National Documentation Centre

EKT
ΕΘΝΙΚΟ ΚΕΝΤΡΟ ΤΕΚΜΗΡΙΩΣΗΣ
NATIONAL DOCUMENTATION CENTRE

A Bibliometric Analysis of Greek Scientific Publications 1993-2008

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3rd Qualitative and Quantitative Methods in Libraries International Conference

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Scope of the presentation

Overview of the bibliometric analysis realized by National Documentation Centre (EKT) regarding Greek scientific publications for the period 1993-2008:

- Greece's position in the international research environment
- main categories of organisations participating in the production of scientific publications,
- the scientific fields in which Greek research teams are active and excel,
- the level of national and international collaboration developed.

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National Documentation Centre: the National Facility for scientific and technological content collection, aggregation, organisation and distribution

EKT's e-infrastructure

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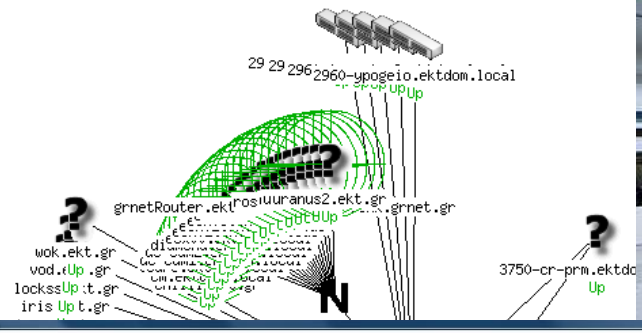
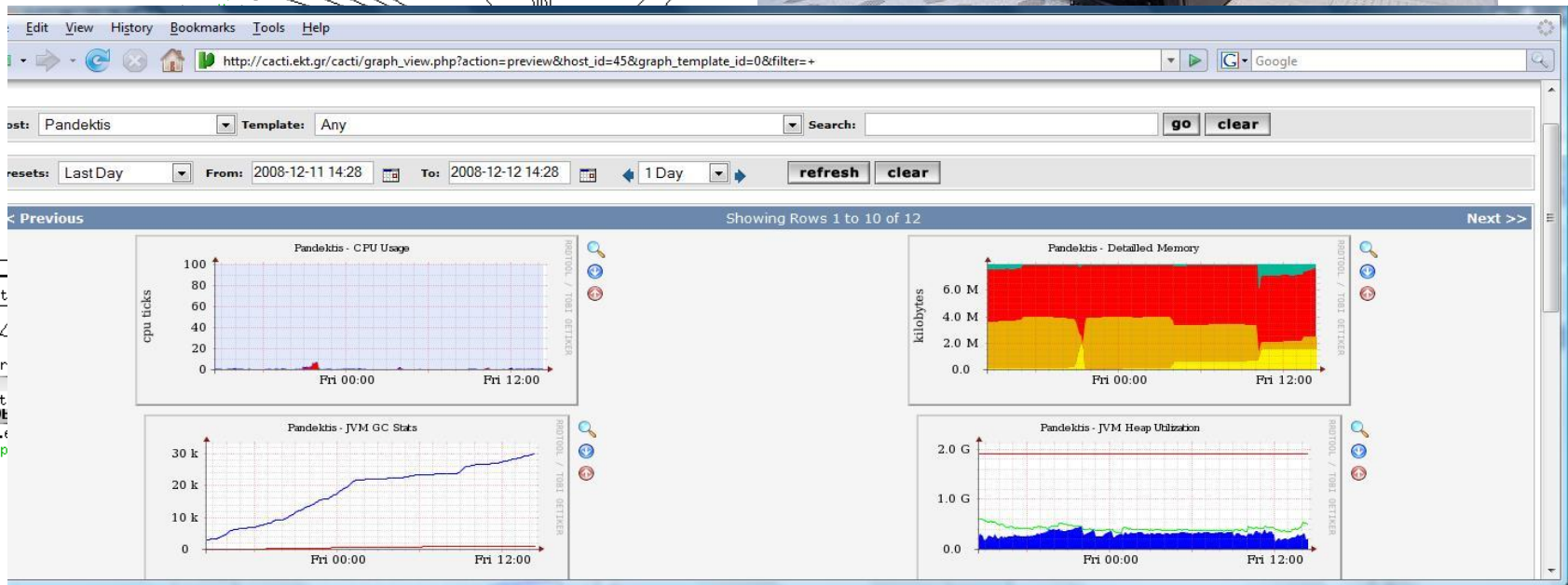
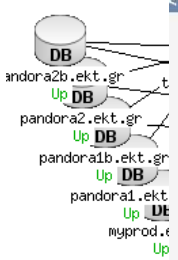






Methodological notes

- Data was drawn from the National Science Indicators [NSI] and the National Citation Report Greece [NCR-Greece] databases of Thomson Reuters for the period 1993-2008.
- A software was developed by EKT specifically for the statistical processing of the data and the calculations of the bibliometric indicators.
- Calculations were based on those types of papers that contain substantive scientific information, namely, articles, research notes and reviews.
- Normalization is always applied when assessing the impact of publications to smooth out differences in citation practices in various scientific fields.
- The 'whole counting' technique was adopted, e.g. each co authored publication is counted once for each organisation

A most challenging issue: the assignment of Greek publications to relevant Greek organisations

- Varying methods of naming organisations and making data entries and almost general use of abbreviations and abridgements. Some typical cases are:
  - Incorrect typing or spelling *[eg Aristetelio Univ Thessaloniki].*
  - Inconsistent use of abbreviations, abridgements and initialing *[eg Polyclin and Polycliniki, NTUA and Natl Tech Uni Athens].*
  - Variability of transliteration of Greek names into Latin characters *[eg Natl & Capodistrian Univ Athens and Natl & Kapodistrian Univ Athens]*
  - Permutation of words *[eg Natl Tech Univ Athens and Athens Natl Tech univ].*
  - Use of 'Greeklish' instead of foreign language names *[eg Ethniko Metsovio Polytech and Nat Tech Univ Athens].*
- Use of the name of the smaller unit *[eg institute, department , laboratory]* with or without reference to the parent organisation *[eg Dept Chem Eng].*
- Use of incomplete names which do not identify the organisation in one way *[eg Tech Educ Inst, Gen Hosp, Uni Hosp].*
- Existence of postal address only, without a name reference.

A revised version of the database was produced

Steps of the process:

I. Alternative names for each organisation, as they were recorded from previous activities of EKT, were accumulated, recorded in a suitable way for automatic processing and elaborated with new details.

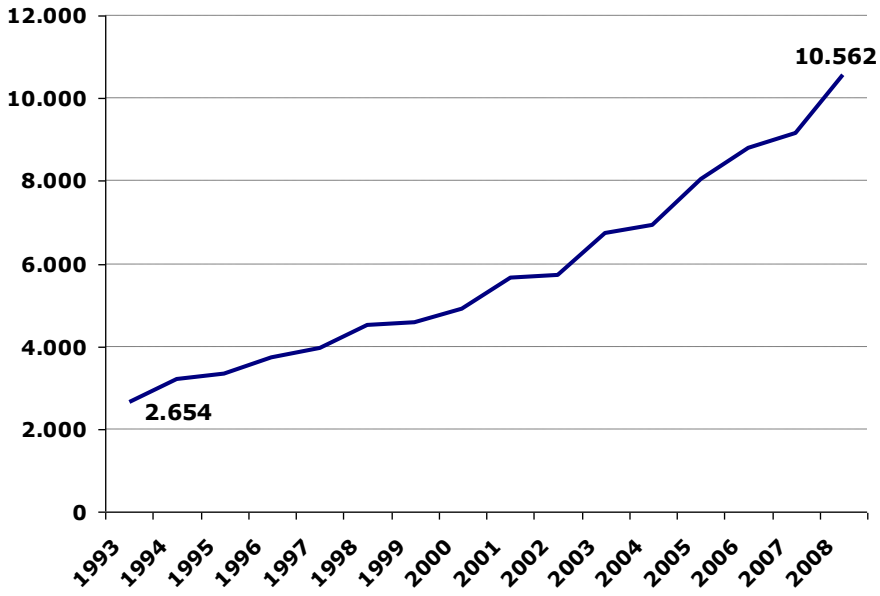
II. Improvement in the quality of data resulting from step 1, through the use of software designed for automatic duplicate detection. For the automatic processing, 'clustering' was used and the necessary tools were developed.

III. Manual corrections to the results of the above mentioned automatic procedure.

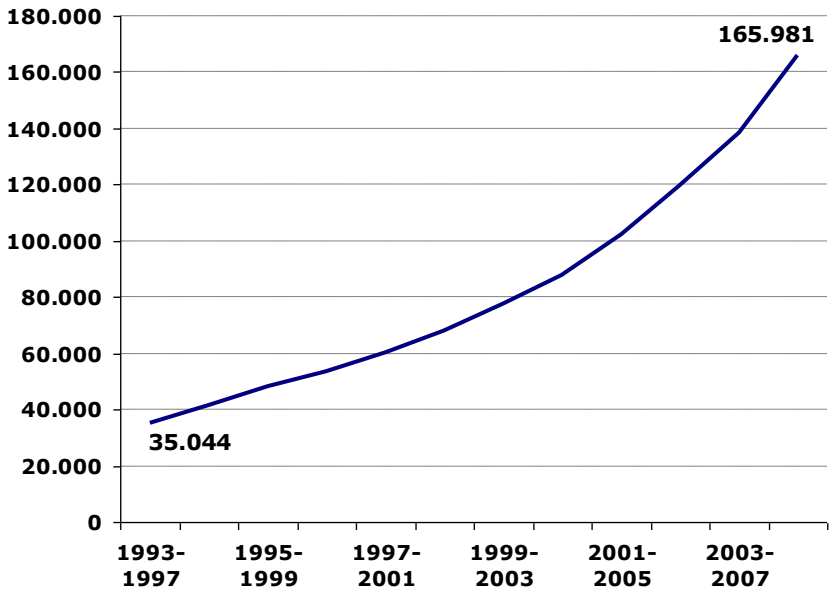
IV. Production of a new edition of the database with the replacement of all the alternative names per organisation with only one valid written representation.

Evolution of Greek Publications and Citations from 1993 to 2008

No of Publications

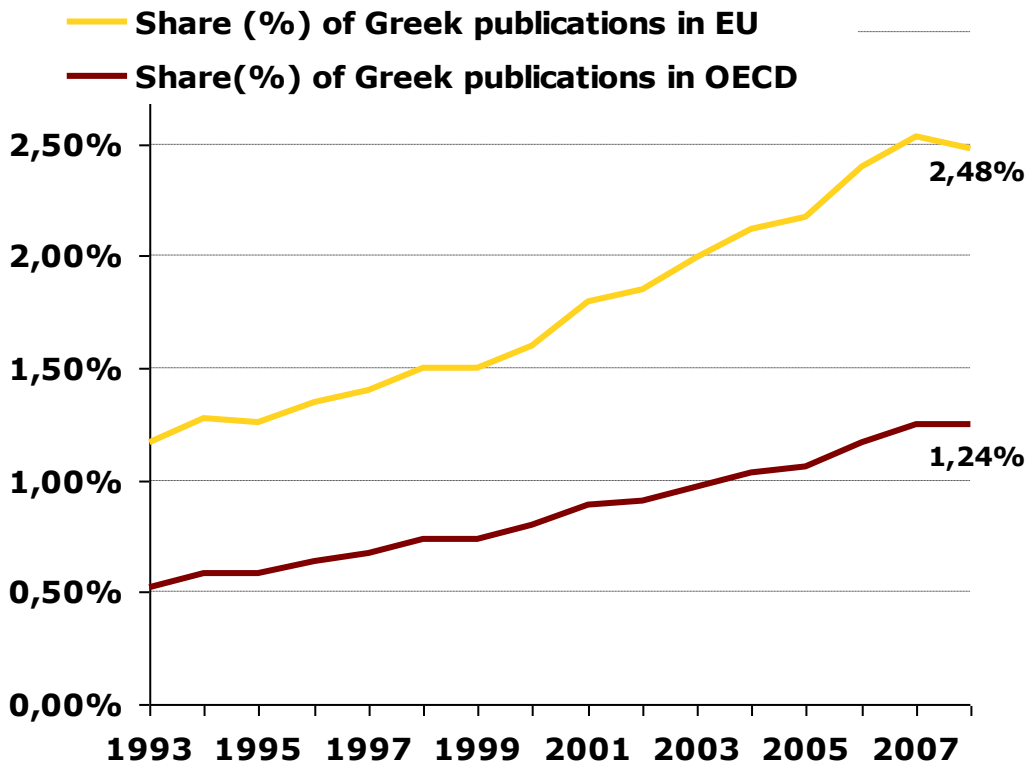


No of Citations



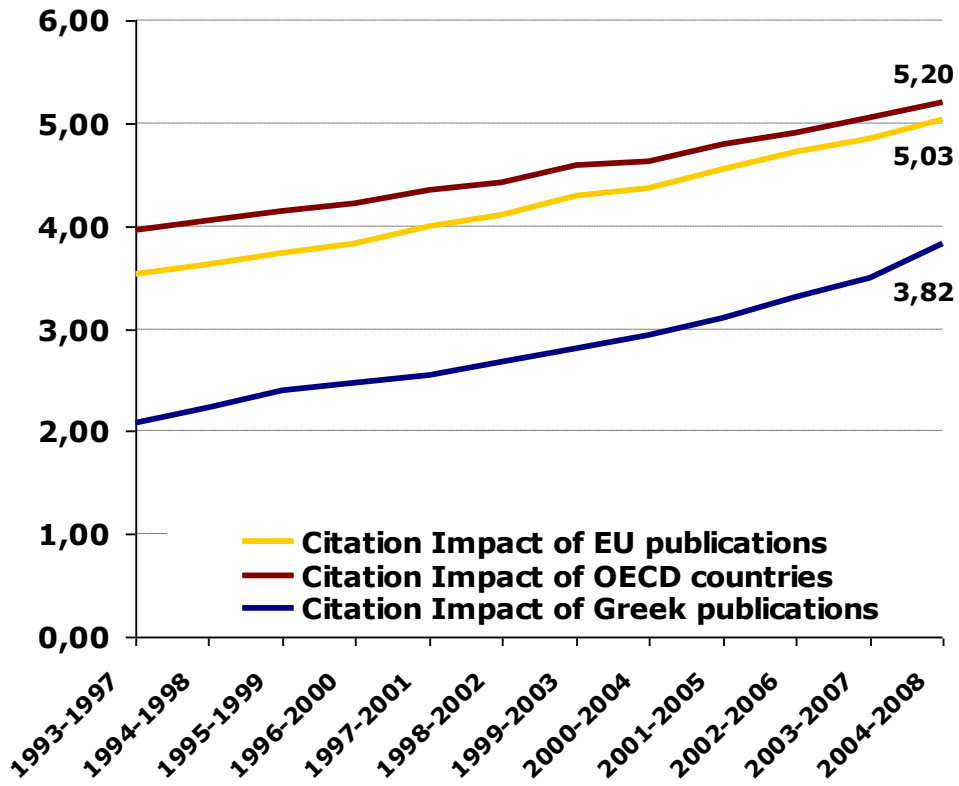
- **1993-1997:** 7.919 publications (46,9% of the total) received 35.044 citations
- **2004-2008:** 26.224 publications (60,3% of the total) received 165.981 citations

Greece in the International Context: Share of Publications



Growth Rate 1993-2008 in No of Publications	
Greece	3,98
EU	1,87
OECD	1,65

Greece in the International Context: Citation Impact



Growth Rate 1993-2008 in Citation Impact	
Greece	1,32
EU	0,71
OECD	0,57

Relative Citation Impact of Greek Publications in relation to:	
EU	0,76
OECD	0,73

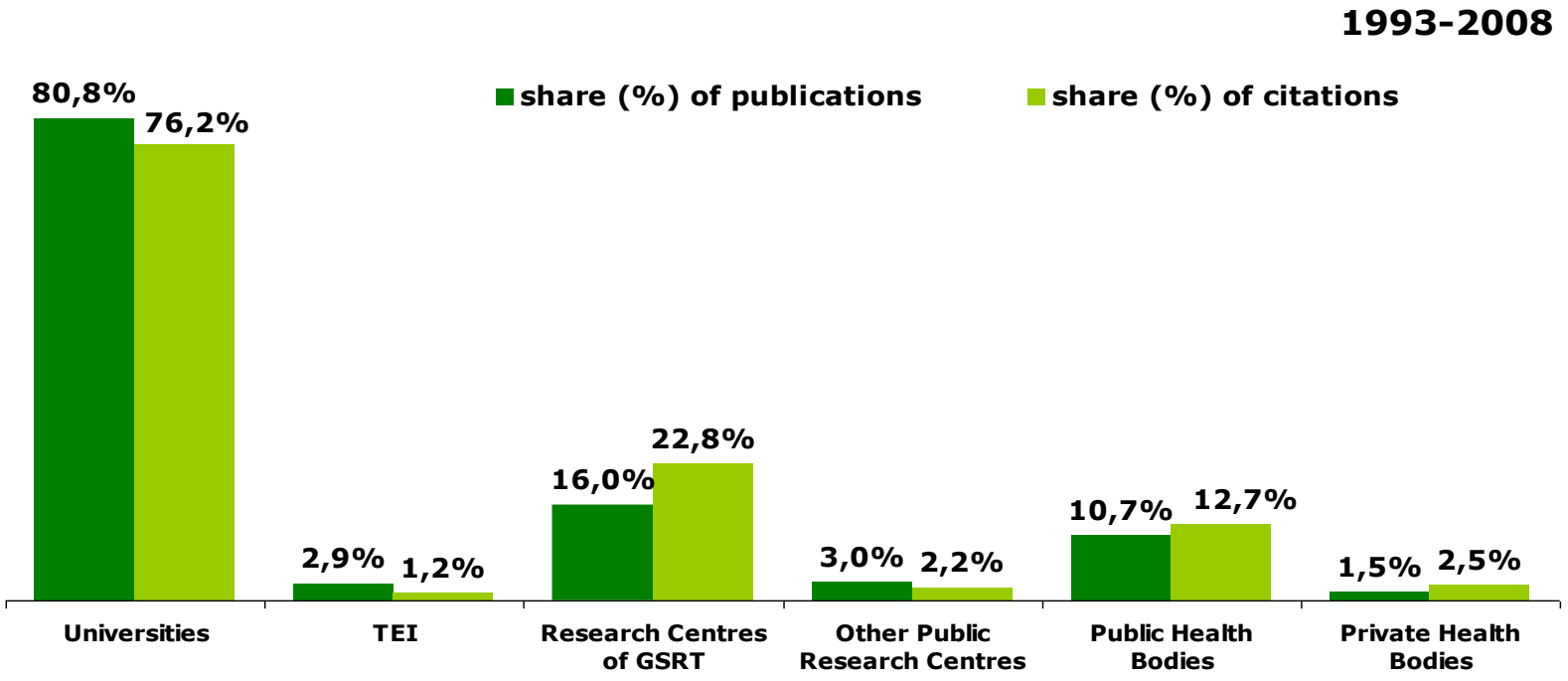
Major Greek Actors in the Production of Publications

- The Greek organizations were grouped into 11 categories based on the type of activity and their status as public or private institutions.
- The following 6 categories participate in 97% of Greek publications:

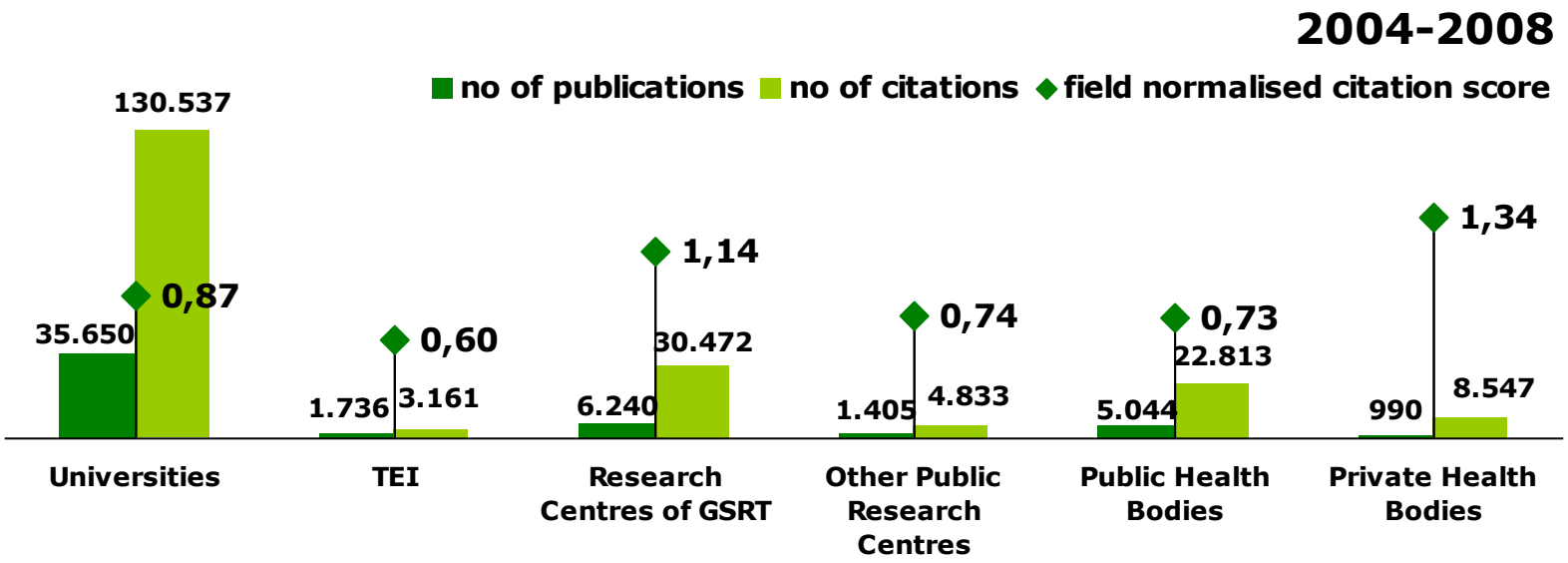
Higher Education	1. Universities 2. Technological Educational Institutes [TEI]
Research	3. Research Centres supervised by the General Secretariat of Research and Technology [GSRT] 4. Other Public Research Centres
Health	5. Public Health Bodies 6. Private Health Bodies

- Other categories with a much smaller but still identifiable share are: Organizations supervised by the Ministry of Defence, Banks, Museums, Other Public Organizations and Other Private Organizations.

Share of Publications and Citations by the major Greek Organizations Categories



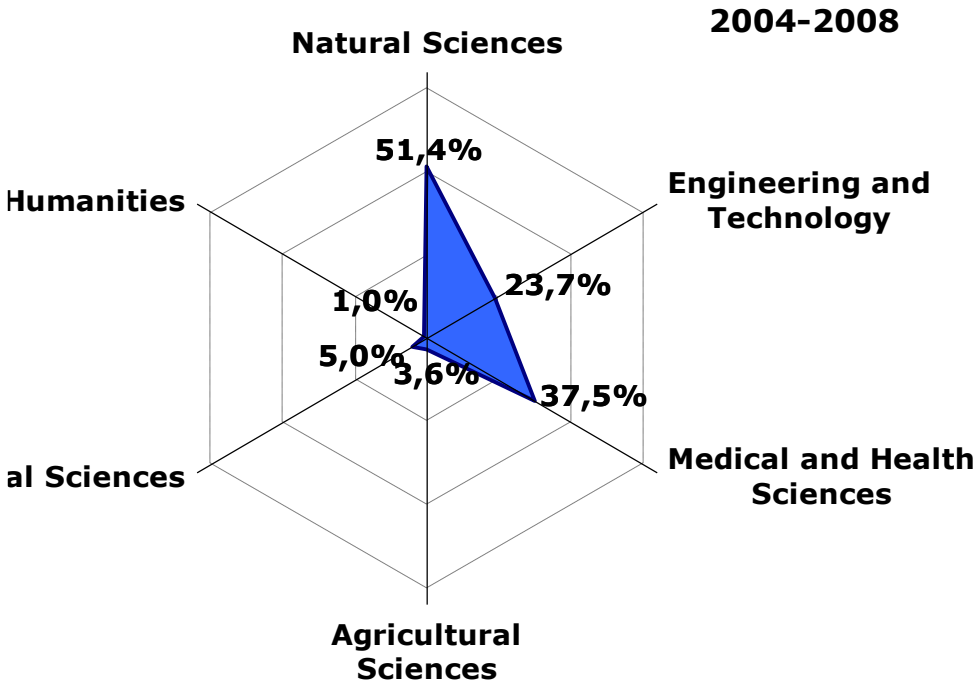
Impact Relative to the World



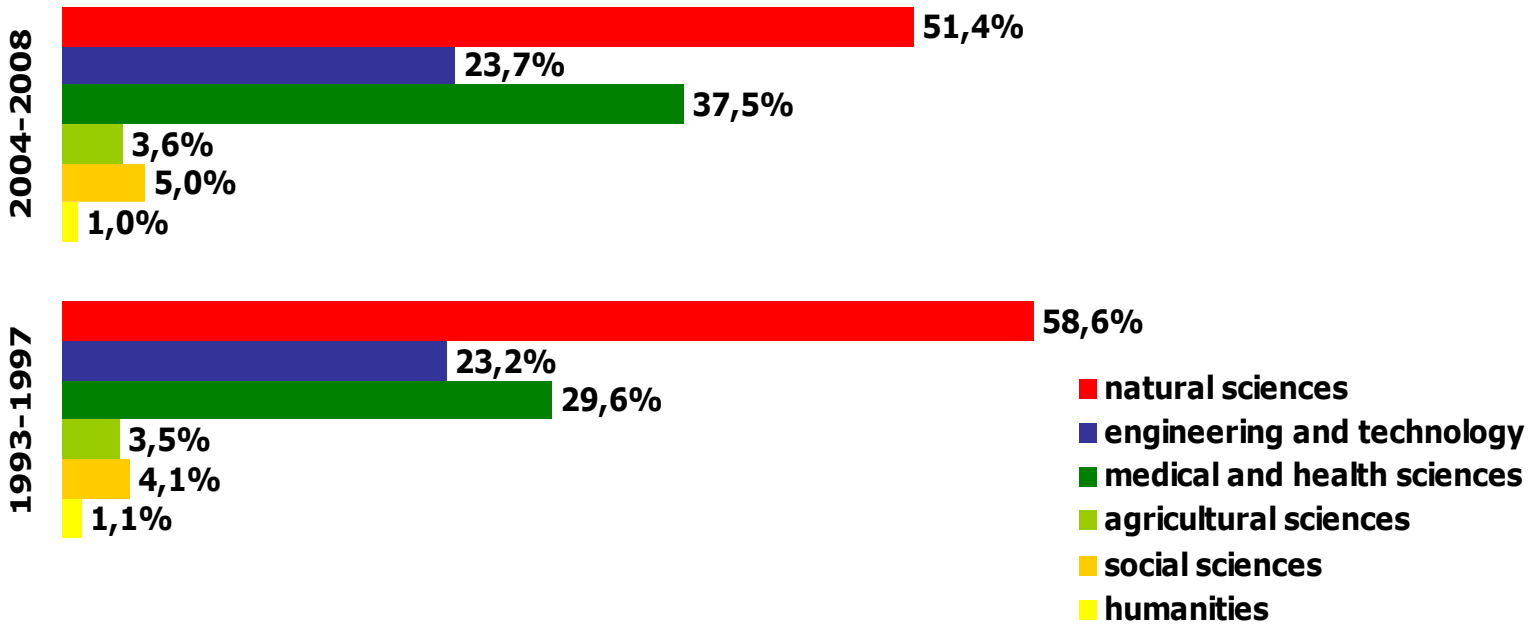
The Field Normalized Citation Score was calculated using the software developed by EKT that permitted normalization of the citation values on an individual article level.

Scientific Fields of Greek Publications

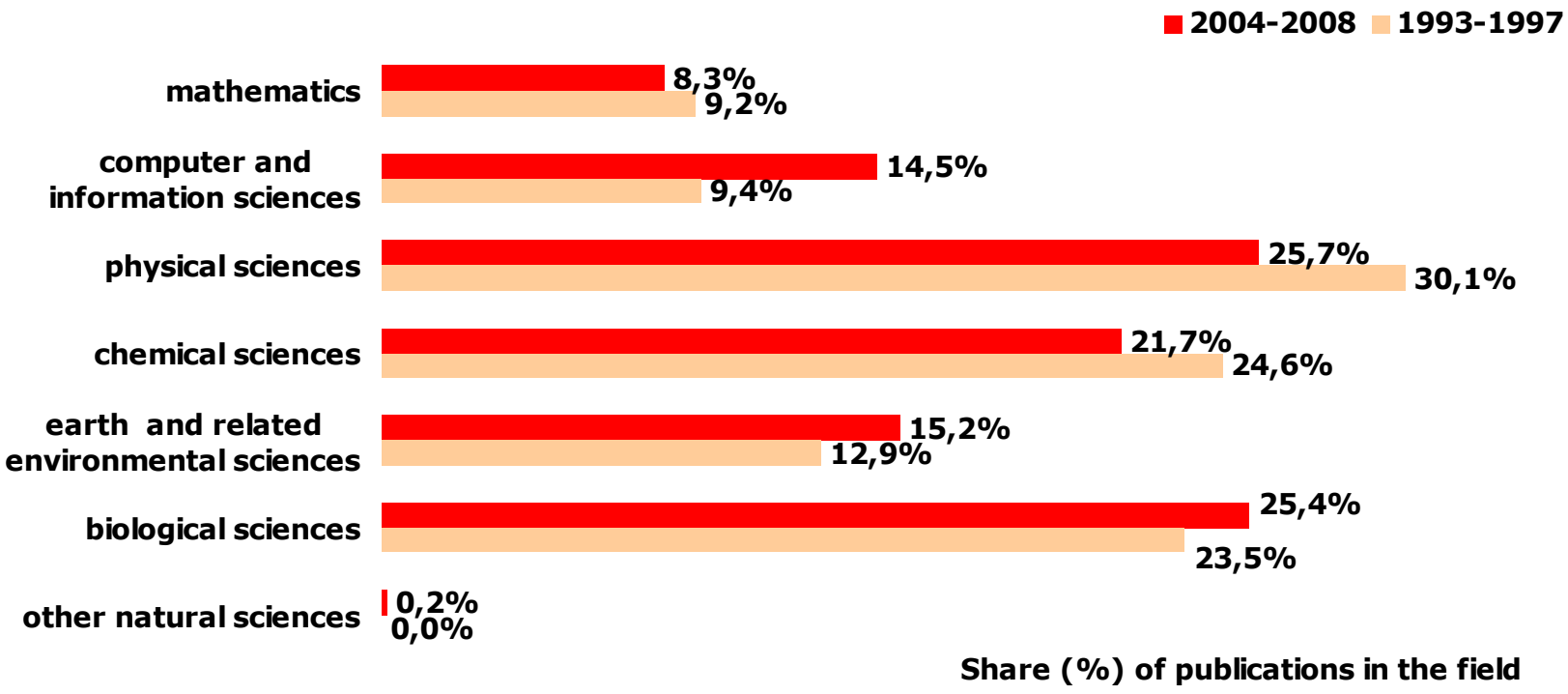
- Greek scientific publications were divided into the six major fields and their subcategories, as suggested by the Revised Field of Science and Technology Classification in the Frascati manual / OECD.
- The classification was based on data from the last 5-year period, 2004-2008, in order to record emerging scientific areas of significant research interest.



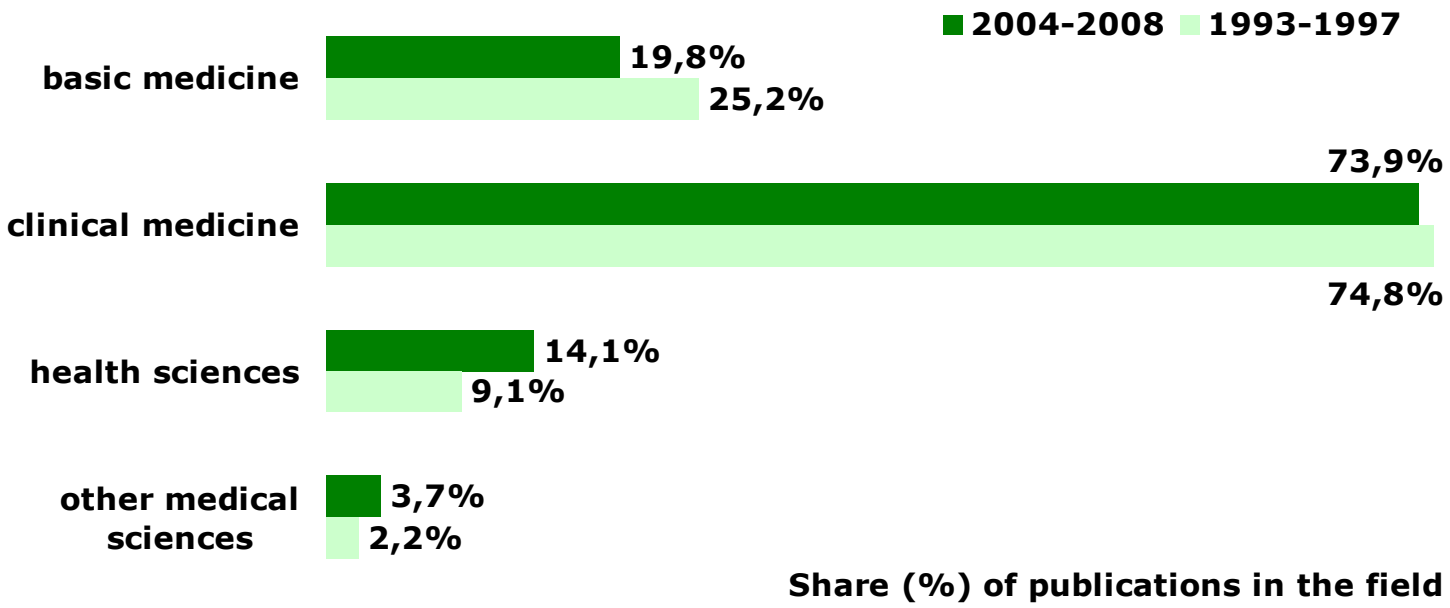
Changes in Scientific Fields' Shares of Publications from 1993 to 2008



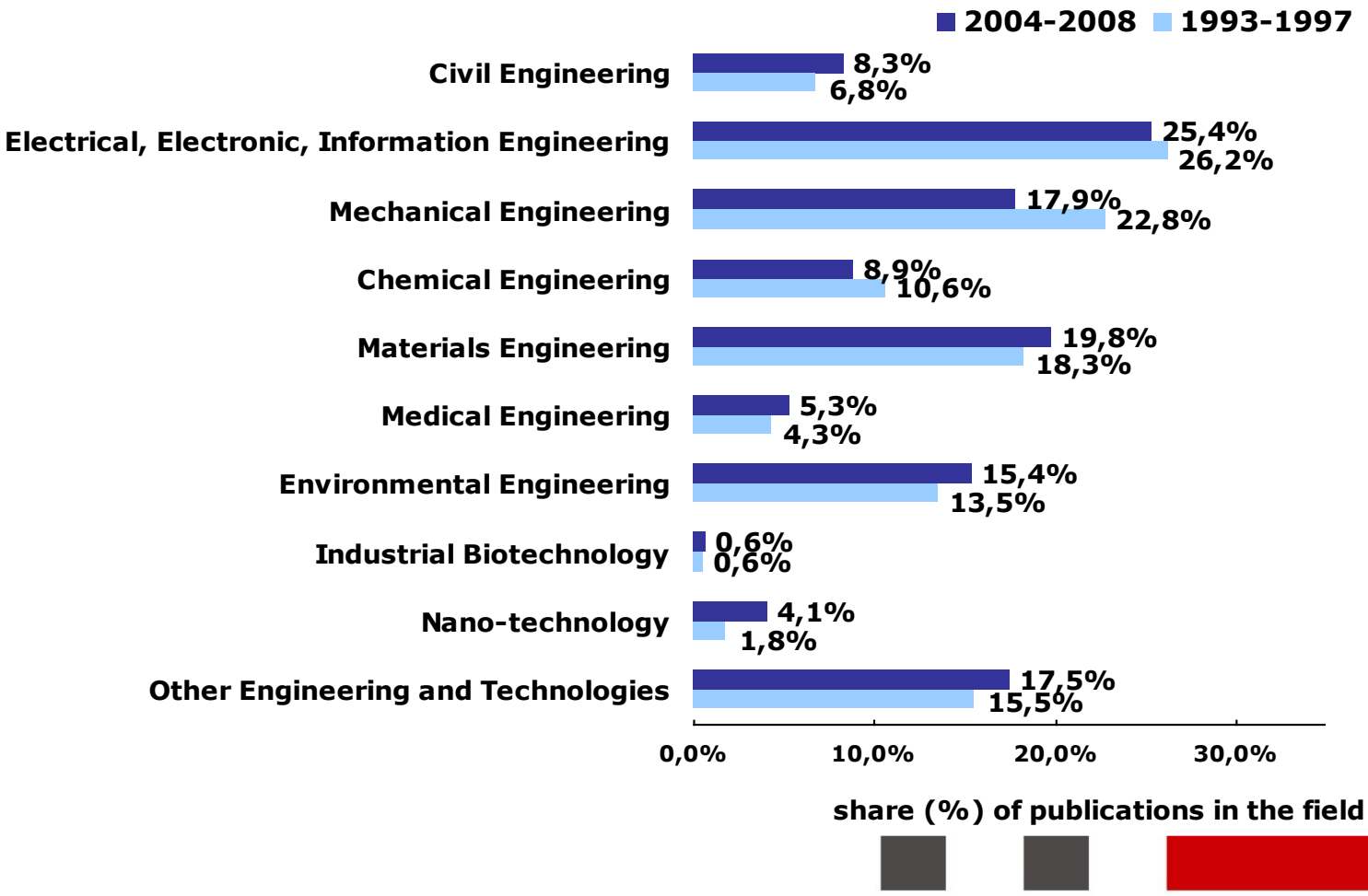
Changes within "Natural Sciences" Scientific Field



Changes within "Medical & Health Sciences" Scientific Field



Changes within "Engineering & Technology" Scientific Field



Scientific Subfields with the Highest Impact

Natural Sciences

polymer science	1,36
genetics & heredity	1,26
physics, multidisciplinary	1,20
optics	1,17
physics, fluids & plasmas	1,17
crystallography	1,17
physics, particles & fields	1,16
mathematics, applied	1,13
physics, mathematical	1,12
virology	1,09
chemistry, physical	1,07
physics, nuclear	1,07
meteorology & atmospheric sciences	1,07
reproductive biology	1,06
chemistry, inorganic & nuclear	1,05
electrochemistry	1,03

Medical & Health Sciences

medicine, general & internal	1,38
public, environmental & occupational health	1,31
allergy	1,23
critical care medicine	1,21
rheumatology	1,20
infectious diseases	1,09
chemistry, medicinal	1,03
geriatrics & gerontology	1,01
immunology	1,01

Agricultural Sciences

agricultural engineering	1,29
agricultural economics & policy	1,24
fisheries	1,04

Engineering & Technology

materials science, composites	1,59
engineering, environmental	1,36
materials science, ceramics	1,23
engineering, chemical	1,16
transportation science & technology	1,16
imaging science & photographic technology	1,09
thermodynamics	1,07
energy & fuels	1,06

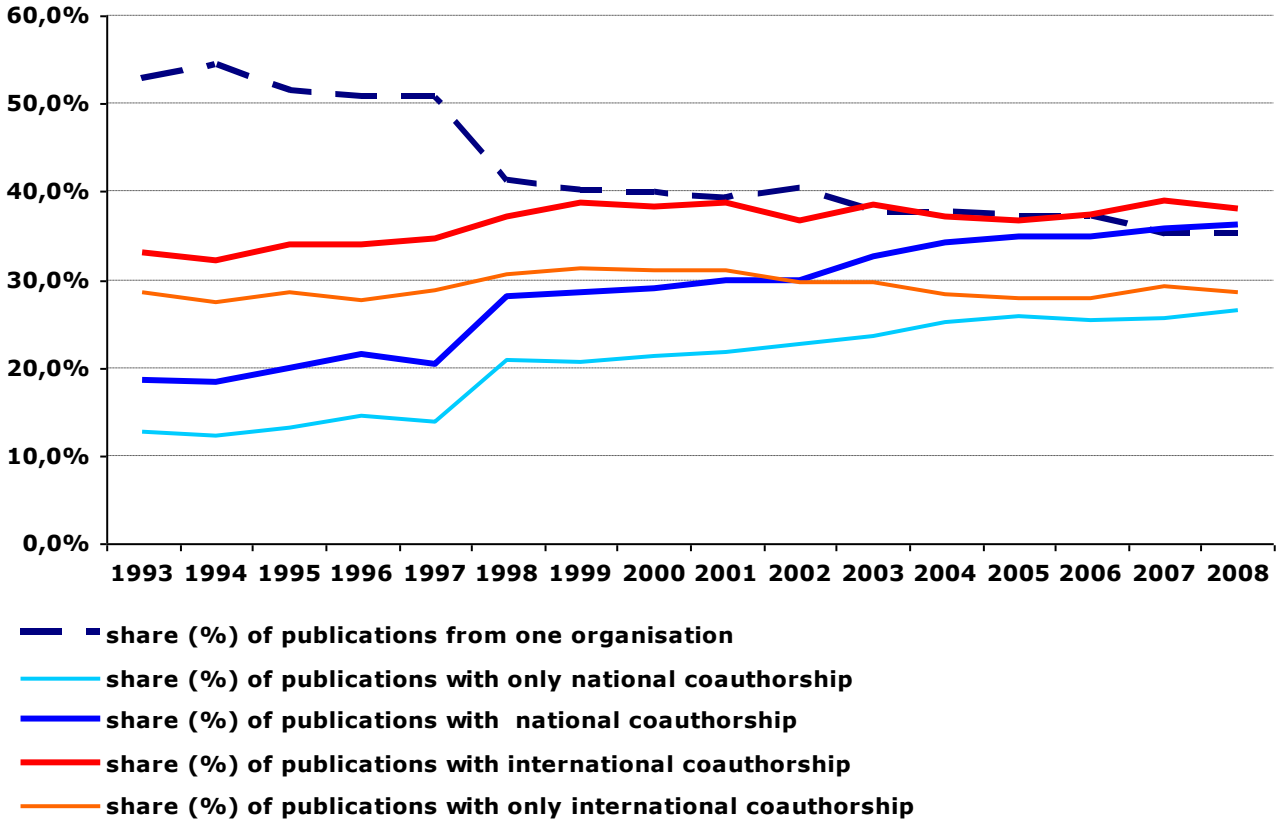
Social Sciences

anthropology	1,27
education, special	1,11

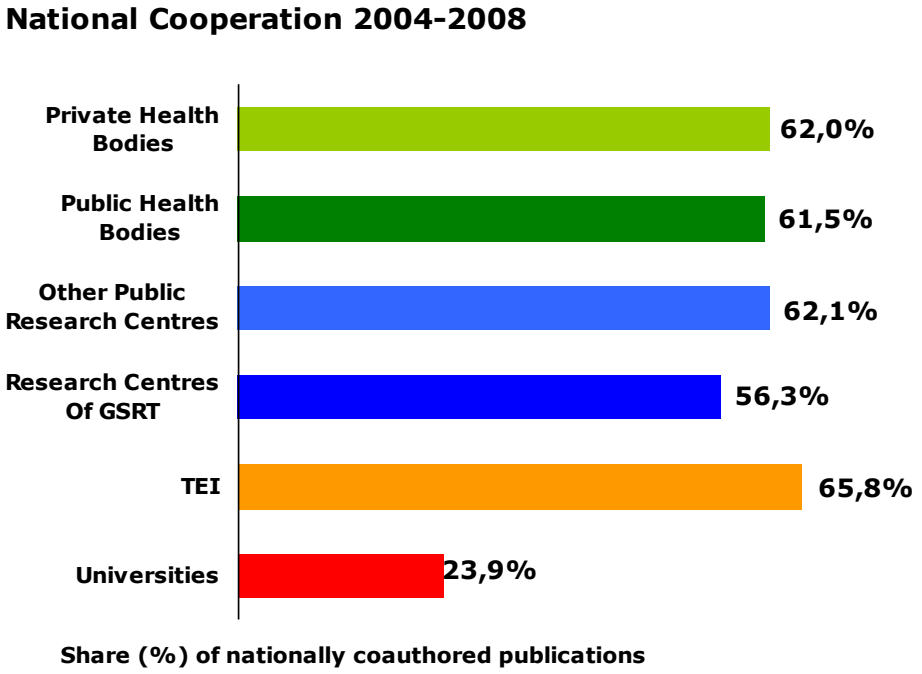
Humanities

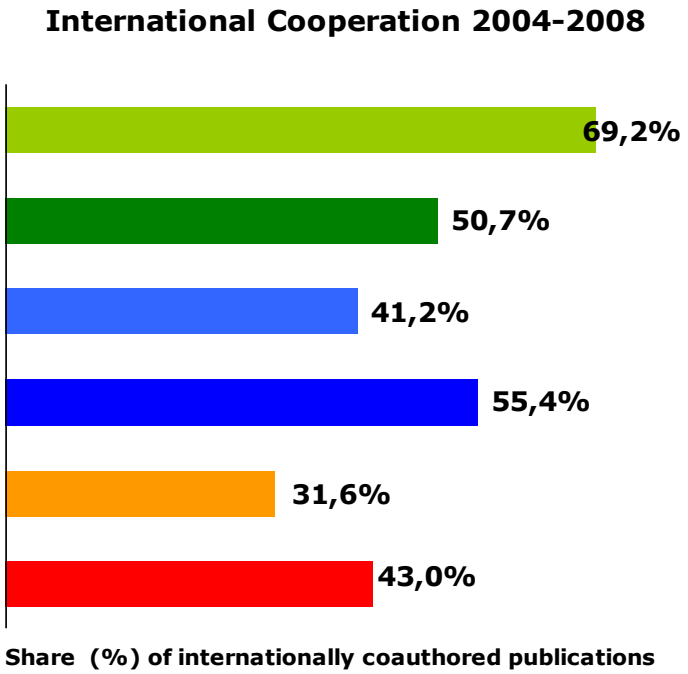
archaeology	1,08

Collaboration and its evolution from 1993 to 2008

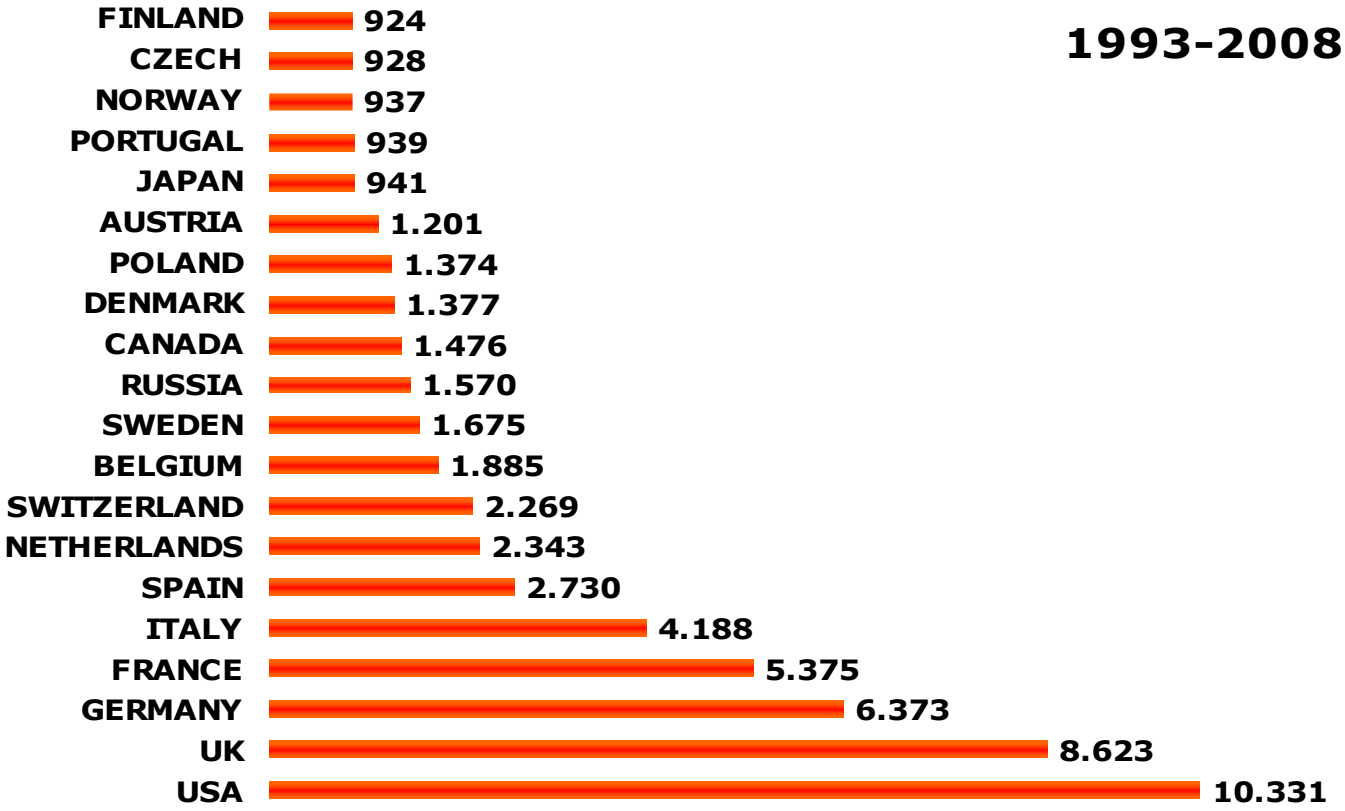


National and International Cooperation Level in the 6 major organizations' categories





Main international collaborators



Thank you for your attention!

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http://www.ekt.gr/metrics/