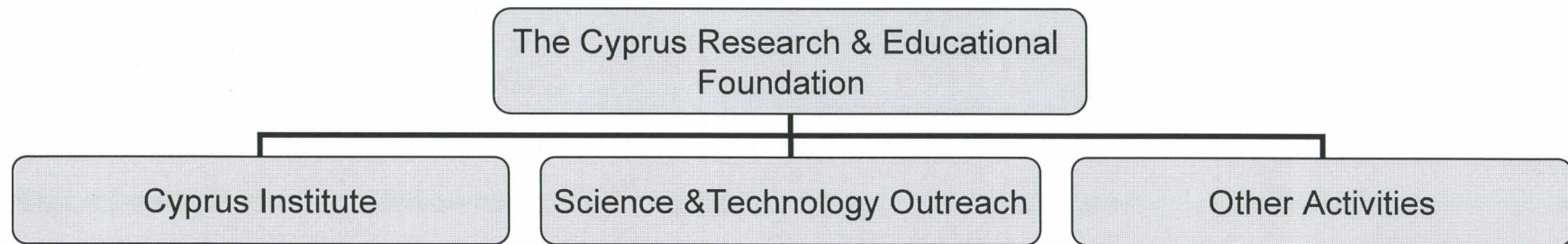


**THE CYPRUS RESEARCH AND
EDUCATIONAL FOUNDATION**

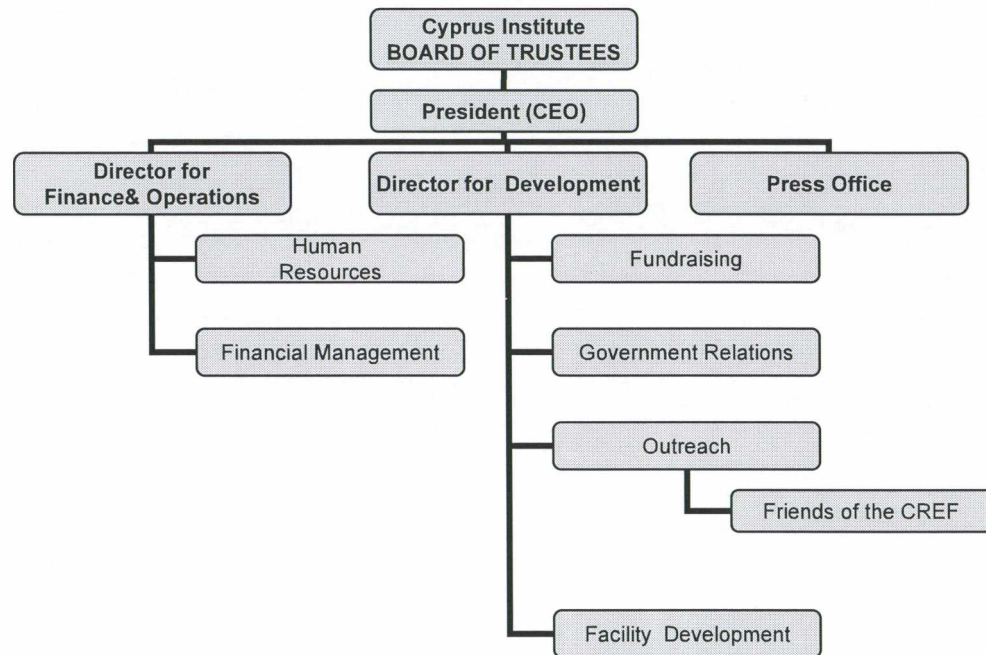
&

THE CYPRUS INSTITUTE

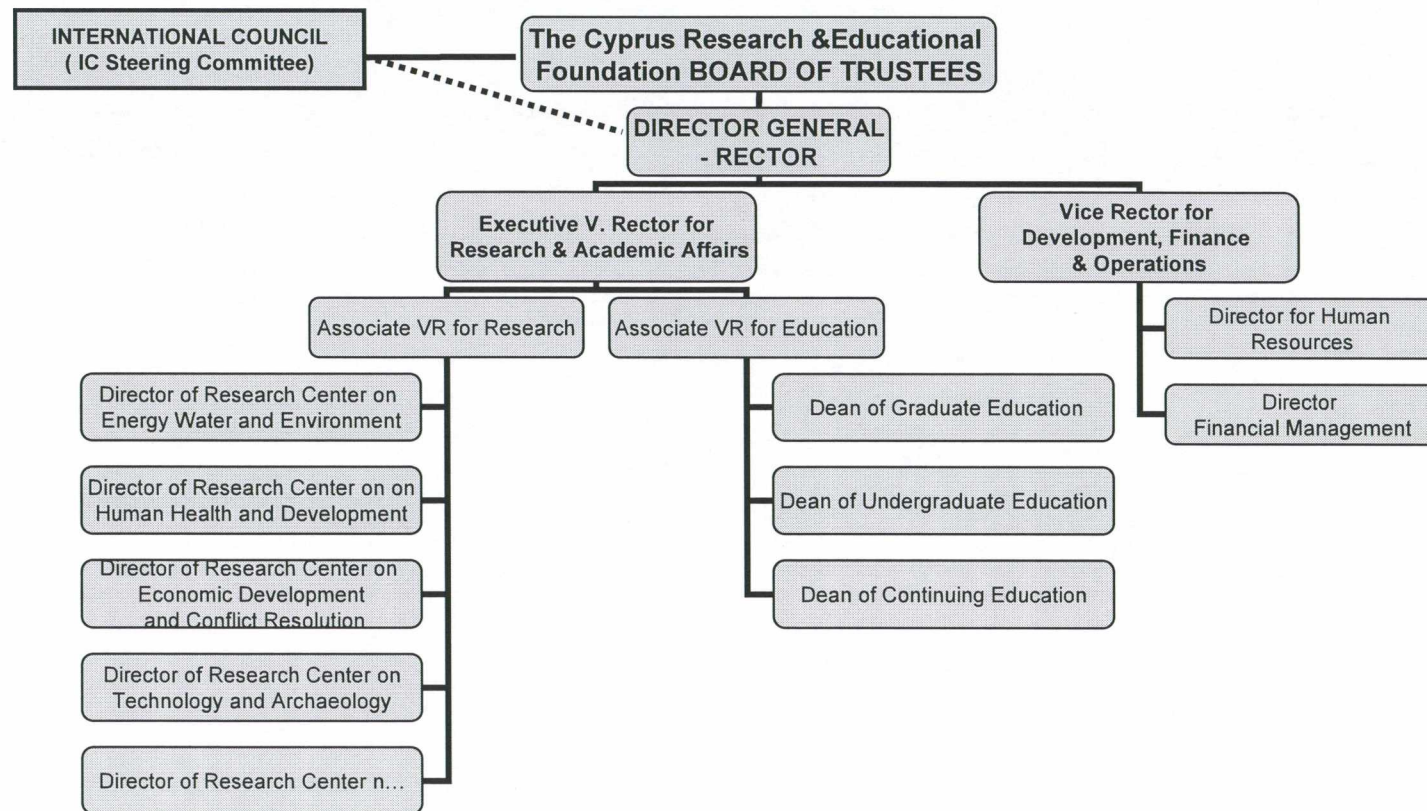
The Cyprus Research & Educational Foundation



The Cyprus Research & Educational Foundation (CREF) Organizational Chart



Cyprus Institute Organizational Chart



The Cyprus Research and Educational Foundation

DEED OF TRUST

Founder:

THE CYPRUS DEVELOPMENT BANK LTD

Founding Trustees:

Tassos Papadopoulos

Glaucos Clerides

George Vassiliou

Andreas Mouskos

John G. Joannides

Petros M. Kareklas

Costas N. Papanicolas

DEED OF TRUST made on the 27th day of January, 2004
between **THE CYPRUS DEVELOPMENT BANK LTD.**
(hereinafter called the "Founder")

and

Tassos Papadopoulos
Glaucos Clerides
George Vassiliou
Andreas Mouskos
John G. Joannides
Petros M. Kareklas
Costas N. Papanicolas

(hereinafter called "the Trustees" and this expression shall include the Trustees as they shall be elected or appointed in accordance with these presents).

WHEREAS the Founder wishes to make a donation of CYP 100.000,00 (one hundred thousand Cyprus Pounds) to be used as a contribution for the promotion of research and education in Cyprus and abroad,

AND WHEREAS with a view to fulfilling this purpose, the Founder wishes to establish an irrevocable trust which shall be called "*The Cyprus Research and Educational Foundation*" (hereinafter called "the Trust") for the charitable and public welfare purposes described below, and generally to extend the benefits therefrom to the general public,

AND WHEREAS in fulfilment of the wishes of the Founder, the amount mentioned above has been deposited in the name of the Trustees with a view to holding it on trust as prescribed in this document,

AND WHEREAS it is the wish and conviction of the Founder that the capital of the Trust should be increased from time to time with donations, grants, contributions, legacies and otherwise,

AND WHEREAS the Trustees named above, have agreed to act as the Founding Trustees of the Trust according to the terms of this document, as is evidenced by the fact that they are contracting parties hereto and have signed to this effect.

THIS DOCUMENT WITNESSES THE FOLLOWING:

***Establishment of
the Trust***

1. In order to fulfil the aforementioned wish of the Founder and in consideration of the aforementioned, the Founder hereby states that prior to the execution of this document, he has paid to the Trustees the amount of CYP 100.000,00 (one hundred thousand Cyprus pounds) (hereinafter to be called "the Trust fund" which expression, unless otherwise provided herein, shall also include any interest and/or other income that may arise, any assets or investment of any kind in which the aforementioned amount or any part thereof may have been converted or invested or varied from time to time and any property that may have come into the hands of the Trustees, in pursuance of the terms of this document or in pursuance of the law, in any manner, in connection with this document, including all donations, whether in cash or in movable or immovable property of any kind, or in pursuance of donations, grants, contributions, legacies or otherwise, which may be granted or paid or collected by the Trustees from time to time) with a view to the Trustees holding such amount irrevocably on trust, as described below.

Objects of Trust

2. The Trustees shall hold the Trust fund and shall use all or any part thereof as they may at their absolute discretion decide, for the following charitable and public purposes:
 - A. The advancement of knowledge and its humane and benevolent application.
 - B. The establishment of a new research and educational public-benefit organisation which shall generally promote research and education in Cyprus and abroad.

This distinctive research and educational institution, shall be called "*The Cyprus Institute*" and shall be located in Cyprus. It shall have strong scientific and technological orientation and shall strive to be:

- world class in its standards, international in its membership
- partnered with established world class

institutions

- independent in its support but public in its commitment and service
- devoted to the well being of the local, regional, and international community
- welcoming to all nations, cultures, races and faiths
- dedicated to the advancement of knowledge and its humane and benevolent application

C. In addition and/or in connection with and/or in order to support and/or to serve the above main objects, the Trustees may proceed to the following:

- (i) The use of any means and ways for the promotion of the above objects of the Trust as may be decided by the Trustees from time to time.
- (ii) The use of any funds and/or the carrying out of all necessary payments, as the Trustees may determine at their absolute discretion, always with a view to fulfilling the objects of the Trust.
- (iii) The carrying out of any project and/or action, either alone or in collaboration with other charitable or other foundations, associations, organisations, groups, committees, persons, which are related or conducive to the fulfilment of the objects of the Trust, and which are located either in Cyprus or abroad.
- (iv) The doing of all such other things as may be incidental or conducive to the attainment of the objects of the Trust.

Donations and other payments by the Trust

3. All payments, donations, grants, loans or other form of financial help to be given and/or granted and/or offered by the Trustees in support and/or in fulfilment of the objects of the Trust shall be of such value and/or amount and shall carry such benefits and shall be granted on such terms as the Trustees may decide from time to time, in their absolute discretion.

Contributions

4. The Trustees may, at any time, at their absolute discretion, collect any voluntary contributions or

***donations etc. to
the Trust***

donations, either from the Founder or from the Government of the Republic of Cyprus or any other body, organisation or collective group with or without legal personality or any individual or otherwise from Cyprus or abroad in the form of a contribution, grant, donation, legacy or otherwise. Any contribution, grant, donation, legacy or otherwise should be accepted with or without special terms as it is mutually agreed between the donor and the Trustees, provided that these terms shall not be contrary to the charitable objects of these presents.

***Disposal of funds
after dissolution to
other
charitable
Purposes***

5. In case of dissolution or liquidation of the Trust, any remaining property after settlement of all its debts and obligations, shall not be paid and shall not be distributed either to the Founder or the Trustees, but shall be disposed by resolution of the Trustees taken prior to the dissolution, to another organisation, the memorandum of association or other founding document of which shall prohibit the distribution of its income and property between its members and which shall have approved charitable objects similar to those determined in paragraph 2 of these presents.

***The Trust -
non-profitable***

6. The income and property of the Trust, whatever their source, shall be used only for the promotion of its objects and no part thereof shall be paid or transferred directly or indirectly either to the Founder or to the Trustees (subject always to the provisions of paragraph 29 hereof).

***Management of
the Trust by
Trustees and their
number***

7. The Trust shall be managed by the Trustees. The number of Trustees serving at any time shall not be less than three (3) and there shall not be a maximum number.

Board of Trustees

8. The Founding Trustees, within a period of 120 days from the date of signature of these presents, shall be called by the Founder to hold a meeting and shall thereby constitute a Body, hereinafter to be called the Board of Trustees. This first and Founding Meeting shall be chaired by the President of the Republic of Cyprus (or his alternate, if any) and in his absence, by one of the Founding Trustees selected by the Founder. At this Founding Meeting the Chairperson and the Vice-Chairperson shall be elected and the Executive Committee shall be constituted in accordance with the

provisions hereof. At this meeting, the Founding Trustees shall also appoint the Secretary and the Treasurer of the Foundation and shall also conduct such further business as they may decide. Five trustees shall form a quorum for the purposes of the Founding meeting. The Founding Trustees shall serve for a period of four years and each shall be eligible for re-appointment in accordance with the provisions hereof.

Appointment of Trustees

9. The appointment of new Trustees shall be made by the Trustees at any time and from time to time, for a four-year service.

Re-appointment of Trustees

10. A trustee may be re-appointed provided that no Trustee shall be re-appointed if he/she was a Trustee for eight continuous years immediately prior to the proposed re-appointment.

Qualifications of Trustees

11. For the appointment of any person to the position of Trustee, the following qualifications are necessary:
- a. The candidate should be a person who adopts the principles and objects of the Trust.
 - b. The candidate should be a person of known authority enjoying local and international respect and having been distinguished for his/her achievements in the sector in which he/she is involved.

Ex Officio Trustees

12. The following persons shall be ex officio Trustees:
- a. The person serving as President of the Republic of Cyprus from time to time, who will also be the Honourary Chairman of the Trustees, and who shall be entitled to appoint a person of his choice to act as an alternate to himself, provided such person complies with the provisions of article 11. hereof.
 - b. The President of the Foundation whilst he serves the Foundation in this capacity

Resignation of Trustees

13. A Trustee may at any time give notice in writing to the Trustees of his/her intention to resign. The notice must be submitted at least one (1) month prior to the date on which he/she intends to resign.

***Dismissal of
Trustees***

14. The Board of Trustees may for exceptional and justified reasons, dismiss any Trustee from office, without this creating any right to the Trustee regarding the said early termination of his/her appointment. A notice in writing is communicated to the Trustee to be dismissed at least three (3) months prior to the date of the meeting at which his dismissal will be discussed. The relevant decision of the Trustees shall be taken by a majority of at least four fifths (4/5) of the Trustees serving the Trust at the time.

***Appointment of a
Trustee in
replacement of
another in certain
circumstances***

15. The Trustees may, and in case of a breach of the minimum number of the Trustees must appoint another Trustee in replacement of the Trustee who has passed away or departed or been dismissed from office or has in any other manner ceased to be a Trustee before the end of his/her term of office, and any Trustee who shall be thus appointed shall hold office for the period during which the Trustee who has been replaced would have held office.

***Proceedings at
Meetings,
Quorum,
Chairman
Vice-Chairman***

16. (a) Except as otherwise provided in these presents, the business of the Trustees shall be carried out at their meetings. Teleconferences may also constitute meetings of Trustees.
- (b) The Trustees shall determine the procedure in connection with their meetings, as well as the necessary quorum therefor.
- (c) The Chairperson, and the Vice-Chairperson, of the Trustees shall be elected by them amongst their number and shall hold office for such a period(s), as the Trustees shall determine in each case, provided that those thus appointed continue to hold the office of Trustee. The Founding Chairperson, and Vice-Chairperson shall be elected at the first meeting of the Trustees.
- (d) Except as otherwise provided herein, the decisions of the Trustees shall be taken by a simple majority (more than 1/2 of the votes of the members participating in the deliberations and voting) and in case of a tied vote the Chairperson, and in his absence the Vice-Chairperson, shall have a casting vote.

- (e) A unanimous decision in writing signed by each one of the Trustees or by each member of a committee of Trustees (as the case may be) shall be valid and shall have the same legal consequences as if such had been approved at a Meeting of the Trustees or at a meeting of such committee duly convened and held.
- (f) All acts carried out by any Meeting of the Trustees or committees thereof or by any person acting in the capacity of a Trustee shall be valid notwithstanding that it be subsequently disclosed that there was a defect in the appointment of any Trustee or person acting as above, or that they or any of them did not possess the necessary qualification to that end. Such actions shall be counted as valid as if every such person had been duly appointed and was qualified to be a Trustee.

Issuance of Regulations

- 17. The Trustees shall from time to time issue regulations to regulate the management and operation of the Trust, and may alter, rectify, vary or invalidate them from time to time at their discretion. Provided that these Regulations shall not be contrary to the objects, terms and the spirit of the Trust.

Establishment of committees (Executive Committee)

- 18. The Trustees may establish committees, as they judge expedient, and they must also form an Executive Committee. The Founding Executive Committee shall be appointed by the Founding Trustees at the Founding meeting.

The Trustees may delegate or transfer to the said committees such powers or duties as they may deem proper and may determine the procedures which shall apply in each one. Provided that the decisions of the Trustees with regard to the constitution of the Executive Committee, as well as the powers, duties and procedures thereof, shall be taken by special majority (at least 3/4 of the votes of the members participating in the deliberations and voting).

Minute Books, books of account and audit,

- 19. The Trustees shall keep minutes of their meetings and shall also keep proper books of account which shall be audited annually by auditors to be appointed by the

***publication of
report***

Trustees, following the recommendation of the Chairperson. An annual report by the Trustees on the Trust activities during the preceding year shall be published by the Trustees. The content of the said report shall give an accurate and complete picture of the said activities

Bank accounts

20. The Trustees may from time to time open, manage and keep a bank account or accounts in the name of the Trust, each of which shall be managed either by two Trustees, or by one Trustee and the Treasurer, in accordance with a decision of the Trustees.

Investments

21. (a) The Trustees may, at their absolute discretion, invest the Trust Fund in any approved investment in pursuance of the Charities Law Cap 41 of the Republic of Cyprus, with power at their absolute discretion to alter or vary any investment.
- (b) The Trustees may acquire by purchase, lease or exchange or hire or by donation or otherwise, any movable or immovable property (including long-term leases) and shall have all the powers of an absolute owner. The Trustees may sell, exchange, donate, lease, rent, assign, mortgage, charge and dispose of such property as they shall deem expedient from time to time provided that any profits made by the Trust shall be used exclusively for the pursuance of its objects as set out herein.

***Loans, mortgages,
charges etc.***

22. The Trustees may, from time to time at their discretion, borrow or raise any amount or amounts and secure the payment thereof, and mortgage or charge all or any part of the assets and capital of the Trust and to make, issue or accept promissory notes or other negotiable instruments and to give guarantees for the payment of any amounts and the execution of any contract, obligation or undertaking and to issue letters of indemnity and to enter into agreements, contracts and obligations.

***Signature of Trust
documents***

23. A document signed by two designated Trustees as the Trustees may determine from time to time, or by such other person(s) as the Trustees may determine from time to time, as evidence of receipt of any income or capital on the part of the Trust, or such signature of any titles or

securities or other documents or in respect of any money or property of the Trust, shall be sufficient concerning the person dealing with the Trust, and such person shall be able to rely on such documents and shall not be required to inquire into the disposal of such property or its use.

***Hiring of
representatives***

24. The Trustees may, instead of acting in person, hire and pay representatives in order to carry out any business or action, provided that these representatives shall not exercise any discretionary power which the Trustees, in pursuance of these presents or the law must exercise in person. These representatives cannot replace or represent Trustees in meetings of the Board or any of its committees.

***Payment of
accounts, claims
etc.***

25. The Trustees may pay all bills, settle, arrange compromise, abandon or refer to arbitration any actions, proceedings or disputes, claims, demands or other issues related to any matter in connection with the Trust, and to proceed to any other acts which are considered to be proper for this purpose.

***Deposition of
documents with
banks etc.***

26. The Trustees may deposit for safe-keeping any instruments or securities held by them in connection with any property which belongs to the Trust in banks, companies or other bodies or persons with legal or without legal personality, and may pay any amount which is payable in connection with the said safe keeping. Any such account may be kept in the names of, and be handled by any two of the Trustees or such other persons as may be appointed by them from time to time.

***Decisions
regarding whether
money or other
assets are capital
or revenue etc.***

27. The Trustees shall have power to determine in case of doubt whether any money or property shall be considered as capital or revenue for the objects of the Trust, and whether any expenses or costs shall be paid or undertaken. Provided that this provision shall not be considered to give power to the Trustees to dispose of the revenue or the capital of the Trust fund for any purpose which is not allowed by these presents.

***Representation
before the
authorities etc.***

28. Any Trustee or Trustees nominated by a decision of the Trustees, may appear before any Governmental or other authority, organisation or body and shall sign any document or take any action required by law or which

may be required or expedient in the circumstances in connection with the Trust.

***No remuneration
for Trustees
acting in that
capacity***

29. No remuneration, fee or other benefit shall be paid to the Trustees in respect of their service as such, but each Trustee shall be paid his/her expenses, if any, for attendances at meetings of the Board of Trustees and its committees. Trustees shall however, be compensated for serving the Trust in a capacity other than that of a Trustee.

***President,
Secretary,
Treasurer and
other officials***

30. The Trustees shall have power to appoint such persons as they shall deem necessary for the fulfilment of the objects of the Trust, including the President, the Secretary, the Treasurer and other officials and employees as they may determine from time to time and shall have power to grant such persons such powers, duties and responsibilities as they may deem necessary and/or expedient. The duties, emoluments and any other possible benefits of the said persons shall be determined by the Trustees at their discretion.

THE CYPRUS INSTITUTE

Objective:

To define and create a distinctive research and educational institution that both serves and shapes regional progress within a global perspective

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Establishment of a new research and educational institution, with strong scientific and technological orientation, freed from the constraints of the past, unfettered by internal and external bureaucracy, open and welcoming in its membership, dedicated to meeting human need in its fullest expression. The new institution not only will benefit its region and the surrounding areas, but it will also provide a new and exciting model of a community of enquiry, harnessing and directing its efforts to the nurture of human potential and the promotion of the public welfare.

This distinctive research and educational institution will be:

- world class in its standards, international in its membership, located in Cyprus
- partnered with established world class institutions
- independent in its support but public in its commitment and service
- devoted to the well being of the local, regional, and international community
- welcoming to students, faculty, and staff of all nations, cultures, races and faiths
- dedicated to the advancement of knowledge and its humane and benevolent application

Why a new institution?

World-class universities, small in number, play a catalytic role in advancing human affairs and welfare, economic growth, scientific progress, and cultural achievement. But the rationale for this new institution, The Cyprus Institute, aspires to go beyond the pursuit of excellence in research and education, while at the same time firmly anchored in such excellence. It strives to go to the centrality of science and technology in the era of knowledge, recognizing the reality of globalization and the diversity of human experience. Traditional research universities, shaped in earlier historical and technological eras, need rejuvenation to focus emerging science and technology on the human condition and to ameliorate disabling conflicts. The Cyprus Institute, while retaining the proven advantages of the traditional university model, will be attuned, by design, to the challenges and opportunities of the 21st century. It will be structured to facilitate learning across disciplinary boundaries, while advancing academic excellence; to take a global perspective while considering the regional context; to focus on issues, while rooted in the disciplines. An issue-oriented institution that is structured *ab initio* to cross disciplinary boundaries and to transcend national boundaries, while based in

a region with an abundance of problems and a scarcity of rigorous analysis, is like no other institution; yet, in its pursuit of academic excellence, the Cyprus Institute will be in the company of and in partnership with the world's great research universities.

Why Cyprus?

Cyprus is at the geographical, political, and cultural fault line where East meets West and where North meets South. At the crossroads of civilizations, commerce and cultures for centuries, Cyprus has never been too far from the epicenter of world conflicts and, indeed, it has had a fair share of conflicts of its own. In a region of immense ethnic, religious and cultural diversity, where oil seems to run more abundantly than water, and where peace is scarcer than conflict, Cyprus offers fertile ground for the scientific study and alleviation of scarcity and conflict and celebration of diversity. A member of the European Union, Cyprus, as both the Eastern-most and Southern-most outpost of a United Europe, and indeed of the West, will serve as a gateway to and from the important economies and cultures of the region and beyond. Strategically located to be effective yet small enough not to be threatening, Cyprus can play a catalyzing role for new understanding and reconciliation by hosting a world-class research and educational institution with regional dedication and global perspective. Such an elite institution based in Cyprus, with its values and scholarship guided independently, can bring to bear the best of science, technology, and management in dealing with some of the world's most refractory problems. At the same time, such an institution would prepare leaders for tomorrow who would more readily use science, technology, and management than the threat of war to respond to scarcity, to tap diversity, and to resolve conflict.

Why should the world community support it?

The world community, and the European Union in particular, have much to gain from supporting a world-class research and educational institution in a region riddled with complex problems and lacking a global center of excellence to address them. The conflicts arising from scarcity in the midst of abundance, from desolation in the midst of diversity, and from isolation in the midst of globalization are, in the long term, more amenable to science, technology, development and management than to the projection of political and military power. It is also a more lasting and cost-effective response. But the region is lacking a widely acceptable analyst and catalyst of world-class excellence and global reach that can bring the world's greatest minds and know-how to bear on problems of great complexity, intellectual challenge, and global significance. Furthermore, in a region that has been the cradle of many of the world's civilizations, an unmatched cultural heritage waits to be rediscovered for the benefit of all humanity. The Cyprus Institute aims to use science and technology to unearth the region's past and shape its future as an integral and vital part of the global community. It aims to turn scarcity into an engine of efficiency and innovation; diversity into a source of strength and

wealth; conflict into a springboard for reconciliation and cooperation. The world community with vital interests in a more prosperous region at peace with itself has every reason to want to nurture and support this initiative.

The Strategy

The core strategy developed under the aegis of the Cyprus Development Bank has two parts.

First is the engagement of outstanding scholars who are committed to the core vision:

- Professor Ernest J. Moniz of the Massachusetts Institute of Technology has served as Undersecretary of the US Department of Energy and as Associate Director of the White House science office, where he had responsibility for the university-government partnership.
- Professor Guy Ourisson of Strasbourg, former president of the French Academy of Sciences, Founding President of the University "Louis Pasteur" (Strasbourg, FR).
- Professor Costas N. Papanicolas of the University of Athens, with extensive knowledge of the research and higher education systems in Cyprus, the Middle East, Europe and the US.
- Professor Frank Rhodes, having long served as President of Cornell University and as the current President of the American Philosophical Society, is internationally recognized for leadership on higher education issues.
- Professor Herwig Schopper served as Director-General of the European Center for Nuclear Research (CERN) in Geneva and has advised several governments on research and education

They have, in turn, engaged scholars of international caliber spanning many scientific and professional disciplines. All of these individuals understand excellence at a world standard. Among them are:

Erich Bloch (Formerly IBM Vice-President and Director of the US National Science Foundation)

D. Allan Bromley (Yale, Former Presidential Science Advisor, USA)

George Constantinides (U. of Chicago, Leo Melamed Professor of Finance)

Richard Cooper (Harvard, Maurits C. Boas Professor of International Economics)

Paul Crutzen (Mainz, environmental scientist and Nobel Laureate)

Hubert Curien (President of the French Academy of Sciences, Former Minister for Research)

Claudio Dematte (Chairman of the Management Board, Bocconi University, Milano)

Victor C. Jongeneel (Director, Office of Information Technology, Ludwig Institute for Cancer Research Swiss Institute of Bioinformatics, CH)

Elias Houstis (Purdue Univ. USA and U. of Patras, GR)

Fotis Kafatos (Director General of the European Molecular Biology Laboratory, Heidelberg)

Walid Khadduri (Editor-in-Chief, Middle East Economic Survey, Cyprus)

Angeliki Laiou (Harvard and Academy of Athens, Former Undersecretary of Foreign Affairs, Greece)

Heather Lechtman (MIT, Head of Technology and Archeology Program)

Jean-Pierre Mohen (Director, Centre de Recherche et de Restauration des Musées de France)

John W. Negele (William A. Coolidge Professor of Physics, M.I.T. USA)

Frank Press (Formerly Presidential Science Advisor and President of the US National Academy of Sciences)

Jeffrey Sachs (Columbia, Director of the Earth Institute)

Maxime Schwartz (Former Director General of Institut Pasteur, France)

Constantine Stefanis (Athens Academy, former minister of Health, Greece)

Jorma Routti (Finland, Former European Commissioner for Research)

Daniel C. Tosteson (Harvard, President of the US Academy of Arts and Sciences)

Dennis Tsichritsis (University of Geneva, Chairman of the Executive Board of GMD, Germany)

Harold Varmus (Nobel Laureate, President and CEO of Sloan Kettering Memorial Hospital and former Director of the National Institutes of Health)

Robert White (Former President of the US National Academy of Engineering)

Joe B. Wyatt (Vanderbilt, Chancellor Emeritus)

The second core strategy has been the conceptual design, subject to dynamic evolution upon further discussion and the recruitment of outstanding administrators and faculty, of an Institute that meets the above stated expectations through graduate-level research and professional education and through a synergistic undergraduate college.

The Research Centers

The research organization revolves around cross-disciplinary research centers pursuing issues of great scholarly opportunity, global significance, and regional focus. In the start-up phase, these might include:

The Center for Energy, Environment and Water

This center will address technological and policy issues concerning energy resources, energy production and management, water usage and management, environmental issues and policy. Its research portfolio will include both regional and global concerns, ranging from water usage and management in the Near East and North Africa, to global warming and fossil fuel usage, to alternative forms of energy production and development. The Center will exploit its convening potential for addressing EU/regional energy, transnational environmental and water issues.

The Center of Human Development and Health

This Center will have a strong grounding in fundamental biology but will also "vertically integrate" this research foundation with considerations of human health and development in partnership with appropriate regional and international medical schools and facilities.

The Center for Economic Development and Conflict Resolution

The portfolio of this Center will include research and facilitation of economic policies, management strategies and the utilization of key technologies for development and conflict resolution, with emphasis to acute regional (South Europe, Balkan, Near and Middle East and North African) problems.

The Center for Technology and Archeology

The Center for Technology and Archaeology will research, develop, adopt and employ the use of modern scientific and technological discoveries in the field of archeology and in the preservation and presentation of cultural heritage.

The Center for Information, Communication and Computation

This center will focus on issues in the area of Information Science and Engineering and Telecommunications pertaining to the region's multicultural and multilingual environment, and to the disparate levels of development at relatively close quarters, taking advantage of Cyprus strategic location and its good infrastructure.

The Center for Management and Finance

This Center will innovate in the integration of private and public sector management into a joint educational and research program. Its scope will extend beyond business and public administration to the management of scarcity, diversity and conflict. As such it will be closely affiliated with the Center for Economic Development and Conflict Resolution.

The Center for Computation-Based Science and Technology

This Center will advance the large-scale simulation of complex systems as a new tool of scientific discovery and use that tool to pursue important scientific and engineering areas including advanced materials, the dynamics of macromolecules and protein structure, atmospheric and ocean dynamics, environmental transport, and interactive human systems.

The Colleges

Following the establishment of the research Centers and the Graduate College, an Undergraduate College will be developed at the core of the Institute. Here, the faculty from the various research centers will have the shared experience and responsibility of guiding the academic and moral development of undergraduates. Collaborative teaching will be the norm. This will be a key component of the sense of community that will characterize and distinguish the Institute and will yield graduates who, in addition to establishing their capability for further study in a specific academic area, will gain:

- a sense of openness to others with the ability to listen, read, observe, and analyze with comprehension and speak and write with clarity
- a sense of self confidence and curiosity, with the skills to satisfy both
- a sense of proportion and context in the worlds of nature and society
- delight in the richness and variety of human experience and expression
- a commitment to responsible citizenship, including respect for others
- a sense of direction, with the self-discipline, personal values, and moral conviction needed to pursue it

These are the traits of today and tomorrow's leaders.

The Institute

The Institute will be residential in nature, self-supporting through fees and gifts, and relatively small in size. An eventual student body of about 3,000, with 2,000 undergraduates and 1,000 research and professional graduate students, with about 200 faculty, is appropriate.

Key to the Institute is a dedicated, knowledgeable and committed Board of Trustees and a strong President who will recruit an outstanding faculty and student body. A substantial International Council composed of friends of the

Institute will be essential for the Institute to reach its ambitious goals within a reasonable time.

We anticipate that the capital requirement to establish the full Institute will be several hundred million Euros, with an ongoing operational expense in excess of 60 million Euros. Assembling these resources is a formidable challenge, but one that can be met by men and women of dedication to the Institute's ideals and to the well being of Cyprus and the important region that the Institute will serve. Our partners in this adventure will be those who believe that we can shape a better future by developing in our youth both the professional skills needed for a knowledge-based society and the ability to speak across boundaries of birth and divisions of belief.

Cyprus Institute Development Plan

PREAMBLE

We present here a draft of developmental plan for the Cyprus Institute. This plan is based and derives material from the extensive work done by the Coordinating Committee of the research phase of the project and the team of the Cyprus Development Bank supporting the project. Background material on which this plan is based can be found in:

- The Assessment report, presented to the June 2002 Convocation of International Scholars
- The Conclusions and Recommendations of the June 2002 Convocation
- The Business Plan for the Development of the Cyprus Institute submitted to the Planning Bureau
- The proposal for the seed funding submitted to the Council of ministers and the decision (approval) of the Council of Ministers.

It is intended to provide a road map for the development of the Institute. It is assumed that this staged development will last ten years (2004 to 2014).

This plan has been approved by the Meeting of the Cyprus Institute Coordinating Committee (April 5, 2004) and the by the Founding meeting of the Board of Trustees (April 16, 2004) of the Cyprus Research and Educational Foundation.

The overall development plan of the Institute is expected to last a decade and it will cost in excess of 500 Million Euro.

Phases of Development

The development of the Cyprus Institute can be distinguished into the following phases – stages of development:

Phase I Research/Feasibility Study

Aug/2001 - Dec/2003

Definition of the character, scope and orientation of the Institution. Assessment of its viability. Definition of its first priorities and developmental path. This phase has been successfully completed and it led to the creation of the Cyprus Research and Educational Foundation (CREF) under which the establishment of the Cyprus Institute is being pursued.

Phase II Start-up/Planning

Jan/2004 - Sep/2006

This phase marks the transition from a research/feasibility study to the actual establishment of the Institution. At the conclusion of this phase a functional, independent organization will be in place with the first research and academic activities – concentrated in the area of Energy Environment and Water (EEW) –under way. The detailed planning of this phase which is now beginning is presented in the following section, it is marked by the following major milestones

- Establishment of the Institute's Board of Governance.
- Establishment of an interim management team to oversee the implementation of the Institute's development plan.
- Preparation of an overall Master Plan for the entire Institute.
- Preparation of the business plans for each Center. Fast tracking the Centers on
 - A. Energy Environment Water,
 - B. Biology and Human Health and
 - C. Economic Development and Conflict resolution.
- Donor research (Private, Governmental, International and EU sources) and announcement of first donations.
- Recruitment of the first Institute officials and faculty.

Phase III Implementation - Construction

Jan/2005 - Dec/2010

This phase which is to commence in 2005, upon the completion of the first stages of planning (Phase II) and their review and validation by the appropriate bodies is expected to take six years and will terminate with the

completion of the operation of the Campus facilities, the research infrastructure of an integrated research - educational establishment.

Phase IV Research - Initial Operation Sep/2006 - Dec/2010

It is projected that the Cyprus Institute will start operating its first Research Center (EWE) during the academic year 2006 -2007 (starting on Sep 2006). Every subsequent academic year one research Center will become operational. As currently planned at least four and optimally five Research Centers will be operational by the Academic year 2009-2010 at which point the Cyprus Institute could be considered as having reached full operability in its research profile.

Phase V Graduate Education - Initial Operation Sep/2008 - Dec/2012

It is projected that the Cyprus Institute will not start operating as an educational institution till the Academic year 2008-2009 when students for graduate programs will be first admitted, two years after the commencement of operations its first Research Center. Every subsequent academic year at least one additional graduate program will open. According to this plan by the Academic year 2012-2013 at which point the Cyprus Institute could be considered as having reached full operability of its Graduate College.

Phase VI Undergraduate Education - Initial Operation Sep/2010 - Dec/2014

It is planned that the Cyprus Institute will operate a small, very high quality undergraduate College following the successful launching of the Research Centers and of the Graduate College. This tentative plan will of course be reexamined at several points during the development of the Institute. In the current scenario the first undergraduate class will be admitted in Sept of 2010 and it will graduate in June of 2014

Phase VII Stage 2 - Full Operation Sep/2014 onwards

Under the proposed scenario the Cyprus Institute will reach full operability on the academic year 2014 -15, with all of its units functional reviewed and delivering.

As one might expect the detail with which each phase is defined varies and so do the detailed goals and milestones. However the overall path is well defined as described by the major objectives defined above

C. Tasks and Deliverables of the Start-up/Planning Phase (Jan/2004 - Sep/2006)

The tasks and deliverables of the Start-up/Planning Phase (Jan/2004 - Sep/2006) are presented. The estimated total budget for each task and that of the first year is also shown.

1. Establishment & operation of Central Administration

Tasks:

- Overall coordination of the project
- Identification of funding sources (from non Cy Government sources and international organizations)
- Dissemination of Information (locally and internationally) re the Institute
- Administrative and Technical Support to the Board of Trustees and the scientific Task Forces
- Establishment and commencement of operations of the central administration of the Institute.
- Formation and initiation of operation of Advisory Committees

Deliverables:

- Registration of the Trust (02/04).
- Staffing of the Administrative Headquarters (10/04).
- Founding Meeting of the Board of Trustees (04/03)
- Establishment of Scientific and other advisory Committees (06/04).

BUDGET:

Total: £587. 000

First year: £231.000

2. Detailed Planning of the Institute

Tasks:

- Development of an integrated research plan/portfolio for the Institute
- Development of an integrated educational - teaching/portfolio for the Institute
- Articulation of a detailed plan of developing the Institute in a phased approach

Deliverables:

- Detailed business plan for the entire project (09/04).
- Plan for the phased development of the Institute (09/05).

BUDGET:

Total: £130.000

First year: £36.000

3. Development Plan and Funding Campaign

Tasks:

Development plan for Cypriot and Greek sources.
Development plan for EU sources.
Development plan for International Donors.
Commencement of funding campaign.

Deliverables:

- Establishment of Development/Campaign office (06/04).
- Master plan for fundraising (12/04).
- Announcement of the first non governmental contributions (06/04).
- Announcement of the non governmental contributions (06/05).

BUDGET:

Total: £168.000

First year: £72.000

4. Development of Campus Master Plan (Kornos Campus)

Tasks:

- Development of the Kornos site
- Development of the Campus Master Plan (conceptual plan)
- Development of preliminary budget for the Campus

Deliverables:

- Master Plan.
- Budget for the development of the Campus

BUDGET:

Total: £273.000

First year: £106.000

5. Planning and startup of the R.C. on Energy Water & Environment

Tasks:

- Articulation of research portfolio
- Development plan for the building of the Center
- Market analysis and of the competitive environment
- Development of a plan for partnerships and networking with premier international Institutions
- Establishment of Rules and Procedures for the academic, support staff and for the students of the Center.
- Development of a viable capital and operational budget
- Hiring of academic and supportive staff
- Commencement of operations

Deliverables:

- Detailed business plan (06/04).
- First administrative staff in place (12/04).
- First research staff in place (09/05).
- Opening of the Center (09/06).

BUDGET:

Total: £608.000

First year: £216.000

6. Development of action plan for the R.C. on Biology and Human Development and Economic Development, and Conflict Resolution.

Tasks:

- Articulation of research portfolio for each of the centers
- Development plan for the building of each Center
- Market analysis and of the competitive environment
- Development of a plan for partnerships and networking with premier international Institutions
- Establishment of Rules and Procedures for the academic, support staff and for the students of the Center.
- Development of viable capital and operational budgets for the Centers

Deliverables:

- Detailed business plans for each of the centers (06/05).
- Preparation for the launching of each of the centers (12/05)

BUDGET:

Total: £232.000

First year: £60.000

7. Advancement of the Plans for the other research Centers of the Institute.

Tasks:

- Conceptual definition of the research portfolio for each of the centers
- Development of conceptual plan for the building of each Center
- Market analysis and of the competitive environment

Deliverables:

- Preliminary plans for the establishment of each of the Centers (06/05).
- Viability analysis (12/05).

BUDGET:

Total: £96.000

First year: £18.000

8. Organize during 2004-2005 international workshops with the goal of establishing Cyprus as a venue for scientific activity in the research thrusts of the Institute

Tasks:

- Development of a coherent plan of seminars and workshops that are in concert with the developmental plan of the Institute.
- Formation of an International advisory Committee.
- Hiring of staff and commencement of operations.

Deliverables:

- Definition of the Scientific and Local Organizing Committees (05/04).
- Definition of Scientific areas of concentration (06/04)
- Program of activities for the first year (09/04) .
- Program of activities for the second year (09/05).

BUDGET:

Total: £96.000

First year: £46.000

PERSONALITIES ENGAGED IN THE CYPRUS INSTITUTE

***Paul Crutzen** (Mainz D, Nobel Laureate for work in atmospheric chemistry)
 ***Walid Khadduri** (Editor Middle East Economic Survey, Cyprus)
 ***Fotis Kafatos** (Director of the EMBL, Heidelberg, D)
 ***Maxime Schwartz** (Former Director General of Institut Pasteur, F)
 ***Jeffrey Sachs** (Harvard, Galen L. Stone Prof. of International Trade)
 ***George Constantinides** (U. of Chicago, Leo Melamed Professor of Finance)
 ***Jean-Pierre Mohen** (Musées de France)
 ***Elias Houstis** (Purdue U. and U. Patras)
 ***Maciej Nalecz** (Prof, UNESCO, PL)
 ***Frank Rhodes** (President Emeritus Cornell University)
 ***Dennis Tsichritsis** (U. of Geneva, Chairman of the Executive Board of GMD)
 ***Jorma Routi** (Finland, Former European Commissioner for Research)
 ***Jose Mariano Gago** (Former Minister of Research, Portugal)
 ***Richard Cooper** (Harvard, former Yale Provost, former Undersecretary of State)
 ***Joshua Jortner** (Israeli Academy of Sciences)
 ***Constantine Stefanis** (Athens Academy, former Minister of Health)
 ***George Philokyprou** (U. Athens, former Vice Rector)
 ***Costas Kounnas** (ENS, F)
 ***Theodore Panayiotou** (Harvard & CIIM)
 ***Harold Varmus** (Sloan Keetering, Nobel Laureate, former Director of NIH)

#**Vartan Gregorian** (Carnegie Foundation, Former President of Brown U)
 #**Charles Kleiber** (Secretary of State, CH)
 #**Heather Lechtman** (Massachusetts Institute of Technology, USA)
 #**John Negele** (Massachusetts Institute of Technology, USA)
 #**Victor Jongneneel** (Director of Bionformatics, Cancer Institute, Zurich, CH)
 #**Erich Bloch** (IBM, Former Director of the US National Science Foundation)
 #**Khaled Toukan** (Minister of Education, Jordan)
 #**Claudio Dematte** (Bocconi University, Milano, I)
 #**K.C. Nicolaou** (Scripps, USA)
 #**Angeliki Laiou** (Harvard & Athens Academy)

Dave Marks (MIT, director of Laboratory for Energy and the Environment)
M. Molina (MIT, and Nobel laureate for work in atmospheric chemistry)
R. Smalley (Rice, and Nobel laureate for work in nanotechnology)
Ismail Serageldin (Director, Library of Alexandria)
Ahmed Zewail (CIT, Nobel Prize Winner Chemistry)
Enric Banda (Spain) Secretary General European Science Foundation
Marie-Lise Chanin (French Academy, Atmospheric Sciences)
Michelle LeDuc (ENS, F)
Thomas Rosswall (Sweeden) ICSU Executive Director
E. Morse (Hess/ Council on Foreign Relations, US)
Pierre Lafitte (Senaieur, Fondation Sophia Antipolis)
André Capron (Accademié de Sciences, F)
Gilles Kahn (Accademié de Sciences, F)
John Deutch (Institute Prof. MIT, former provost of MIT)
John Joannopoulos (MIT)
Alexander Zehnder (ETH, Director of Fed Institute for Water & Environment, CH)

Names marked with an (*)Asterisk indicate those academics that attended the 1st Convocation (June 2002).
 Names marked with a (#) number sign indicate those academics that were invited to attend the 1st Convocation (June 2002) but were unable to attend, even though they wished to do so.

THE CYPRUS INSTITUTE

Enabling the Knowledge Economy of Cyprus

Costas N. Papanicolas*

University of Athens

Athens, GREECE

Abstract

The "Cyprus Institute" aspires to become a premier research - educational institution in the Eastern Mediterranean basin. A non governmental, technologically and issue oriented Institution is designed to ab initio cross disciplinary boundaries. It is designed to take advantage of Cyprus's strategic location as the gateway of Europe to the Middle East and North Africa. The scheduled for 2004 accession of Cyprus to the European Union and the desire to transform the island's economy to a knowledge economy are incorporated in the planning of this Institution.

* Invited talk presented at Knowledge Economy Forum II, Helsinki March 25-28, 2003. Organized by the Government of Finland and the World Bank.

THE CYPRUS INSTITUTE:

Enabling the Knowledge Economy of Cyprus

INTRODUCTION

Leading Academic/Research Institutes are primarily located in the US and in Europe. Their role as locomotives pulling the knowledge economy sectors is widely acknowledged. It is also widely recognized that in terms of organization and governance a most successful model for these institutions is that of the non-profit, independent, private research university of North America such as those of MIT and Stanford.

In terms of economic impact, the most successful institutions are those that have become centers of production of knowledge and are well integrated in an economic environment that uses both as incubators of new ideas and technologies and as creators of the human resources to empower them. The classic examples are MIT/Harvard (Massachusetts), Stanford/Berkeley (California) and Research Triangle (Carolina). These institutions are mainly funded through healthy endowment, expensive tuition and very extensive research funding, deriving primarily from Government sources.

In many instances, the model of these elite research Universities is emulated and “adjusted to local environments”. An attempt to create such an institution, the Cyprus Institute, is underway in Cyprus. One of the principal benefits of this project and the one which is attractive to the Cyprus Government and public is the promise that it will become a driving force for the much desired transformation of the Cyprus economy to a knowledge economy.

The project has been initiated and supported by the Cyprus Development Bank (CDB) and it has been endorsed by the Cyprus Government. The Institute is scheduled to be formally launched this year (2003).

WHY CYPRUS

The eastern Mediterranean basin, and Cyprus in particular, provides an advantageous location for hosting an institution of the character described above, matched to the emerging realities of the new millennium. The reason lies at the intersection of history and the economic future: since the dawn of history, Cyprus has been a unique island, a strategic and commercial crossroads. With a series of very diverse cultural influences, Cyprus has developed over centuries as a crossroads of learning, where the cultural traditions and scholarship of one people came into lively contact with those of others. Cyprus has also been a land of conflict, beginning with its earliest recorded history and continuing to the present day.

The geographic position of Cyprus continues to be strategic in terms of an educational institution. It provides an open window, both to the community of the European Union, on the one hand, and to the countries of North Africa, the Eastern Mediterranean and Middle East on the other. The revolutions in air transport and more recently in communications have reduced, if not removed altogether, the

significant disadvantages of the geographic isolation that an island state may have presented in the past.

Cyprus offers a mature and fertile field for hosting such a far forward-looking educational Institution. It is uniformly accepted throughout the island that education is a very effective means for social advancement. Also, the liberal and humanistic tradition of the educational system of Cyprus, places a great value on the merits of education, as a key instrument for building a "better" society, explaining to a large degree the very positive attitude of the society in general towards investing in education. Of significance to this initiative is the policy of the Republic of Cyprus to encourage and regulate the non Governmental Tertiary Education through a system of Evaluation and Accreditation and its declared policy to transform Cyprus into a regional educational center.

The new institution will present Cyprus with an exceptional opportunity to move to a new level of economic and social development. This opportunity is rooted in its sound economic performance of the last two decades, its imminent entry into the European Union, and its location and associated potential role as a major gateway between the Western economies and the eastern Mediterranean/ Middle Eastern/ North African region that has major world economic and cultural significance. Science, technology, and communications are clearly central to the transformation of the island's economy needed to reach a broadly competitive globally-focused knowledge-serving economy.

The local environment will be important for the success of the Cyprus Institute. Cyprus is faced with considerable challenges in transforming its economy to be competitive with the E.U. framework. The economic transition demands significant change to stimulate innovation, to develop a stronger science and technology base, to advance research and development, to strengthen the technology-oriented professional cohort and skilled workforce.

FACTS ABOUT CYPRUS

Some key indices concerning Cyprus, relevant to the project, are summarized below:

Government: Presidential Republic (The Republic of Cyprus)

Area: 9251 sq km (3355 sq km in North Cyprus)

Population: 785,000 (including 141,000 in North Cyprus)

Capital city: Nicosia (pop 193,000)

People: Cypriot (Greek 78%, Turkish 18%)

Language: Greek, Turkish, English

Religion: Greek Orthodox, Muslim

Member of EU: membership scheduled for May 2004

GDP: US\$10 billion

GDP per capita: US\$15,400 (Republic), US\$5000 (North)

Annual growth: 3%

Inflation: 1.7%

Major industries: Tourism, fruit & vegetables, wine, cement, clothing, shoes

Major trading partners: UK, Greece, Japan, Germany, Russia

Tertiary Education in Cyprus

Institutions of higher tertiary education have a short history in Cyprus. The first institutions were established in the sixties following the creation of the Republic of Cyprus catering to an insignificant number of students, providing rudimentary post-secondary education. An impetus was given to the growth of Private (and mostly for profit) Institutions of Tertiary Education (PITE) by the socio-economic conditions that prevailed during the years following the Turkish invasion of 1974 which led to the emergence in earnest of private tertiary education in the late eighties. In recent years about half of the Cypriot students study abroad while most of those studying in Cyprus attend private Institution of Tertiary Education (see Figure1).

The nineties are characterized by the rapid growth and consolidation of PITE which gradually developed as an important sector in the current educational scene; during the same period we have the establishment of the first public University (The University of Cyprus in 1991). The majority of the programs in the private sector cater to the low end of the quality spectrum. However, the policy of the Republic of Cyprus of encouraging and regulating the Private Tertiary Education through a system of Evaluation and Accreditation has resulted in a rapid growth of the private sector and a marked improvement in the quality of the services offered. In PITE the language of instruction is English whereas in the public institutions (with very few exceptions) it is in Greek.

Significant changes are currently under way: both the government and the parliament are in agreement that the law governing accreditation should be expanded to include institutional accreditation (in addition to programmatic) and the licensing of private Universities and possibly the franchising of foreign institutions. Recently the Government announced the establishment of a second public University (of "applied sciences") through the consolidation and upgrading of a number of vocational programs. The language of instruction of this second public University will be mostly in English.

The overwhelming majority of the operating programs in PITE are undergraduate programs and of those a good number offer only junior degrees. The University of Cyprus has a significant and rapidly expanding graduate school; in the private sector there exist few programs leading to a Masters degree (primarily MBAs).

Cyprus is characterized by relatively small percentage (recently around 25% slowly growing) of eligible students pursuing post-secondary education, about half of the corresponding percentage for the European Union. Of the students that graduated last year 69% decided to pursue post-secondary education studies. About half of those are pursuing studies abroad (mostly Greece 53%, UK 23% and the US 14%) while the remaining are studying in Cyprus. Even so the Cyprus economy which is characterized by chronic labor shortages cannot absorb the available scientific human resources, especially those that are highly trained.

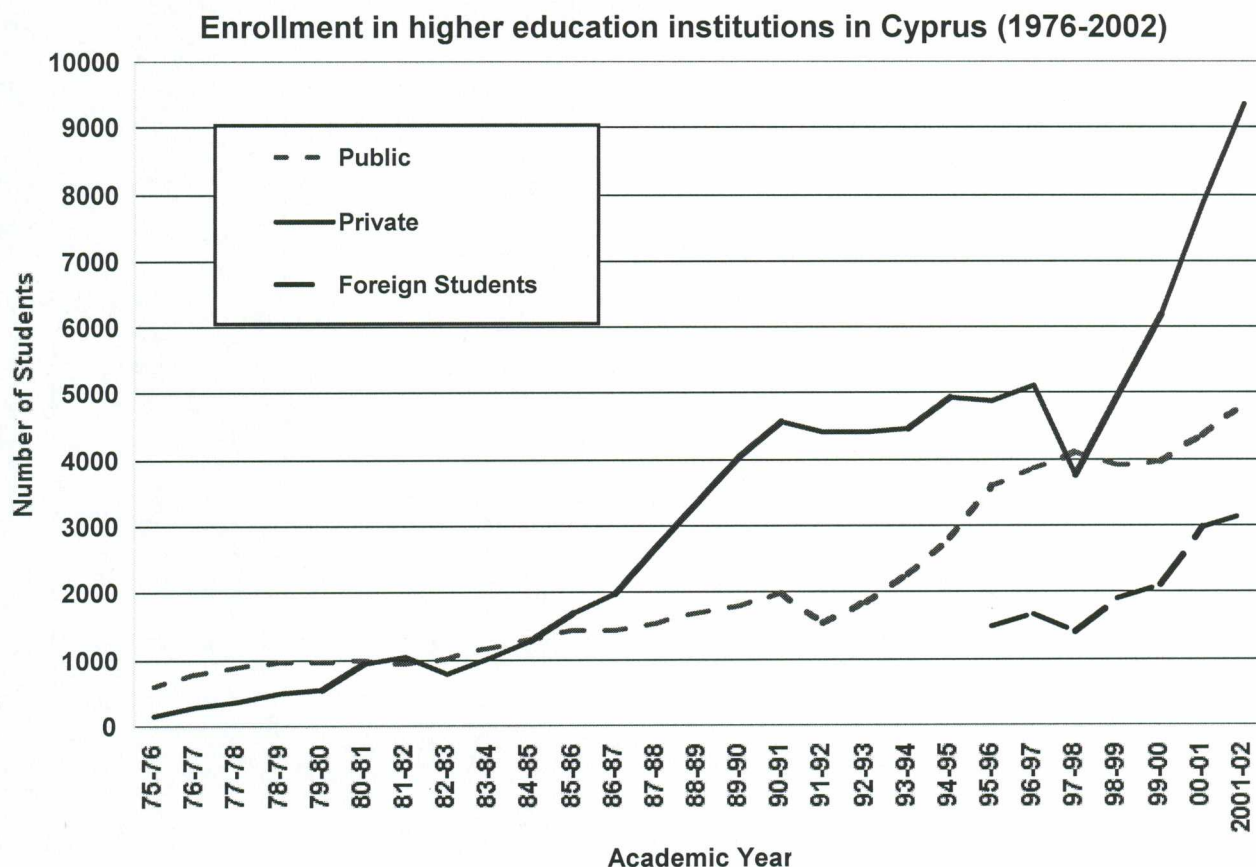


Figure 1: The higher education in Cyprus is dominated by the private sector. A dramatic growth has marked this sector after a system of evaluation and accreditation has been introduced in the 1996.

The presence of foreign students in Cyprus is a recent phenomenon, to a large degree due to the enterprising owners of the PITE. The number of foreign students is 34% of the PITE student population in Cyprus and growing. Anecdotal evidence suggests that these students view Cyprus PITE as an inexpensive alternative to British Universities at the low end of the quality spectrum.

Overall, tertiary education in Cyprus is marked by a rapid expansion. It is viewed by all political parties and social forces as a sector that needs to be developed and one that can offer a viable means of sustained growth. It is uniformly accepted that education is a very effective means for social advancement; experience from the post war years (1950-2000) supports this belief. However, mixed feelings exist towards "private" tertiary education, to a large degree because no distinction (partly on purpose) is made between "private - non profit" and "for profit" institutions.

Research Activity in Cyprus

Research activities in Cyprus either in research institutes or in academic institutions are limited but growing. Cyprus has one of the lowest figures for R&D as a fraction of GDP of all EU and EU associate members, a mere 0.28%, an order of magnitude smaller than that of the EU mean and of the other industrialized nations (US and Japan). This contrasts sharply with the rather big fraction of the GDP spent on education: 5.7%.

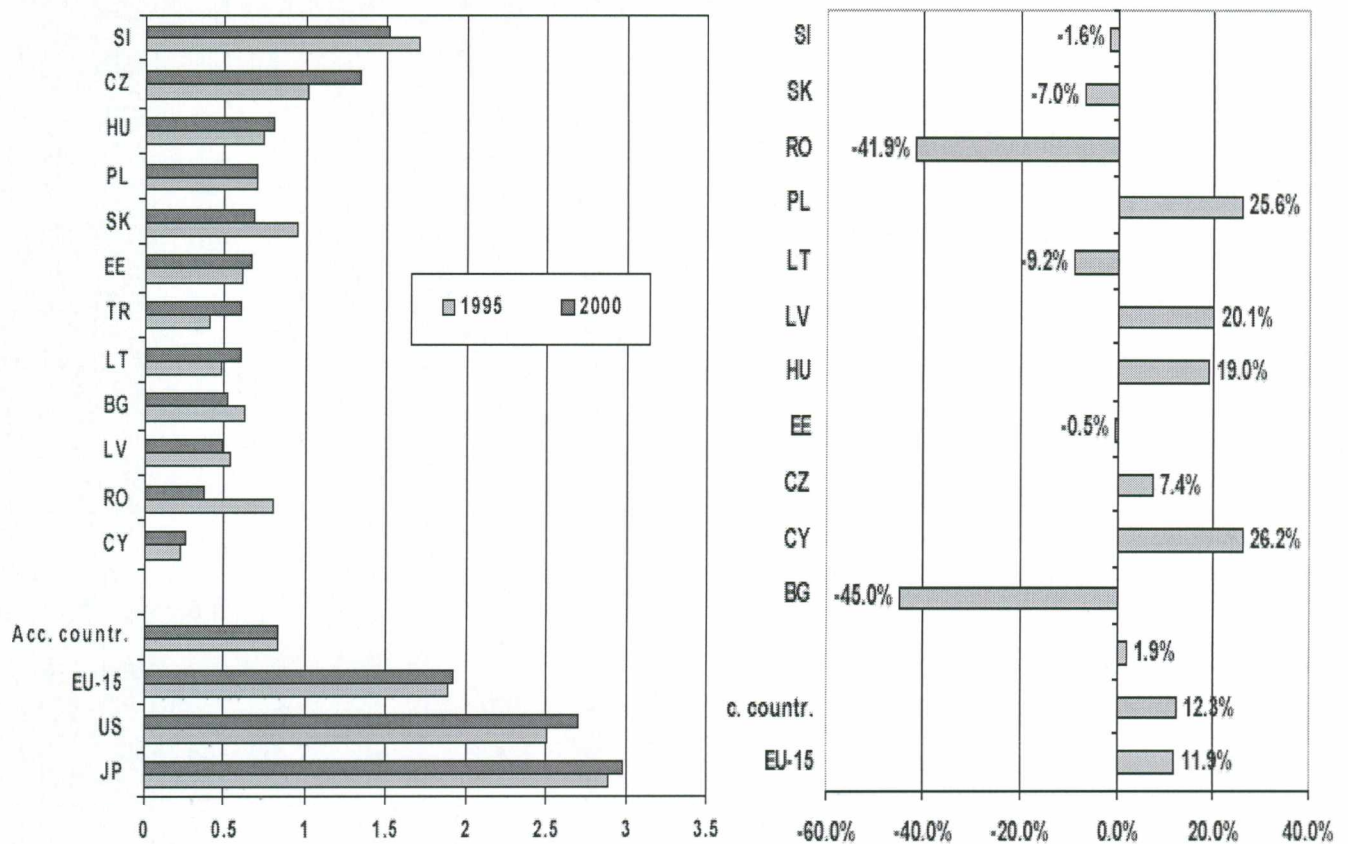


Figure 2: R&D per capita: among Accession to the EU countries Cyprus has the lowest figure (left panel); in recent years it exhibits the fastest growth in the same index (Source: Eurostat).

The recent creation of suitable funding agencies (e.g. the Foundation for the Promotion of Research or the Foundation for Technology) and the stated government policy to gradually bring these expenditures in line with the EU norms hold the promise of improving research activity. Cyprus has contributed the necessary funds so Cypriot scientists and Institutions could participate as full partners in the EU fifth framework program. Cyprus is a full participant in the sixth framework program.

Among the accession countries, Cyprus is among the weakest in terms of R&D funding; it has however demonstrated the most rapid growth during the last five years. All political parties agree that R&D spending should rapidly and dramatically increase. The platform of the recently elected President calls for dramatic increases so that Cyprus will reach the goal of the EU (3% of the GDP) as early as 2008. Realization of this goal, even by 2010 as stated by EU policy, will present formidable challenges as it will require substantial research capacity building. The Cyprus Institute presents a rather unique opportunity for such a capability building.

Cyprus Global Competitiveness

A recent (2000) ranking of Cyprus in terms of Global competitiveness, conducted by the Cyprus Development Bank, the Cyprus International Institute of Management and Harvard University places Cyprus 35th out of 60 countries. Cyprus ranks below all European countries except Greece, Russia and Turkey. It has a relatively good score on infrastructure, low scores on openness of the economy, government and efficiency of the public sector, finance, management and technological innovation.

Of particular interest are the results on infrastructure: (24 out of 60) where Cyprus gets high marks for telephone quality (rank 23rd), access to the Internet (rank 15th) and generally well functioning

communications services. Cyprus ranks in the mid-30's in terms of quality of traditional infrastructure such as ports and roads. However, Internet use for e-commerce by firms is low (rankings 49th-55th). Equally disappointing is Cyprus performance in technological innovation: (43 out of 60). Cyprus receives a rank of 37 on the question that asks about the overall level of technological sophistication and a ranking of 27th on the quality of basic mathematics and science in schools. The ease of licensing foreign technology is also moderately high (rank 24th). However, companies in Cyprus are not perceived to be innovative. Product designs are not developed locally (rank 59th) and companies do not pioneer their own products (rank 60th). Company spending on R&D is low (rank 42nd) and overall spending on R&D as a percentage of GDP is very low (rank 53rd).

The Global Competitiveness Reports are the result of a collaboration between the World Economic Forum and the Center for International Development at Harvard University. The rankings are designed to be linked to economic growth potential. Countries that have high rankings also tend to score highly on economic indicators that have been shown empirically to be related to economic growth.

THE "Cyprus Institute": A NOVEL INSTITUTION

The critical challenge of the new millennium is the balance between the creation of knowledge and the sharing of its power, and the humane and generous application of its resources and benefits. That essential task - the pursuit of knowledge and the promotion of its wise and benevolent application in the globalized societies of the new century - is the challenge for the leading institutions of higher learning. This particularly challenging task is also the core and defining function of the **Cyprus Institute (C.I.)**. An institution of higher learning aspiring to be designed ab initio matched to the opportunities and needs of the new era. The new institution aspires to become:

- scientific and technological in its orientation
- dedicated to the humane and benevolent application of knowledge and technology
- international in its membership
- partnered with other institutions and bodies
- excellent in its quality; world-class in its standards
- independent [koinofeles] in its character but public in its commitment and service
- devoted to the good of both the local, regional and international community
- open to students, faculty and staff of all nations, cultures, races and faiths

A model for the new Institution

The new institution will have a character and style that makes it distinctive. Attuned to the newest resources of technology, it will retain the proven advantages of the traditional university model, while embracing the opportunities, economies and flexibility provided by its new resources.

Amongst its distinctive characteristics, each described in more detail below, are the following features:

- outcome-based undergraduate education
- issue-based graduate education
- each graduate will receive a life-long learning contract
- public outreach, which is service-based, is emphasized
- have as a core a residential community devoted to free and open enquiry
- maintenance multiple working partnerships and alliances
- governed by an independent, international board of trustees

The intellectual focus of CI will be on science and technology and their humane and responsible application; it will in parallel emphasize the role of the arts and social sciences in enhancing personal growth, interpersonal understanding and dedicated public service.

THE ORGANIZATION OF THE CYPRUS INSTITUTE

Academic and Research Units

The new institution is organized around two major complementary academic structures: the colleges (undergraduate and graduate) and the research centers. It can be argued that these should be established concurrently. However, the availability of funding and the need to establish and maintain from the very beginning internationally recognized excellence, strongly suggest that the research centers be developed first in conjunction with post-graduate studies; undergraduate education will be implemented in a second phase. Academic and research units will be heavily dependent on each other for their success and effectiveness. The organization of the Institute is therefore, from the very beginning, designed to facilitate this duality.

THE COLLEGES

The Colleges (undergraduate and graduate) will be organized as single entity and will be presided over by a Provost. Distinct programs of study leading to four year baccalaureate degrees will be established; they will be presided over by Directors. While some programs of study are expected to be of indefinite duration, all programs will be subject to periodic review and evaluation and possible re-definition.

The faculty of the Colleges will be responsible for undergraduate and graduate education. The faculty from the various research centers will have the shared experience and responsibility of guiding the academic and moral development of undergraduates. Collaborative teaching will be the norm and will be a key component of the sense of community that will distinguish the Institute.

All students will be expected to gain substantial research experience in the various centers. The majority of the faculty is expected to have double appointments: at the College and at one of the centers. *The college will not be further subdivided into schools, divisions or departments.*

THE RESEARCH CENTERS

The Centers will be organized around issues of major public significance and will be responsible for facilitating graduate education, research, outreach and public service. The issue orientation of the Centers facilitates the conception and execution of interdisciplinary research initiatives, but even

more shapes a new emphasis in graduate education. This organization puts out front the paradigm that these issues of public significance have also come to define coherent areas of study and research, with norms of excellence evolving in the hands of leading scholars. These integrated interdisciplinary programs of study and research will be effected for each student's doctoral program under the guidance of a committee of faculty sponsors.

Among the centers to be created early in the development of the Institution, with potential focus areas that will be shaped and refined by world-class experts as the CI planning process moves forward, will be:

The Center for Energy, Environment and Water

This center will address technological and policy issues concerning energy resources, energy production and management, water usage and management, environmental issues and policy. Its research portfolio will include both regional and global concerns, ranging from water usage and conflicts involving water management in the Near East and North Africa to the supply and demand of hydrocarbons to global warming and fossil fuel usage to alternative forms of energy production and development. The Center will exploit its convening potential for addressing EU/regional energy, environmental and water transnational issues. Its scientific staff will include scientists, engineers, economists and policy experts, agriculturists, and others.

The Center for Technology and Archeology

The Center for Technology and Archaeology will research, develop, adopt and employ the use of modern scientific and technological discoveries in the field of Archaeology (excavations, surveys, evaluation of archaeological data) and in the preservation and presentation of cultural heritage (museums, archaeological sites). The geographical advantages of locating such a center in Cyprus and within the institutional setting of C.I. are obvious. Its scientific staff will include archaeologists, scientists and engineers.

The Center for Information, Communication and Computation

This center will focus on specific issues in the area of information Science and Engineering and Telecommunications. This is a very competitive research area, but some attributes of Cyprus and the region may provide a springboard for emerging thrust areas – the multicultural and multilingual environment, the disparate levels of development at relatively close quarters, the very good infrastructure of the island and its potential as a test bed for advanced communications. Its scientific staff will include electrical, computer, and telecommunication scientists and engineers.

The Center for Economic Development and Conflict Resolution

The portfolio of the Center for Economic Development and Conflict Resolution will include the research and facilitation of economic policies, management strategies and utilization of key technologies for development and conflict resolution, with emphasis on acute regional (South Europe, Balkan, Near and Middle East and North African) problems. Economists, managers and technologists will staff the center.

The Center for Management and Finance

This Center will innovate in the integration of private and public sector management into a joint educational and research program. Its scope will extend beyond business and public administration

to the management of scarcity, diversity, and conflict. As such it will be closely affiliated with the Center for Economic Development and Conflict Resolution.

The Center for Human Development and Health

This center will have a strong grounding in fundamental biology but will also “vertically integrate” this research foundation with considerations of human health and development. The Center will partner with appropriate regional and international medical schools and facilities as part of its research agenda. Its scientific staff will include biologists, clinical researchers, and health and development researchers.

The Center for Computation - Based Science and Technology

This center will advance the large-scale simulation of complex systems as a new tool of scientific discovery and use that tool to pursue important science and engineering areas, often in synergy with the research agendas of other Centers. Developing the needed mathematical structures for bridging the widely disparate scales typical of such complex systems will be part of the research agenda. Areas of scientific application may include advanced materials, the dynamics of macromolecules and protein structure, atmospheric and ocean dynamics, environmental transport, and interactive human systems. The scientific staff will include mathematicians, physicists, biologists, chemists, engineers, and economists.

These centers are organized around specific intellectual challenges or problems, rather than traditional disciplines. They are generally heavily dependent on multidisciplinary work. Synergies among the centers will be strongly encouraged. Each center will be headed by a Director. The Director, working with the Administration, the faculty, and external advisors, will shape a research portfolio that will address leading-edge questions in the subject area of the centers. The faculty will be multidisciplinary, with a mix determined by quality appointment opportunities and the broad outlines of the evolving research portfolio. Faculty members of the centers will be responsible for providing graduate and undergraduate instruction, both in the subject area of the center and in the underlying disciplinary subjects (e.g., science, mathematics, engineering, economics, behavioral science as appropriate). Indeed, a critical part of the Institute’s overall architecture is that the Centers be viewed in a cross-cutting way to provide the breadth of disciplinary base to support undergraduate educational needs.

Degrees will be awarded by the Institute, not by the Centers.

Faculty appointments

Faculty appointments will be made as a result of international advertisement and rigorous selection with participation by all the directors. An attempt will be made, even in the earliest years of the Cyprus Institute, to obtain a balance between experienced scholars, of established reputation and mature years, and young, recently graduated individuals. Opportunistic appointment of “constellations” of senior and junior faculty, spanning more than one school but with synergistic research agendas, will be pursued in the early years.

The quality of the founding faculty appointments is crucial to the long term success of the Institute. The President and Board of Trustees will establish an international advisory committee to assist them

in appointing the founding provost, directors and faculty. Once the Institute is firmly established, new faculty appointments will be made by multidisciplinary committees, chaired by the President or Provost, with funding arrangements developed on a case by case basis.

There will be strong encouragement for linkages and affiliations with other institutions, with industry and commerce, with public health and other non-government bodies, and, in appropriate cases, with regional or national governments. In all cases it is recognized that safeguards must exist to protect the autonomy of the institution and the intellectual freedom of the individual faculty member. Faculty members will be encouraged to develop entrepreneurial interests consistent with their obligations to the Institute, so that the economic, intellectual and social impact of the Institute can be increased and extended.

Faculty members will be expected to devote themselves full-time to the work and interests of the Institute, except where other arrangements are made and agreed in writing. The salary and benefits program for faculty members will recognize the varying contributions and skills of members of the faculty. Generous benefit arrangements for health care, retirement and other coverage will be available. *Funds for scholarly travel and research will be provided.*

The student body

The very ambitious goals of C.I. are best achieved with a small, highly selective student body. The student body for planning purposes it is assumed that at "maturity" will consist of 2000 undergraduates, 500 graduate and 500 professional students. We differentiate here between, for example, the MBA degree, which we regard as professional, and the Baccalaureate and Ph.D. degrees, which we regard as undergraduate and graduate, respectively.

A director of student admissions will be appointed at an early stage. He/she will be responsible for both local and international recruiting. Students will be admitted, not only on the basis of their scholarly achievements and potential, but also for their potential to play a meaningful role in the larger society. Special emphasis will be given to those who will bring particular talents and contributions to the academic community. *Financial scholarships, loans, and fellowships will be available to those whose families can demonstrate financial need.*

The undergraduate student experience

The Institute will be a learning community, created and supported not only because of the need of students to learn, but also because of the benefit to faculty scholarship, research and artistic achievement.

High and uniform standards of admission will be instituted based on standardized tests and common high school curriculum (such as the rapidly expanding International Baccalaureate program) and personalized screening of the applicants. The entering class will be assumed to have a solid background in science and math education and be fluent in the use of the English and of other major European and regional languages.

Undergraduate students will embark on a four-year baccalaureate degree, the first two years of which will be devoted to general education and preparation for more advanced studies in a specialized area. Particular emphasis will be placed on science teaching with a core of rigorous

training in mathematics, physics, chemistry and biology. *A pattern of goal-oriented undergraduate education will be a unique and distinctive feature of C.I.*

Beyond the two years of general education there will be the selection of a major and the preparation for a professional career. The purpose of the major is to provide intellectual mastery and passion in one chosen area, with an awareness of its assumptions, substance, modes of thought and relationships. In the case of C.I. it is anticipated that virtually all the students will go on to careers in the fields of concentration of the Research Centers. Specialized studies in the humanities and social sciences are not planned, though the courses and other learning opportunities provided for undergraduates in these areas will be of outstanding quality and will draw upon the rich traditions and resources of the region.

The style of learning in the College will be such that traditional undergraduate courses are imaginatively linked to industrial internships, apprenticeships, study abroad, team projects and thesis studies. *The pattern of learning will be based on teamwork, open-ended inquiry, and problem-solving.*

The campus will be small and residentially based. The working assumption is that the undergraduate enrollment will be about 2,000 students at the end of the first 10 years of existence of the College. Growth beyond that level should be carefully considered. This relatively small size gives ample opportunities for interactive learning and comprehensive personal and intellectual development. Students will live on the campus in small learning communities, with some members of the faculty actively participating in residential life and bringing to the student body the opportunities for participation in a true learning community. We envisage that this will be linked, both on the campus and beyond the campus, by means of information technology, to other opportunities for participation in projects, some of them of global reach and for gaining the contribution of other studies. *Much of the education in the human and social sciences will be centered in the small residential learning communities.*

One feature of the Cyprus Institute will be the fact that *each graduate will benefit from having a life-long learning contract with the Institute* granting immediate access to its library resources, campus events and programs, and to a major selection of its advanced professional courses, as well as enrichment courses in the humanities and social sciences.

Graduate Education

It is important that the faculty's own scholarship be assisted a *We anticipate doctoral programs being offered early in the life of the Institute.* Although such nd enriched by the presence of graduate and professional students on the campus. Therefore the masters' degree programs should be set up on a selected basis in areas related to the work of the Centers (e.g., environmental science, applied science and technology, biomedical science). All graduate degrees will be issue-oriented, rather than discipline-based, and developed from the Centers. Degrees will be awarded by the Institute. programs will require critical mass, which it takes time to build, we believe some can be "jump-started". *In certain thematic areas, C.I. will actively explore the possibility of granting joint doctoral degrees with elite US or EU Institutions*

We see the continuing professional development of individuals as being a major contribution that the Institute can make to the region.

Professional Degrees

Professional degrees will be awarded in business and finance. The two-year MBA will be targeted to students who have had some direct personal experience of work in industry or commerce.

Particular emphasis will be placed on the technological basis of growing productivity and innovation and its implications in a globalized economy.

Educational goals at all levels

The goal of all education on the campus will be to provide a creative learning environment, which is student-centered, student-friendly, intellectually stimulating, knowledge-based and socially responsible. The ultimate goal is to produce, not only highly skilled, but also broadly educated, self-motivated graduates, with a thirst for life-long learning, *aware of their personal heritage, sensitive to the traditions of others, but conscious of their civic obligations and ethically responsible in their professional careers.*

Alliances and partnerships

The very ambitious goals of the Institute cannot be achieved by an isolated institution. The institute will cultivate and support the cooperation of schools and colleges with which it will be affiliated and with professions, corporations and institutions with which it will be associated. Traditional disciplines, with their deliberate concentration and abstraction, though powerful engines of scholarship, are not always conducive to the broader interests of professional needs, individual creativity and public service. Though strong disciplinary expertise will continue to be essential, it will benefit from the insights and skills of those from other disciplines and professions. In the same way, partnerships with institutions, agencies and corporations beyond the campus will enrich, supplement and extend the skills of the Institute. *The Institute will be organized from the outset so as to expect and facilitate such partnerships.* In particular, all advanced information and communications capabilities needed to facilitate partnerships at a distance will be deployed.

GOVERNANCE, LEADERSHIP AND MANAGEMENT

The Cyprus Institute as envisaged demands exceptional skills on the part of those who are charged with its governance and leadership: a dedicated, knowledgeable and committed board of trustees and a strong president who will recruit an outstanding faculty and student body.

Trusteeship

The primary obligation of the board of trustees is to support and affirm the vision and mission of the Institute, to recruit, appoint, support and monitor the president, to defend the essential values of integrity, excellence, openness, civility, freedom, and responsibility, to promote the autonomy and responsible governance of the Institute and provide the resources required for the effective achievement of its stated goals. It is the supreme body at which all appeals and decisions are heard, though in practice it delegates many of its responsibilities to others, sharing a broad pattern of governance with the president and with members of the faculty.

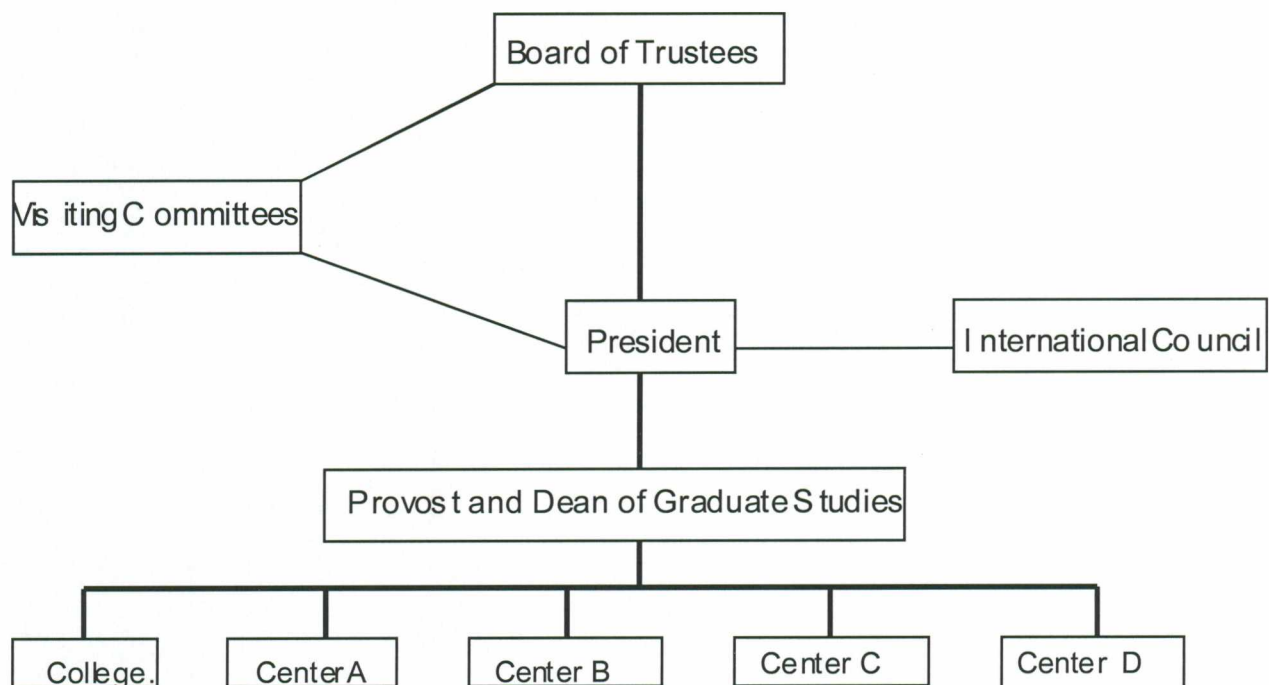
The board of C.I. in order to be effective in both representation and institutional development will need to include some 30 to 50 members. The membership will be international in its scope, multicultural in its backgrounds and commitments and broadly representative in the range of professional skills and public responsibilities. The board will be chaired by an outstanding individual and he or she will be supported by two or more vice chairs. The leadership qualities of these individuals is essential to the health of the Institute and the quality of commitment and skill they bring will largely determine the quality of C.I. in the early years of its history. They will be individuals of wide experience, of impeccable integrity and of commitment to the wellbeing of the institution.

The board will be served by having a small executive committee that will meet at monthly intervals. The board will meet three or four times a year. The board will have its own secretary and legal counsel who will work within the office of the president.

International Council

The Institute will establish a body consisting of 100-250 members, who will assist C.I. in its various endeavors. This body will be international in its membership, generous in its support and influential in its contacts.

ORGANIZATION



The President

The president is the essential link between the governing board and the day-to-day life and membership of the institution. The appointment of the first president is of critical importance to the future health and success of the Institute. The president must be an experienced and effective leader who is wholly committed to the objectives and concerns of the Cyprus Institute. The first president will be recruited with the expectation that he or she will spend a minimum of 5 years in office, thus laying the foundations on which the institution will subsequently develop and for establishing a style of governance and scholarship for which the Institute will be known. The president should not only have the full confidence of the board, but should also be sufficiently established as a scholar and educational leader to enjoy the confidence of the faculty, students, the general public and the international educational, scientific and technological leaders.

Faculty Governance

The Institute shall have a strong participatory system of governance, so that the role and responsibility of the faculty can be appropriately recognized. This is essential so that C.I. is to respect and pursue the scholarly values and professional obligations on which its work will depend.

Effective structures will be developed to allow widespread and responsible participation in matters of faculty governance and the nature and extent of that governance will be carefully stated and adequately defined, both within the institution as a whole and in the component college and research centers.

Institutional Partnerships

It is hoped that the Cyprus Institute will be known partly by the partnerships it establishes, not only with other academic institutions, but also with other scholarly and professional societies, companies, non-government organizations and, as appropriate, regional and national governmental groups.

Needless to say, more traditional partnerships with elite universities in Europe, America and perhaps other parts of the world will also be very important, especially in the early years of C.I. when it is building its world class reputation.

Internal Partnerships

Internal partnerships are the normal pattern of doing business. *All undergraduate students, for example, will be required to have both a major and a minor in distinct programs of study. They will be required to write a thesis.*

Corporate partnerships

Partnerships with industry will be a significant part of the work of C.I. The possibility of developing an incubator and research park adjacent to the campus will be explored in the early stages of the development of the Institute.

THE ECONOMICS OF THE INSTITUTE

In assessing the viability of the Cyprus Institute, as an educational institution it is important to start with a general notion of the Institute's configuration and requirements at maturity. However, the path to maturity is most critical; it is the subject of intense development which will hopefully lead to its definition in the next few months. Of course, many of the assumptions made here may evolve upon further discussion.

The following characteristics of C.I. at full development (after 2010) have been assumed, as a basis for the developmental plan:

Students	2000	undergraduates
	500	research graduate students
	500	professional degree students (MBA, etc.)
Faculty	200	including 150 in science & technology (including biomedical)
Research staff	100	
Administrators	20	
Support staff	150	

With this base, it is estimated that the capital investment needed will in excess of 500 M (in Millions of Euros) and that the annual operating expenses in excess of 75M.

The assumed standard sources of income (tuition etc.) will be supplemented by fund-raising campaigns. In addition, the faculty will also attract external research grants that will cover the costs of research (including most of the research staff). Indirect costs (administrative and facility) will contribute to maintaining and, as appropriate, renovating the research space. The faculty will be encouraged to increase its salary by a substantial amount (typically three month summer salary drawn from research grants, or summer courses and by consulting which will be restricted to one day per week).

The economics and the viability of the Cyprus Institute as a Research Institution at asymptotic state is equally important. While the above scheme provides for a core of a hundred researchers it is to be understood that additional staff (at least of similar volume) will be supported by the competitive research grants, which customarily research universities institutions attract.

Endowment

A most important financial resource and a tool that offers an institution of higher learning precious degrees of freedom is its endowment. It allows the financing of new initiatives, construction funds for new infrastructure, seed funds to attract new faculty, scholarship and fellowship funds for worthy but financially needy students. Endowment building is one of the key concerns of the top administration and the Board and appropriate measures need to be taken in the development of the new Institution to allow for the rapid accumulation of such funds. It is worth pointing out that the endowment characterizing the top Universities in the US is in the range of 0.5 to 2.5 Million dollars per student.

DEVELOPMENT STRATEGY and TIMETABLE

The following four distinct phases are identified in order to plan the development of the Institute.

<u>Project Phase</u>	<u>Timeframe</u>
Research/Feasibility Study Phase	Aug/2001 - Dec/2003
Start-up/Development Phase	Jun/2003 - Jun/2005
Construction Phase	Jun/2004- Dec/2009
Stage 1 - Initial/Partial Operation Phase	Jan/2006 - Dec/2009
Stage 2 - Full Operation Phase	Jan/2010 onwards

The detailed activities of the above project phases are outlined below:

Research/Feasibility Study Phase

This phase, which is now in its second year and at its concluding stage, has been totally funded by the Cyprus Development Bank. Its primary objective is the feasibility and viability of establishing a premier, internationally competitive research university in Cyprus. Most of the material presented in this document derives from the preliminary findings of this study.

Startup/Development Phase

The startup/development phase commences immediately after the completion of the feasibility study and covers the timeframe prior to the commencement of the project construction activities. The duration of this phase is estimated at around two years. The following activities will be carried out during 2003; substantial activity will follow in 2004 overlapping the construction phase.

- Establishment of the Institute's Board of Governance.
- Establishment of an interim management team.
- Preparation of an overall Master Plan and business plans for each Center.
- Private donor research and identification of EU sources of funds.
- Organization of a series of events and meetings with leading academics.
- Recruitment of founding Institute officials and faculty.

Construction Phase

This phase is expected to commence early 2004 and to take around six years to be completed.

Stage 1 - Initial/Partial Operation Phase

This phase is expected to commence early 2006. The assumption is that the Institute will initially operate the College and a few Centers. It is expected to take at least four years until the Institute is in a full operational mode.

Stage 2 - Full Operation Phase

The overall objective is for Institute to reach a full operational stage by 2010.

STATUS AND ACHIEVEMENTS

The planning of the Cyprus Institute is now at an advanced stage. The planning and coordination has been up to now carried out by the Coordinating Committee consisting in addition to the author, who has the overall coordination of the group, of four leading Academics: Prof. E. J. Moniz (of MIT and former US undersecretary of Energy), G. Ourisson (Founding President of the University of Strasbourg), F. Rhodes (President Emeritus of Cornell) and H. Schopper (Former DG of CERN) and of the former CEO of CDB J. Ioannides (and initiator of the project), E. Nikolaidou, A. Stamatis of CDB. The founding Board of Trustees is now being assembled and is expected to launch the Institute this summer. Included among the leading academics are involved in the project and have contributed to its formation and current status are:

Erich Bloch (IBM & f. Dir. of NSF), George Constantinides (U. Chicago), Richard Cooper (Harvard and former Under secretary of State), Paul Crutzen (Mainz, Nobel Laureate), Hubert Curien (President of the French Academy of Sciences), Claudio Dematte (Bocconi U.), Victor C. Jongeneel (Swiss Institute of Bioinformatics, CH), Joshua Jortner (f. President of Israeli Academy), Jose Marciano Gago (former minister of Research, Portugal), Elias Houstis (Purdue Univ. USA), Fotis Kafatos (DG of EMBL, Heidelberg), Walid Khadduri (M. E. Economic Survey, Cyprus), Angeliki Laiou (Harvard), Heather Lechtman (MIT), Jean-Pierre Mohen (Director, CRRMF France), John W. Negele (MIT), Frank Press (F. President of US Academy of Sciences), Jeffrey Sachs (Director of the Earth Institute Columbia), Maxime Schwartz (Former DG Institut Pasteur), Jorma Routti (f. EU DG of Research, Finland), Constantine Stephanis (U. of Athens, Minister of Health, Greece), Dennis Tsichritsis (U. of Geneva), Harold Varmus (Nobel Laureate, President and CEO of Sloan Kettering Memorial), Robert White (F. President of the US Academy of Engineering), Joe B. Wyatt (Vanderbilt, Chancellor Emeritus).

The very ambitious goals, both academic and economic, set for the Cyprus Institute could have been judged unrealistic, if it was not for the following two major achievements:

- It captured the imagination of an international group of scholars that have a track record of academic excellence (see partial list above) and who have worked, in most case defining the project or some of its components.
- It captured the imagination of Cypriot Government, policy makers and the Cyprus society at large. This culminated with the donation of suitable land to host the campus of the new institution.

These two major achievements is necessary precondition in order to pursue the project further without compromising its extraordinary goals with any reasonable hope for success.

ACKNOWLEDGEMENTS

The ideas and work reported here is the result of the contribution of many people and scientists from the Cypriot and international community, most of them listed above. The contributions of the colleagues of the Coordinating Committee, cannot be overstated. I am particularly indebted to E.J. Moniz who in addition to his pivotal role in the Coordinating Committee offered particularly valuable input to this manuscript. Substantial input has been provided by A. Mantis and E. Nikolaidou of CDB and Th. Panayiotou of Harvard and CCIM. The visionary leadership of the CDB under the stewardship of John Ioannides and its president Andreas Mouskos is gratefully acknowledged

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