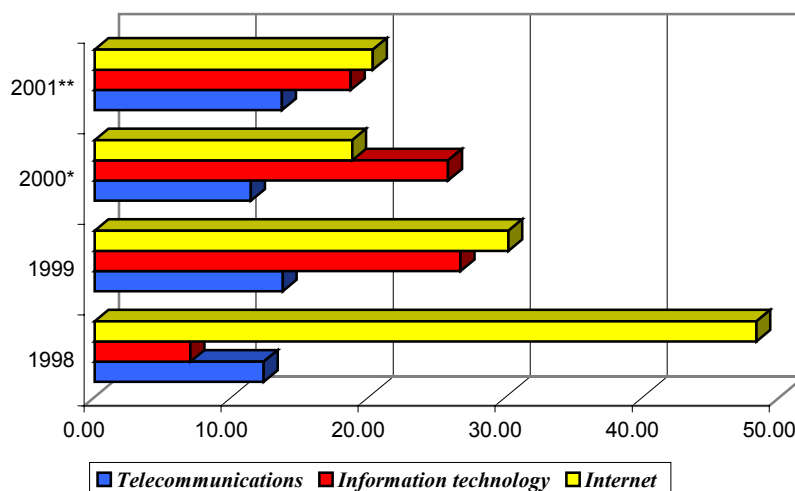
⁸ Ibid.

data transmission, value-added services, Internet services and equipment are, however, liberalised. There is no digital cable or satellite TV in Cyprus.

The CY.T.A wants to digitalise all local networks and to develop - with its satellite telecommunication network and fibre-optic submarine cable system - a strategic information and communications market for the Middle East and Africa. Cyprus' strategic position in the Mediterranean means that it must be careful to develop a regulatory and completion policy that will not be a barrier to the liberalisation of the telecommunications market. Any policy must also support the growth of the ICT sector in the 'Digital Transformation and Info-Communication Era'⁹.

Percentages of Annual ICT Growth in Cyprus

(Source: Cyprus Telecommunication Authority)



Main ICT Regulatory and Legal Developments

The Government's New Industrial Policy includes the development of new hi-tech industries, the assistance and the reconstruction of Cypriot traditional industry, productivity improvement and attraction of capital intensive foreign investment.¹⁰ Within the overall effort to attain these goals, the New Industrial Policy includes, *inter alia*, three key features. First is the introduction of business incubators and the creation of a centre for carrying out applied research and development. These are considered essential components of the effort to develop new hi-tech products in Cyprus.¹¹ Second is the creation of a Foreign Investors Service Centre (One-Stop Shop), which will offer advice to foreign investors. At a later stage, these services will also be extended to local investors. Finally, there has been the introduction of schemes

⁹ George Gantzias 'The Dynamics of Regulation: Global Control, Local Resistance, Cultural Management and Policy: A Case Study of Broadcasting Advertising in the United Kingdom', (London, Ashgate, Aldershot, England, 2001), p. 2; see also George Gantzias and Dimitris Kamaras (2000) Digital Communication, New Media and the Greek Information Society: Convergence, E-Commerce and Portals (London, Louizou Publications, 2000)

¹⁰ Official web site of the Republic of Cyprus, <http://www.cyprus.gov.cy/cyphome/govhome.nsf/Main?OpenFrameSet> (visited on 15.12.2001).

¹¹ See Section 6

for the provision of State Grants to assist technological upgrading and the launch of other IT related initiatives.¹²

According to the European Institute of Cyprus, the main limiting factors of the local economy are the small size of the domestic market, heavy reliance on tourism, and general low IT usage. Consequently, there have been calls for “structural and institutional changes as well as the enhancement of productivity and strengthening of competitiveness”¹³. In terms of structural reform, it is argued that development plans should ‘aim to promote an appropriate restructuring of the services sector through diversification, by encouraging the evolution of other services, considering the importance of the geographical position of the island, such as transportation, telecommunications, insurance, and other professional services, offshore activities’.¹⁴ Furthermore, there is a need for increased competitiveness and institutional changes, such as the gradual abolition of protection through tariffs, quotas and other administrative measures.¹⁵

In April 2001, the Cypriot Parliament adopted a law for the creation of the office of a Commissioner for Telecommunications and Postal Regulation. The functions related to radio-communications will continue to be exercised by the Directorate of Telecommunications of the Ministry of Communications and Works.¹⁶ There was no independent telecommunication regulatory authority in Cyprus until the end of 2001, when one was appointed in January 2002. The Telecommunications Service Law is administered by the Ministry of Communications and Works, while the Ministry of Commerce and Industry is responsible for the liberalised part of the telecommunications market.¹⁷ The basic law regulating the telecommunications sector is the 1954 Telecommunications Service Law Cap. 302. Section 3 establishes and creates the Cyprus Telecommunications Authority (CY.T.A.) as ‘a corporate body with perpetual succession and a common seal and with power to acquire, hold and dispose of property, to enter into contracts, to sue and be sued in its said name and to do all things necessary for the purpose of this Law’¹⁸. As has been noted, the CY.T.A has control over all voice telephony and mobile communications.

It is worth noting that the functions of CY.T.A. include not only the duty to operate good and sufficient telecommunications services in the country, as well as to install and operate all infrastructure for the provision of the services and to promote the development of the telecommunications services, but also to make regulations governing telecommunication services and advise the Minister on all matters relating to

¹² Official web site of the Republic of Cyprus, <http://www.cyprus.gov.cy/cyphome/govhome.nsf/Main?OpenFrameSet> (visited on 15.12.2001)

¹³ Malaos, A., ‘Cyprus Economy and EU Accession Process-2000’, European Institute of Cyprus (www.eic.ac.cy).

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ The Commissioner has not yet been appointed, but the budget for his office is under preparation. Study on ‘Universal Service in the Accession Countries’ - Country Report June 30, 2001, produced for the European Commission under Study contract no 71080 by Cullen International SA and Wissenschaftliches Institut für Kommunikationsdienste GmbH. See ‘Cyprus’, pp. 46-59. See also European Commission (2001) ‘2001 Regular Report on Cyprus’ Progress Towards Accession’, SEC(2001) 1745 - Brussels, November 13, p. 71.

¹⁷ Study on ‘Universal Service in the Accession Countries’, pp. 46-59.

¹⁸ Study on ‘Universal Service in the Accession Countries’ – op. cit, pp. 46

telecommunications¹⁹. The legislation related to regulation is limited to a few laws. According to the European Commission,

“whereas infrastructure and services are well advanced in Cyprus, efforts to gradually open the telecommunications and postal markets need to be maintained. In particular, Cyprus should liberalise the mobile telephony market ... Although the current moves towards cost-orientation of tariffs are encouraging, the preparation and the adoption of legislation and secondary regulatory instruments to transpose essential parts of the *acquis* is not progressing according to the plan. The administrative procedures, and the requirement that even very detailed regulations have to be passed through Parliament, make it difficult to adapt the legal framework to the rapidly changing telecommunications technologies and markets and to promote the development of the Information Society in Cyprus”²⁰.

Indeed, as Cyprus is planning to join the European Union, the Cypriot government will be forced to deregulate the national operator and liberalise the telecommunications market in accordance with community legislation. A new set of legislative measures aimed at ending the monopoly of CY.T.A. and at harmonising the telecommunications sector with EU requirements by December 31, 2003 has been submitted to Parliament.²¹

Assessment of Phenomena Undermining Dependability

Concerns in Cyprus surround computer-related fraud and, in particular, copyright violations. In January 1994 the latest amendments to the Copyright Law came into force²², in which software was specifically mentioned and classified as a literary work.²³ Cyprus is a signatory to the Universal Copyright Convention as well as the Berne Convention for the Protection of Literary and Artistic Works. Furthermore Cyprus is

¹⁹ The Law imposes on the CY.TA. the following duty: Subject to the provisions of this Law, or any Regulations made thereunder, in so far as it is able to do so, and having due regard to economic considerations, the Authority [CY.TA.] shall, provide a telecommunications service and the necessary installations and plant for use by any person (“the subscriber”), at any place in the Republic, to enable the subscriber to communicate by the telecommunications service with any other person. See Study on ‘Universal Service in the Accession Countries’ - Country Report June 30, 2001, produced for the European Commission under Study contract no 71080 by Cullen International SA and Wissenschaftliches Institut für Kommunikationsdienste GmbH. See ‘Cyprus’, pp. 46-59.

²⁰ European Commission 2001 Regular Report on Cyprus’ Progress Towards Accession SEC (2001) 1745 – Brussels, November 13, p. 71.

²¹ Study on ‘Universal Service in the Accession Countries’ ‘Cyprus’ op. cit. pp. 46-59.

²² The House of Representatives voted the amendments to the Copyright Law providing clear protection to software in May 1993. They entered into force though only in January 1994. The purpose of this delay was to allow people to replace any illegal software with original ones. See BSA Cyprus (<http://www.bsa.org/cyprus/09291999.html>).

²³ According to the Law, ‘If anyone, knowingly makes for sale or hire or sells or lets or exposes for sale or hire any infringing copy of software one commits an offence. On conviction is liable to a fine of up to £1500 and/or 1 year imprisonment and for a second offence, to a fine of up to £2000 and/or up to 3 years imprisonment. Additionally, one is exposed to the possibility of a civil action that can award compensatory as well as exemplary damages. Further the Court may order an account of profits for the infringer as well as the confiscation of reproduction machinery.’ See BSA Cyprus (<http://www.bsa.org/cyprus/09291999.html>).

in the process of harmonising its legislation with that of the European Union in view of its application for EU membership.

It is estimated that in 1998 illegal copying cost legitimate software developers about 18 million pounds. Approximately 80-85 % of business software in Cyprus is obtained illegally.²⁴ Business Software Alliance Cyprus has been active in organising seminars to increase public awareness in relation to software piracy. Since 1994 it has also been assisting the Police and Customs in regular training. In 1997 it initiated a civil action under the Copyright Law. This resulted in obtaining an injunction, the amnesty of more than 650 pirate CDs and the payment of the legal costs. A second civil case is in progress after securing an *ex-parte* injunction in 1999²⁵.

Government Initiatives Aimed at Tackling Cyber-Security

The Cypriot government has established an 'Information System Strategy', a master plan for the computerisation of all ministries, departments and independent offices of the government. The Information System Strategy defines a policy framework in three areas: management policies, policies and strategic information systems. In the overall government computerisation plan, ministries and departments are expected to create their own Information System Strategies, and Implementation Programmes. A total of 29 million EUROS was spent between 1989 and 1997 on the Government Information Systems Strategy, while it was estimated between 1988 and 2001 that the expenditure would rise to 64 million EUROS.²⁶

In recent years, the Cypriot government has begun to seriously consider electronic communication, and the issues of security and crime that surround it. It has started developing a range of policies with regard to information society in different sectors such as Health, Social Insurance and Income Tax. New legislation with regard to privacy and private data protection is in the process of upgrading the existing legislation in Cyprus from October 2000²⁷. However, the Cypriot legislation with regard to ICT needs to develop more specific legislation and regulation regarding cyber-crime and cyber-security in the 21st century. For example, during the year 2000, the Cypriot Parliament enacted the Law for Combating Trafficking in Human Beings and Sexual Exploitation of Children. The word "pornography" is defined in the law very broadly and includes any audio or audio-visual material containing sexual performances and other pornographic material. However, this law should be extended to cover pornography on the Internet.

Industry and Other Non-Government Activities Related to Dependability

Cyprus is gradually liberalising the telecommunications sector in order to become a member of the European Union. The private sector in Cyprus has realised the importance of the ICT sector for the development of the Cypriot economy in the 21st century. The private-sector has led initiatives to deal with dependability related issues not only through the ICT sector but also through the whole industrial sector in Cyprus. In this context, there are two private bodies and non-government organisations in Cyprus

²⁴ BSA Cyprus data (<http://www.bsa.org/cyprus/09291999.html>).

²⁵ Ibid.

²⁶ Regulatory Developments, Cyprus, (April 200) on the web site <http://www.eu-esis.org/esis2reg/CYreg4.html> (visited on 1/12/2001)

²⁷ Ibid. (October 2000)

dealing with dependability-related issues: the Employers and Industrialists Federation (OEB)²⁸ and the Cyprus Chamber of Commerce and Industry (CCCI).²⁹

The OEB is a pan-Cypriot independent organisation representing the business community of Cyprus. It comprises the 40 main Professional Associations and 400 major individual enterprises in the Manufacturing, Services, Construction and Agricultural Sectors of the economy. OEB is the acknowledged spokesman for the business community and is consulted as such by the Government.

The CCCI is a private organisation, which is financially independent from the state. The Chamber is funded by its members' subscription fees and through income generated from the offer of services. The Cyprus Chamber of Commerce was founded in 1927. In 1963, a new structure was adopted which remains in operation to date under the name of the "Cyprus Chamber of Commerce and Industry". The CCCI is the federation of the local Chambers of Commerce and Industry (CCIs) which operate in Nicosia, Limassol, Famagusta, Larnaca and Paphos. The local CCIs have a geographical coverage of the district, which they represent. The Nicosia CCI also covers the districts of Kyrenia and Morphou.

The membership of the CCCI exceeds 8,000 enterprises from the whole spectrum of business activity, while affiliated to the Chamber are more than 100 Professional Associations from the trade, industry and services sectors. A 34-member Council, chaired by the President, governs the Chamber. A smaller Executive Committee acts as co-ordinator and handles matters of urgency. The CCCI Secretariat is involved in the day-to-day operation of the Chamber and in the implementation of the policies and decisions of its governing bodies, under the direction of the Secretary General who is the Executive Officer of the Chamber.

Public-Private Partnerships

The New Industrial Policy of the Cypriot Government consists of twelve chapters. The first two chapters refer to the promotion of hi- technology industries in Cyprus, through the establishment of an incubator and the creation of a Centre for carrying out applied research and development in hi-tech fields. The promotion of the incubator model by the Government of the Republic of Cyprus is influenced to a great extent by similar developments in Greece, with which Cyprus has the closest ties among the 15 member-states of the EU. In fact, there has been great co-operation and information exchange between the two countries, during the accession period of Cyprus. Greece, being a member of the EU for more than two decades has often been an example in matters of economic and industrial policy for Cyprus, although the latter differs in many ways as a result of having been part of the British Commonwealth for many decades.

Research and Development

Expenditure in research and development in Cyprus is lower than in the EU. It is also the lowest among the candidate countries. Total R&D expenditure has increased slightly since the beginning of the 1990's reaching 0.25 % of GDP in 1999.³⁰ However, the average in total R&D expenditure for the 15 members of the EU in 1998 was equivalent to 1.86 % of GDP. Similarly, the total R&D expenditure as a percentage

²⁸ <http://www.industry.cy.net/oeb/index.html>

²⁹ <http://www.ccci.org.cy/>

³⁰ In 1991 it was 0.18 % of GDP. <http://kypros.org/DSR/key-figures/Research> (visited on 11/12/2001)

of GDP in other candidate countries was over 1 % in 1998 – Slovenia, for example, spends 1.42 % and the Czech Republic, 1.27 %, although these economies are more manufacture orientated.³¹

A positive development has been the increase of the R&D budget in the field of Engineering and Technology in which the ICT sector is included. Between 1991 and 1999 it rose from 1 million EUROS to 1.5 millions. Although this increase is greater than the equivalent in agricultural Sciences, it is dwarfed when compared to the increase of R&D expenditure in natural sciences, which more than quadrupled from the beginning to the end of the previous decade.³²

Most of the R&D funds come from the government sector. However, towards the end of the 1990s a significant increase in alternative sources of funding was witnessed, especially from the private sector.

R&D Expenditures in Cyprus as % of GDP

Source: <http://kypros.org/DSR/key-figures/Research>

	1991	1992	1998	1999
As % of GDP	0,18	0,18	0,23	0,25

The number of full-time employees in R&D sectors has also increased during the decade. However, that increase was not significant for the Engineering and Technology sector, whose number remained in the forties throughout the period.³³

The most important employer in R&D has, as expected, been the government. Towards the end of the 1990s there was a large increase in R&D employment in private enterprises and higher education. The number of full time personnel employed by the business sector grew from 47 at the beginning of the decade to 135 by the end. In higher education this increase went from 2 to 126 people.³⁴

Many jobs were also created in the private non-profit sector, its main representative being the Cyprus Institute of Technology.³⁵ The Cyprus Institute of Technology (CIT) is a private, non-profit making organisation established in October 1991 as a joint initiative of the Ministry of Commerce and Industry, the Cyprus Chamber of Commerce and Industry and the Industrialists' Federation (OEB). The mission of the Cyprus Institute of Technology is to form the main vehicle for providing technological upgrading and development in the manufacturing sector. The CIT is under the general management of a 12-member board chaired by the Minister of Commerce, Industry and Tourism.

The result of these developments has been a noticeable increase in personnel, though not in all occupations. There was a great increase in researchers - more than 100 % from 1991 to 1999 - and an even more significant increase in other supporting staff. The number of technicians, however, increased at a comparatively low pace, from 153 to 198.³⁶

³¹ "R&D expenditure and personnel in candidate countries and Russia in 1998", Ibrahim Laafia, Eurostat, 13/11/2001

³² <http://kypros.org/DSR/key-figures/Research> (visited on 11/12/2001)

³³ <http://kypros.org/DSR/key-figures/Research> (visited on 11 December 2001)

³⁴ <http://kypros.org/DSR/key-figures/Research-> (visited on 11 December 2001)

³⁵ <http://www.industry.cy.net/it/> (visited on 11 December 2001)

³⁶ <http://kypros.org/DSR/key-figures/Research> (visited on 11 December 2001)

In this context, dependability-related research and development is almost non-existent. Some individual researchers are starting to tackle issues related to cyber-crime and information security, especially in conjunction with the introduction of mobile services. The Department of Computer Science of the University of Cyprus is increasingly active in this domain. However, the country lacks a co-ordinated and central approach.