

NATIONAL TECHNICAL UNIVERSITY OF ATHENS

COMMITTEE FOR RESEARCH



REPORT OF RESEARCH ACTIVITIES

1993

**Prof. T. Loukakis
Dr. A. Xenidis
Dr. K. Komnitsas
Mrs. P. Alamanou**

**ATHENS
SEPTEMBER 1994**

SPONSORED RESEARCH AT NTUA IN 1993

The National Technical University of Athens (N.T.U.A) issued recently the yearly "Report of Research Activities" containing the titles and statistical data pertaining to the sponsored research projects and the provision of technological services for 1993.

As it has been mentioned in last year's "Report of Research Activities", the blossoming of sponsored research in Greek Universities and in particular in N.T.U.A was due to the following pieces of legislation. The Presidential Decree 432/81, which permitted the economic management of sponsored research outside the regulations of the public accounting system, the law-framework 1268/82 which declared research as equally important to education and the recent law 2083/92, which facilitated further university research activities.

N.T.U.A undertakes with increasing frequency scientific and research projects financed by the General Secretariat of Research and Technology, Ministries, the Armed Forces, Public Corporations, Prefectures, Municipalities and the private sector from Greece and abroad. Concerning competitive research projects financed by the E.U, N.T.U.A has a very satisfactory and with increasing magnitude participation, with a cash inflow for 1993 of 7.1 million ECU.

The available funds of the "Special Account for Research" from the aforementioned activities are reinvested in a number of activities which are useful for the further development of the University. The most important of these activities include assistantships to doctoral

candidates, upgrading of the computer centre, installation of a new ISDN network for the Zografos campus, finance of research infrastructure and basic research, development of the technological park at Lavrion, cooperation with countries in the Mediterranean region, the Balkans and the new independent states of the former Soviet Union and many others.

In the 188 pages of the research catalogue, the titles and the basic characteristics of all research projects, carried out at N.T.U.A in 1993 are listed. In addition, all other activities of N.T.U.A, which were enabled by the available funds are presented.

The work done goes beyond basic, applied and technological research and development. N.T.U.A operates dozens of laboratories, which provide expert advice, tests and measurements and all services in general, within the sphere of its technological competence, which can be useful for the development of the country.

In addition to sponsored research, academic research at N.T.U.A is carried out using the means which the University provides to its academic staff free of charge. Such means include use of the laboratories and the computing facilities, assistance by technicians, secretaries and other auxiliary personnel, consumables and printing facilities. Moreover, under the supervision of the faculty members, the 1200 students of N.T.U.A, who complete every year the five year curriculum, spend six months working on their Diploma Thesis.

Furthermore, there are currently 700 doctoral candidates at N.T.U.A, compared to the 6000 regular students.

Sponsored research is being carried out on topics and with specifications provided or approved by an external sponsor, whereas the topics of academic research are chosen freely by the faculty members, within the scientific areas of their Departments or Divisions.

The University is divided in nine academic departments, eight being for the engineering sciences, including architecture and one for the general sciences. The nine departments are divided in 33 divisions, which operate 99 laboratories.

The staff of the academic departments include: 555 members of the Teaching and Research Personnel (T.P.R), 181 members of Scientific Teaching Personnel (S.T.P) and 265 members of Administrative and Technical Personnel (A.T.P). In addition, nine Special Instructors are employed. Finally, the central administration employs 319 people. Thus, the total number of University employees is 1329.

N.T.U.A has two campuses. The old one is in downtown Athens, next to the archeological Museum and the new one, with a land area of 96 hectares and containing all the modern installations, in the Athens suburb of Zografos.

The cash inflows in the "*Special Account for Research*" of the NTUA from the conduct of research projects and the provision of consulting and technological services is shown per year and for each main source of funding in Chart 1. The tremendous rise of sponsored research at NTUA

the past 5 years has brought the research budget for 1993 to 4.2 billion GRD, 0.5 billion GRD more than 1992, a sum comparable to the total (from public funds) budget of the University, which is approximately 7 billion GRD.

The cash inflows, expressed in level of funding and number of projects for each source of funding are shown for 1993 in charts 2 and 3. It can be seen from these charts that the sources of funding cover a wide spectrum of both the public and the private sector. It is remarkable that whereas the majority of projects is sponsored by national sources, the greater amount of funding comes from the E.U.

The distribution of research projects in each academic department, in level of funding and number of projects, is shown in charts 4 and 5. From these charts it is obvious that a satisfactory distribution of projects exists for all engineering departments and that the Departments of Electrical Engineering and Computer Science, Civil and Mechanical Engineering are sponsored to a higher degree.

The same as above distribution for the 32 divisions and the Department of Naval Architecture and Marine Engineering is shown in charts 6 and 7, whereas the budgets for the new projects commenced in 1993 are shown in chart 8. The large number of projects for the Department of Naval Architecture and Marine Engineering is mainly attributed to the provision of technological services to the industry, which this relatively small Department has developed to a great extent. Regarding the level of funding, the divisions of Computer Engineering of the Department of Electrical Eng. and Computer Science, Fluid Mechanics of the

Department of Mechanical Engineering and Water Resources of the Department of Civil Engineering are leading the way.

The number of personnel employed for the needs of the sponsored research projects and the total remuneration throughout the period 1982-1993 are shown in charts 9 and 10. This personnel consists of University employees, who receive additional income for their services, as well as external (mostly young) researchers and graduate (mostly doctoral candidates) students. The several categories of this personnel and the distribution of their remuneration are shown in charts 11 and 12. The average annual income per research worker is about 2700 ECU and represents a substantial help for graduate students and a modest, but not insignificant, increase in the salary of academic personnel, whose wages are much lower than those of similar personnel in the other EU member states or Cyprus. It is interesting to notice that the percentage of the academic personnel employed for the needs of sponsored research has increased from 29% in 1992 to 40% in 1993. Finally, in chart 13, the total remuneration of the several categories of the personnel is compared to the other types of expenses, including those associated with the Institute of Communications

and Computer Systems (I.C.C.S), and the available funds of the "*Special Account of Research*". From this chart it is concluded that the involvement of the academic personnel in the conduct of research projects, with a total remuneration of 313 million GRD, results in a surplus-value of 1200%.

From the above it is obvious that N.T.U.A is being transformed to a new kind of "*Research Technical University*". The variety of topics of the research projects is really great and underlines the ability of the University to conduct not only basic research but to get directly involved with the problems of the society, which can be treated by applied and/or technological research and/or provision of technological services.

It has to be emphasized as well that the multiple use of the University facilities (basic research, applied and technological research, development and provision of services) is both very cost-effective and beneficial for the students of the Technical University.

Unfortunately, the list of research projects is mainly in Greek, but whoever wishes to learn more about the research activities or the technological services of N.T.U.A can do so by contacting:

The Chairman
Committee for Research
National Technical University of
Athens
9 Heron Polytechniou str.
157 80 Zografos, Greece
tel. +30-1-7728119,
fax:+30-1-7799632

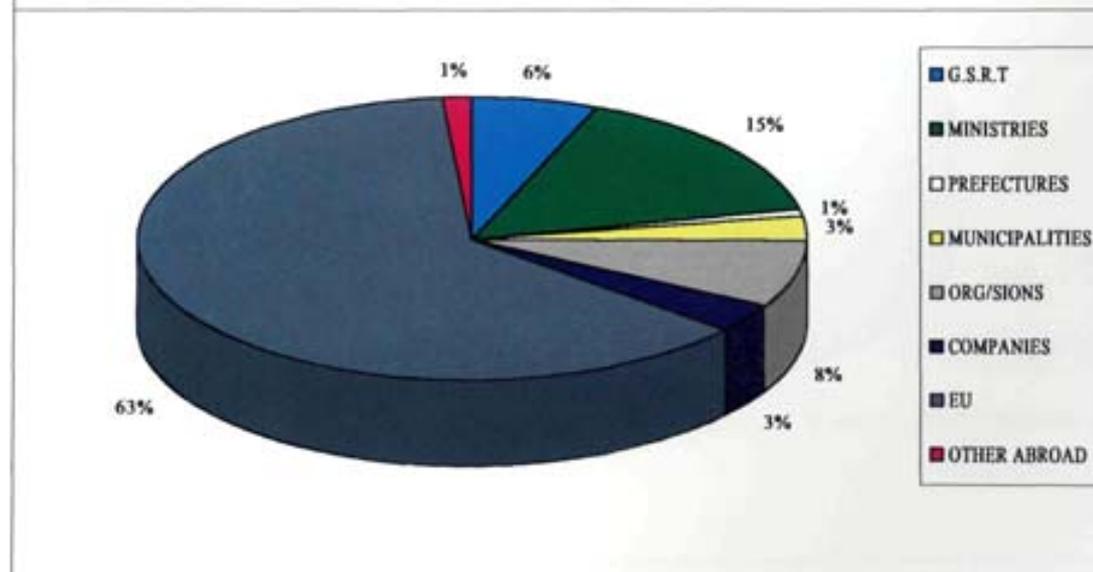
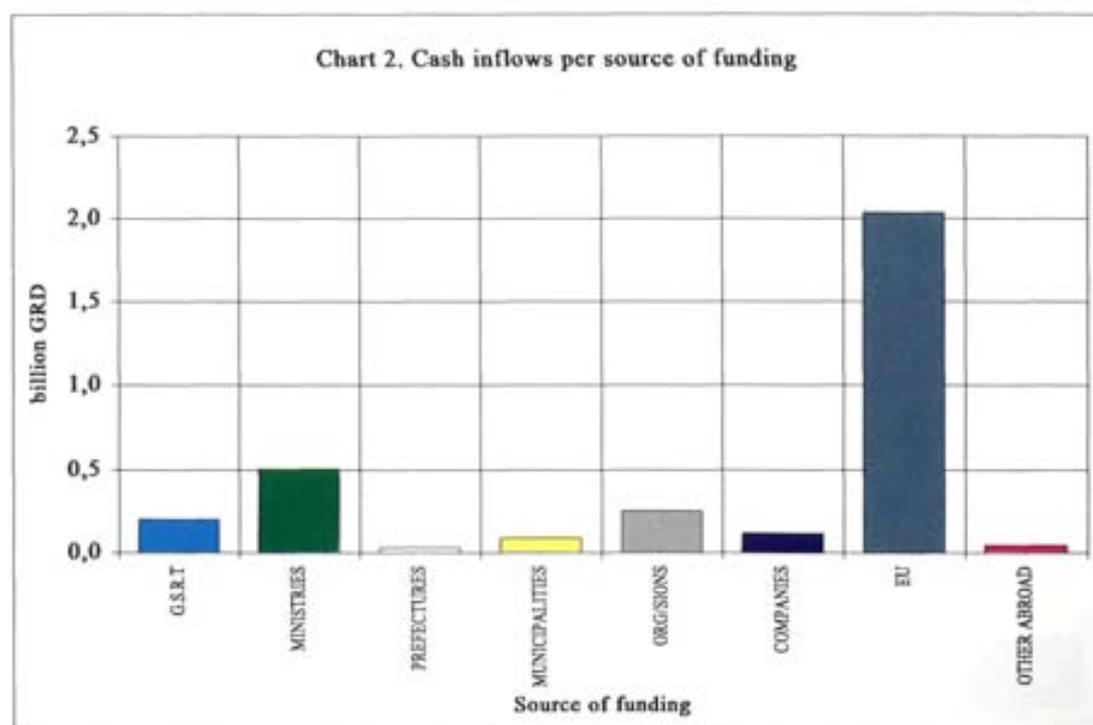
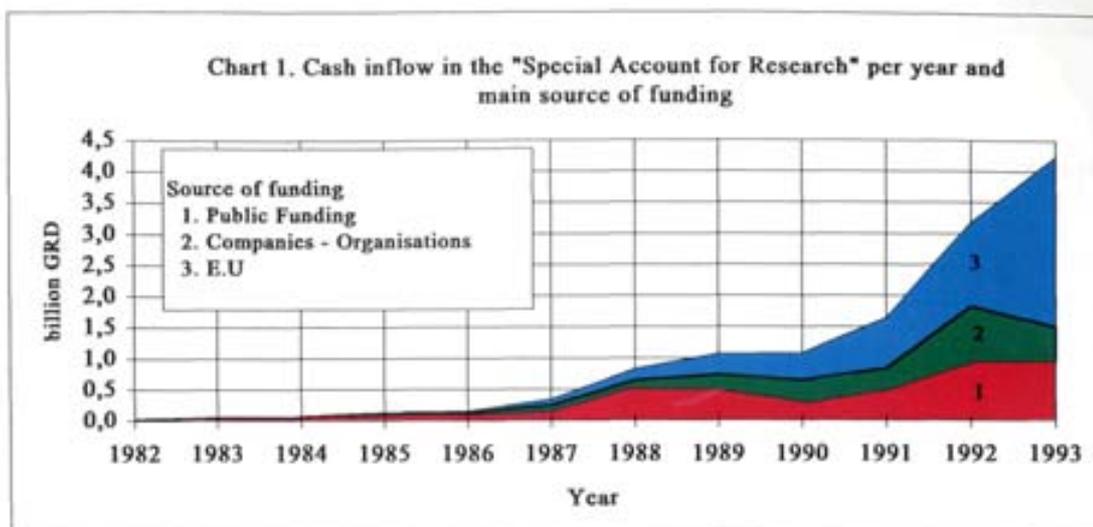
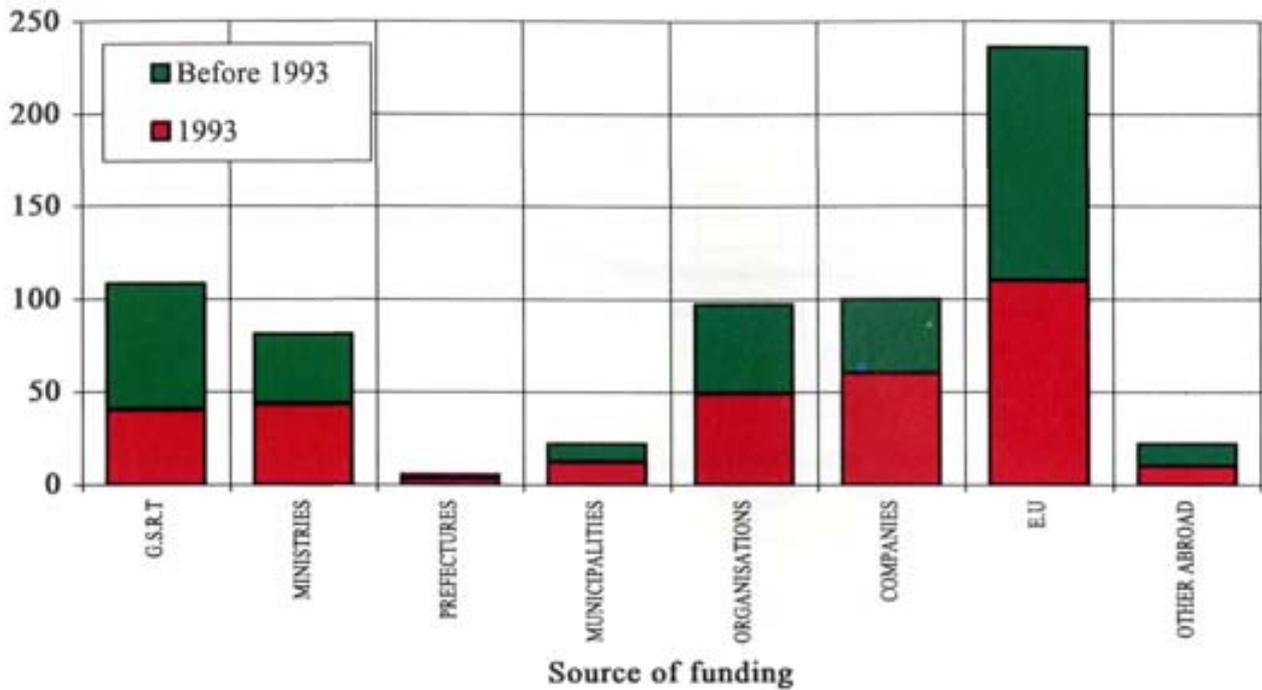


Chart 3. Number of research projects per source of funding



Number of new research projects per source of funding

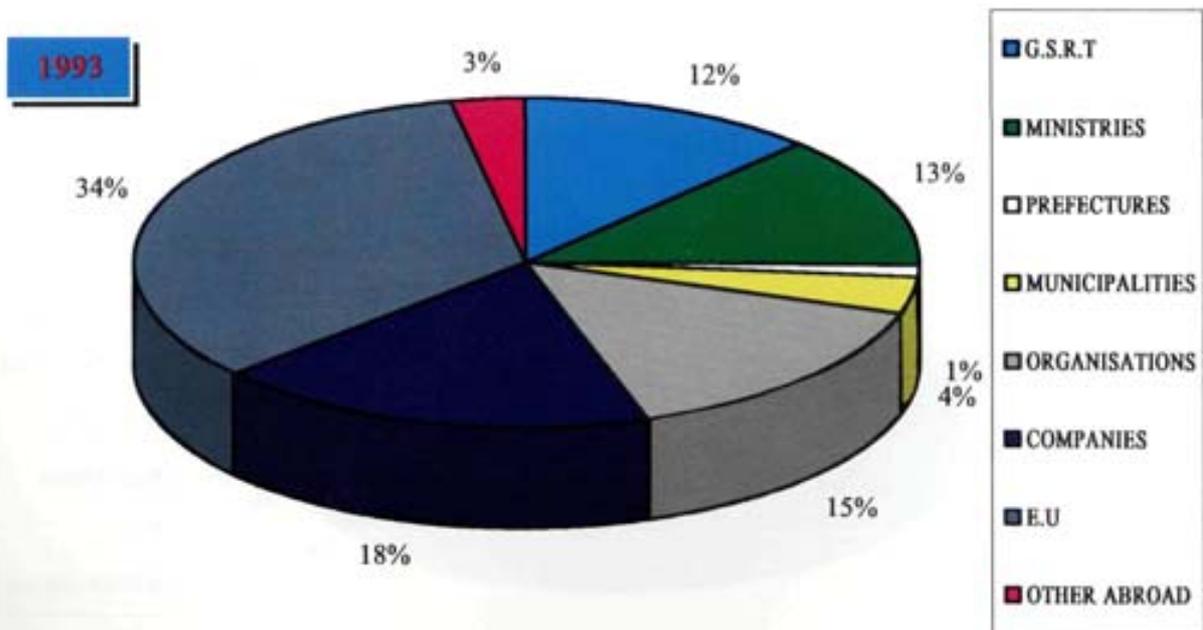


Chart 4. Cash inflows in each Department

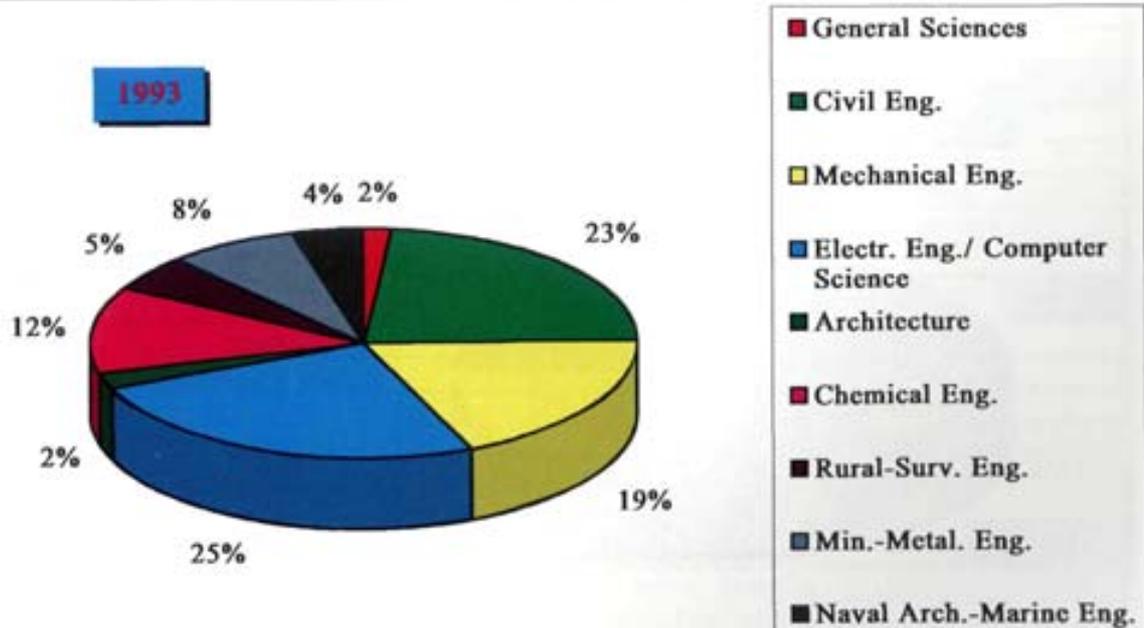
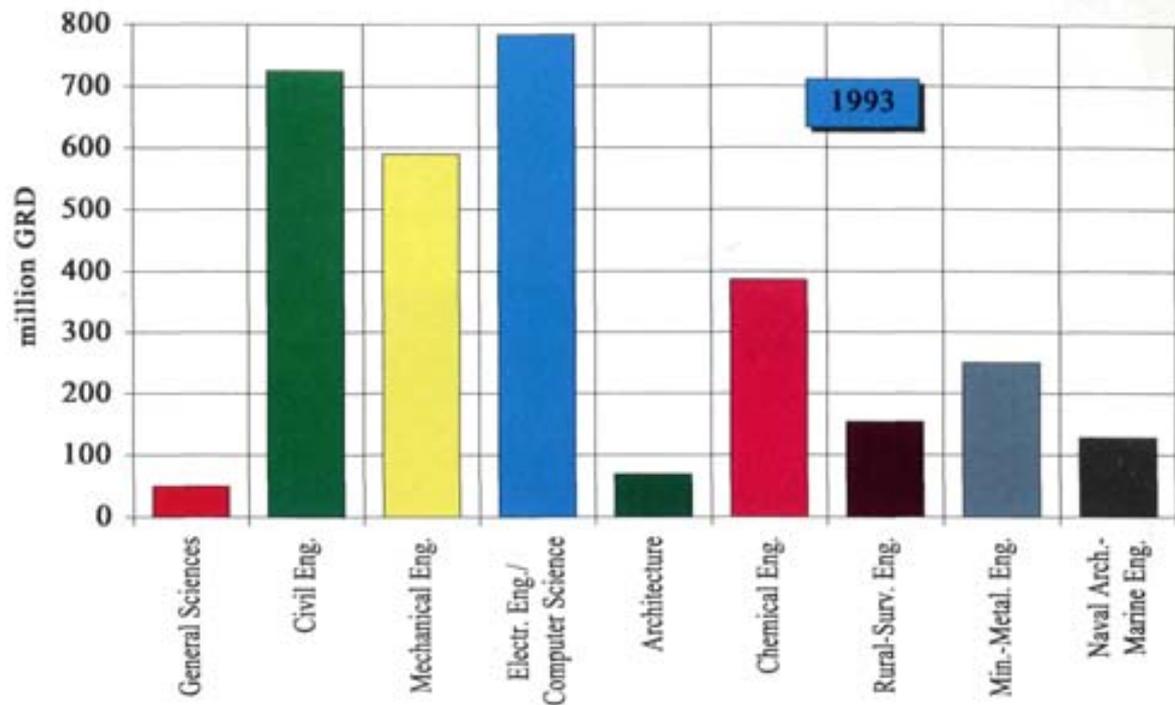
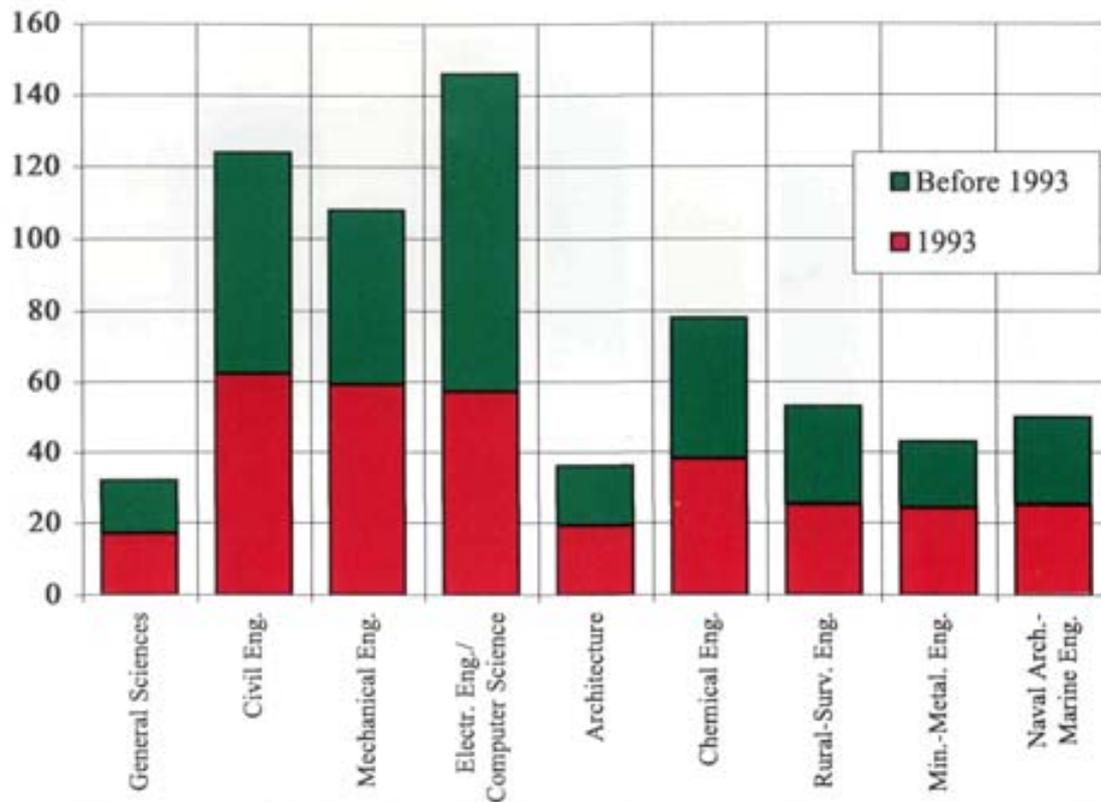


Chart 5. Number of research projects in each Department



Number of new research projects in each Department

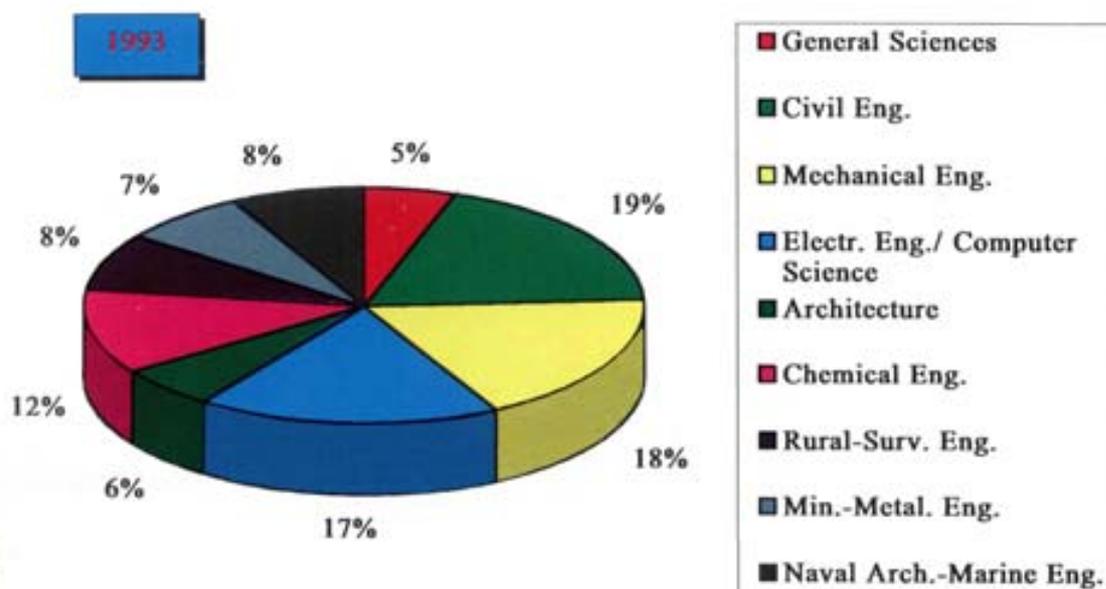
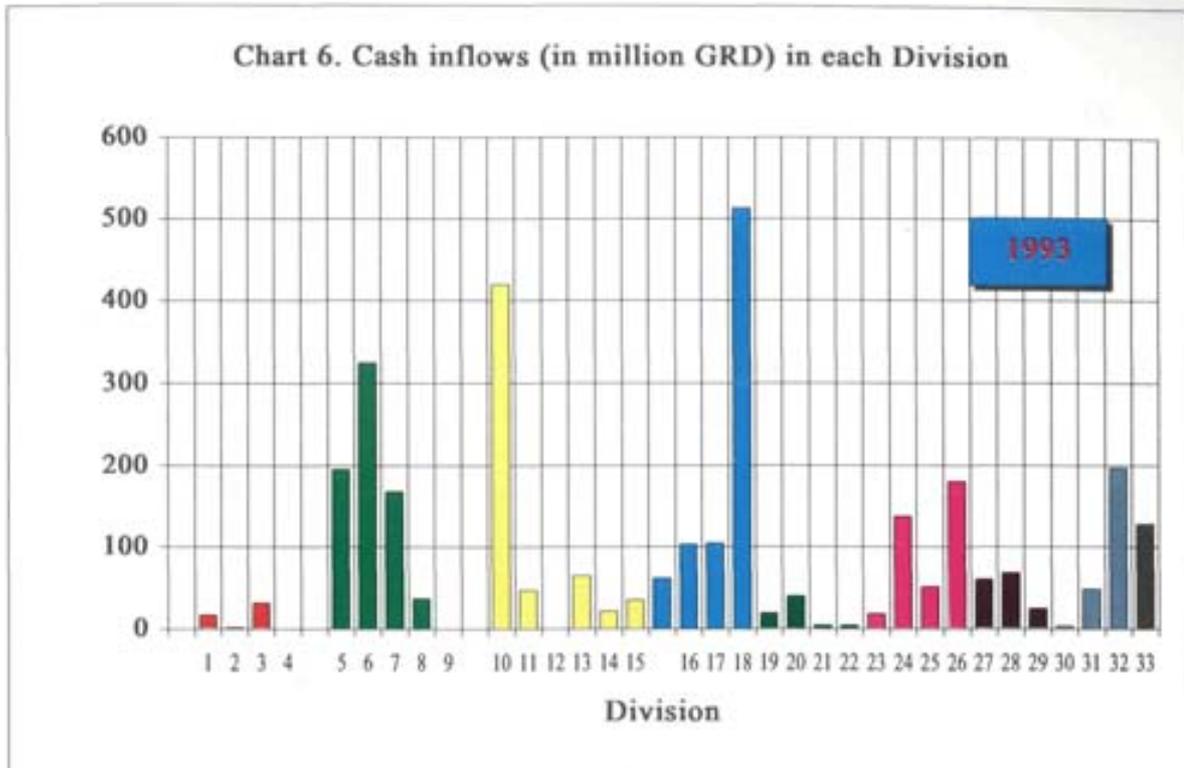


Chart 6. Cash inflows (in million GRD) in each Division



GENERAL SCIENCES	ARCHITECTURE
1. Physics	19. Architectural Design
2. Mathematics	20. City and Regional Planning
3. Mechanics	21. Arch. Language, Commun., Design
4. Humanistic / Social Sciences	22. Architectural Technology
CIVIL. ENG.	CHEMICAL ENG.
5. Structural Eng.	23. Chemical Sciences
6. Water Resources - Hydraulic Eng.	24. Process Analysis and Plant Design
7. Transportation - Planning Eng.	25. Material Science and Engineering
8. Geotechnical	26. Synth./Develop. of Indus. Processes
9. Construction - Project Management	
MECHAN. ENG.	RURAL-SURV. ENG.
10. Fluid Mechanics	27. Topography
11. Thermal Eng.	28. Geography - Regional Planning
12. Nuclear Technology	29. Rural Technology - Development
13. Mechanical Design - Systems Control	
14. Manufacturing Technology	
15. Industr. Manag.-Operational Research	
ELECTR. ENG. -COMPUTER. SCI.	MIN. - MET. ENG.
16. Electrosience	30. Geological Sciences
17. Power Eng.	31. Mining Engineering
18. Computer Eng.	32. Metallurgy and Materials Technology
	NAVAL. ARCH.- MARINE ENG.
	33. Naval Architecture - Marine Eng.

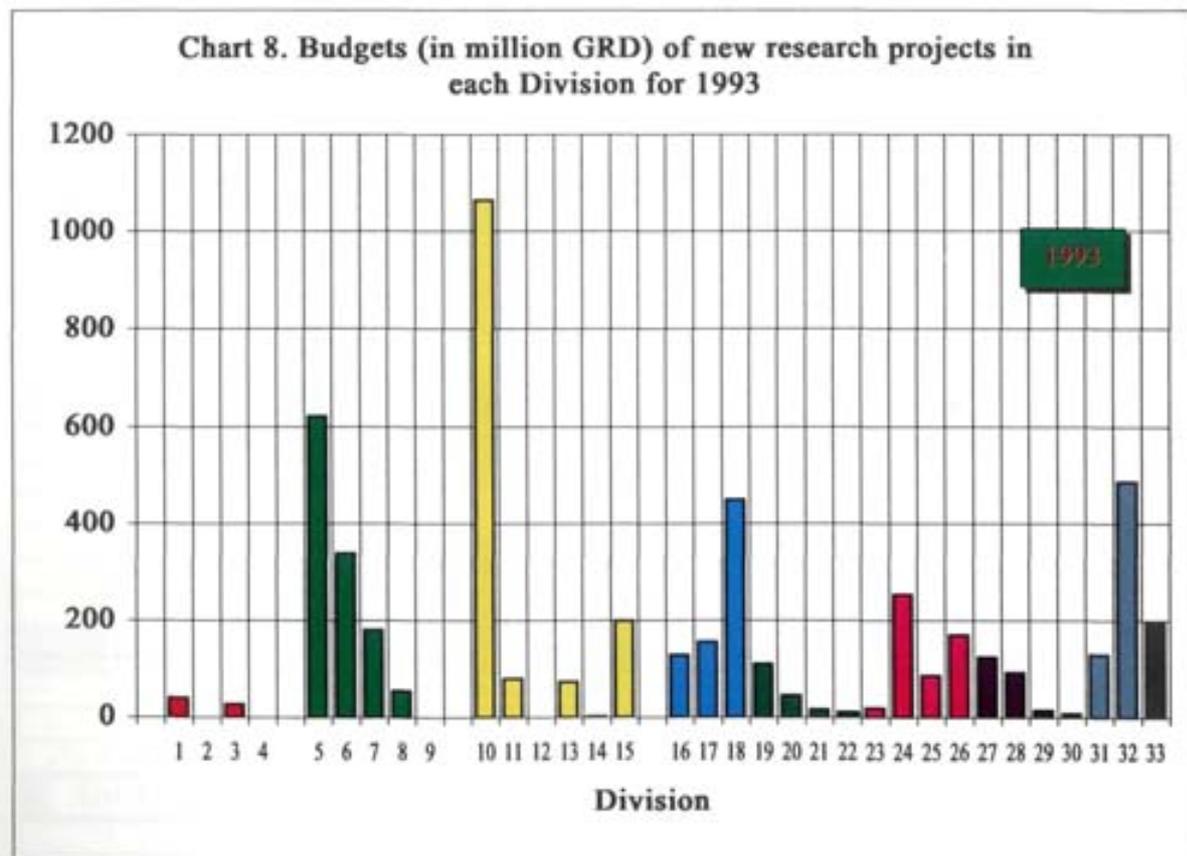
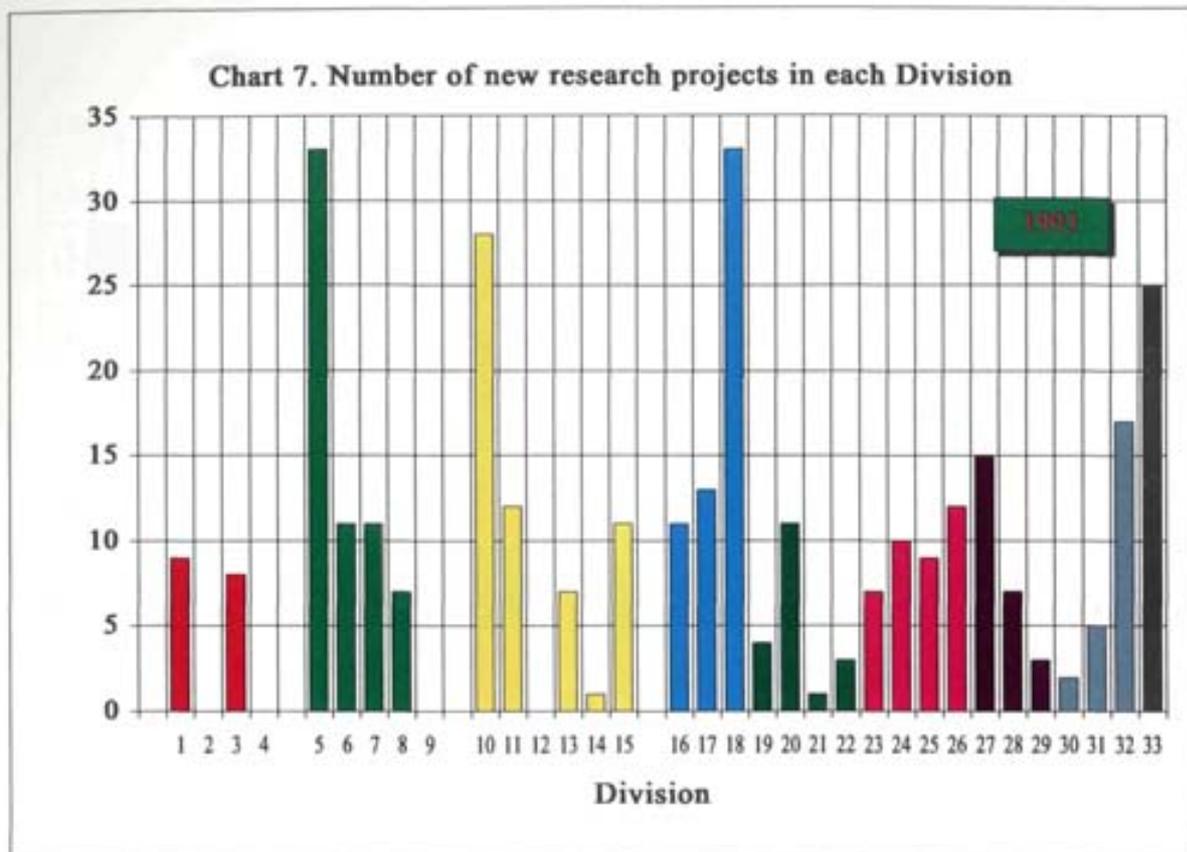


Chart 9. Number of personnel employed per year

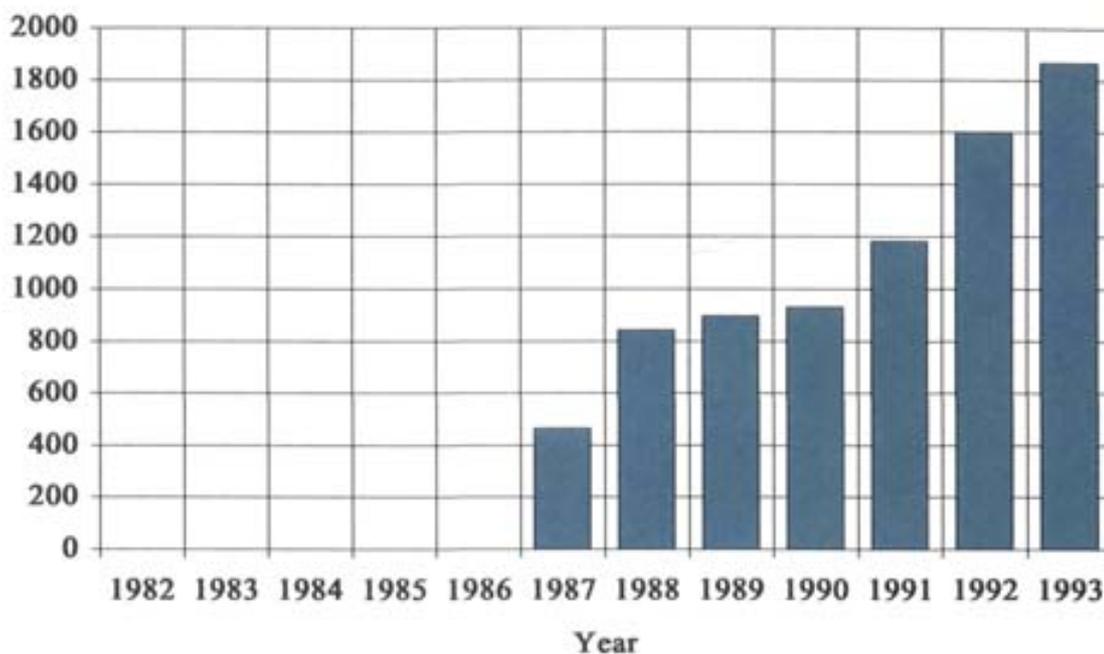


Chart 10. Total remuneration (in million GRD) per year

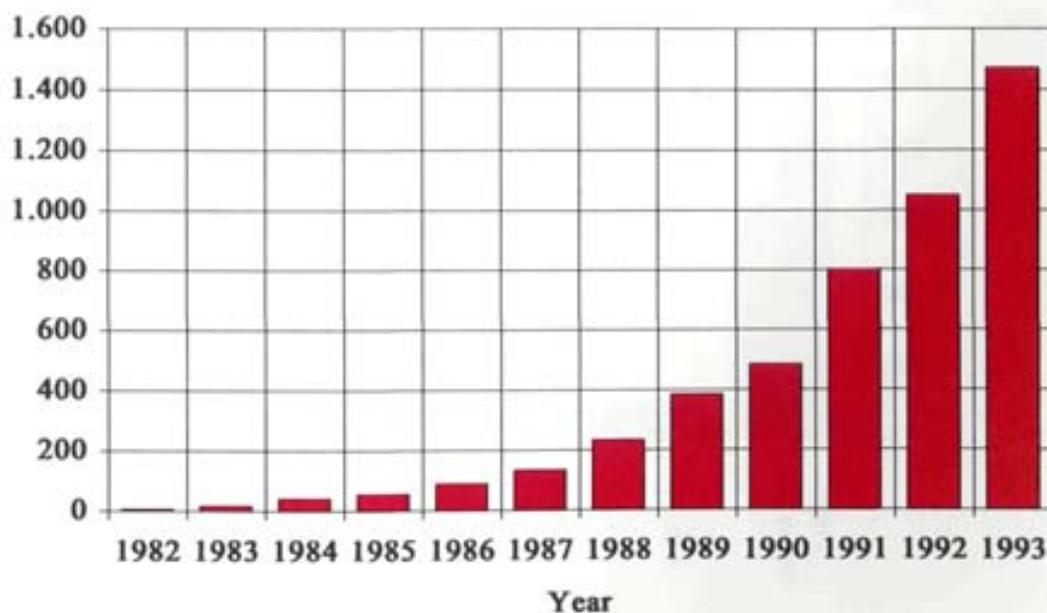


Chart 11. Number and categories of personnel employed in research projects

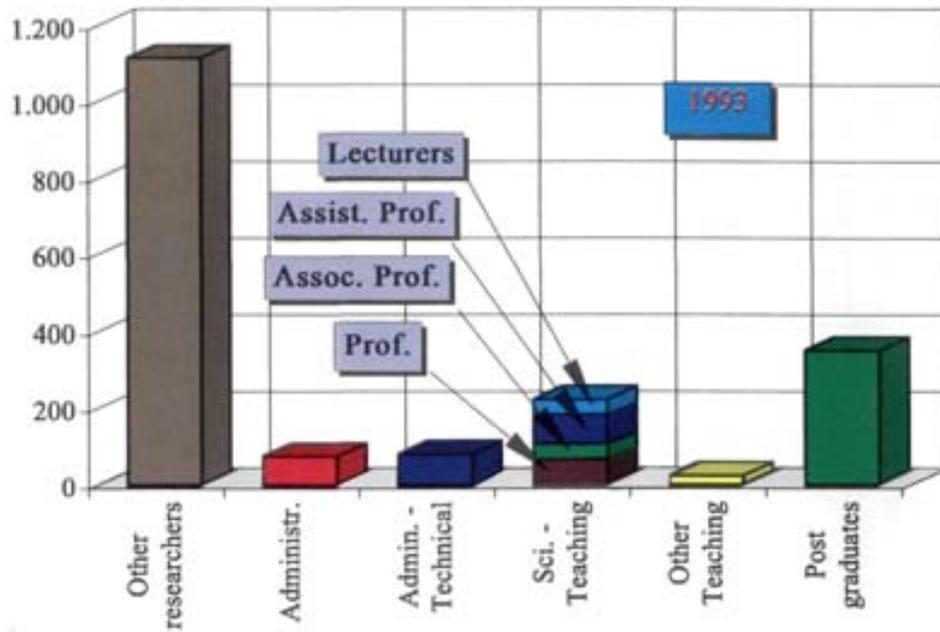


Chart 12. Distribution of remuneration (in million GRD) for each category

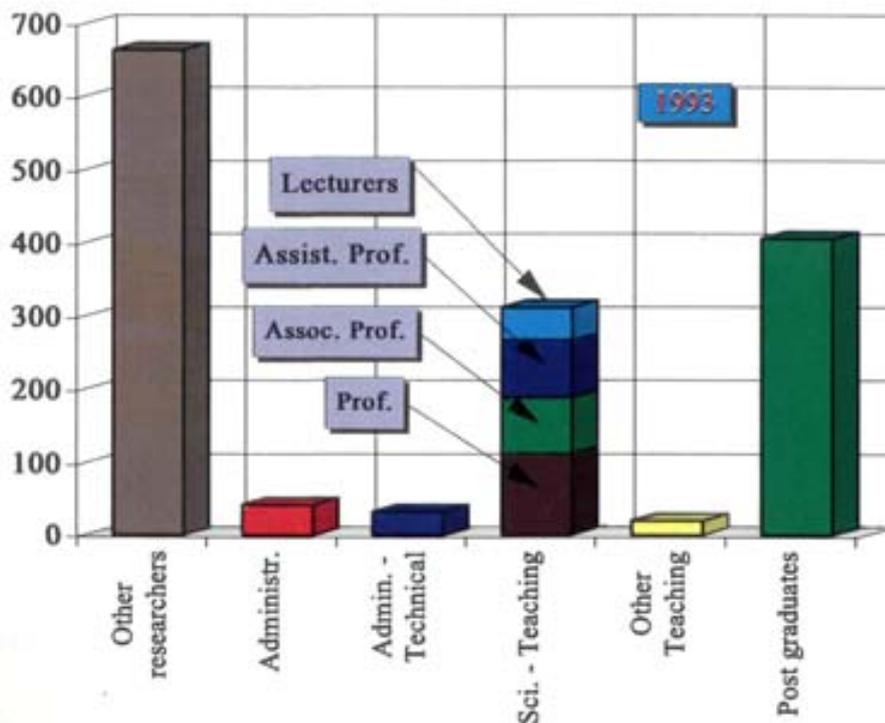


Chart 13. Expenses / Available Funds (in million GRD)

