



United Nations
Educational, Scientific and
Cultural Organization

Natural Sciences Sector

Natural Sciences

**Strategy for the
Future Development of
UNESCO Chairs
in Natural Sciences**

July 2009

Preface

Over the years, the UNESCO Chairs have proved their value as important tools for enhancing the scientific capacity in Member States, to promote networking, and as partners in the implementation of UNESCO's programme. However, in order to muster their full potential, the time has come to provide some guidance for this purpose. I am therefore pleased to present this document which outlines a new Strategy for the Future Development of UNESCO Chairs in the field of the Natural Sciences.



Mr W. Erdelen
Assistant Director-General
Natural Sciences Sector
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Introduction

Established in 1992 by the General Conference at its 26th session, the UNITWIN/UNESCO Chairs Programme was conceived to advance research, training and programme development through the recognition of excellence and university networking.

This document contains strategic guidance for the future development of the Chairs in the Natural Sciences established under the UNITWIN/UNESCO Chairs Programme. It is based on an internal review process in the UNESCO Natural Sciences Sector launched by Mr W. Erdelen, Assistant Director-General for the Sector, with a view of further enhancing the contributions of the Natural Sciences Chairs to the implementation of the natural sciences work programme consistent with the orientations set-out for the UNITWIN Programme by the Executive Board at its 176th session in April 2007, recognizing:

- the dual function of UNESCO Chairs as “think tanks” and “bridge builders” between the academic world, civil society, local communities, research and policy-making;
- the need for aligning new UNESCO Chairs with UNESCO’s priorities as defined in its Medium-Term Strategy for 2008-2013;
- the importance of strengthening North-South, South-South and North-South-South cooperation;
- opportunities for creating poles of excellence and innovation at the regional or subregional level; and
- the need for reinforcing the dynamism of networks and partnerships.

At this same session, the Executive Board noted the recommendations put forward by the External Review Committee of Major Programmes II and III (Doc. 176 EX/7). In relation to UNESCO Chairs, the Committee

recommended that science education should be a high priority (Recommendation 4) and that “UNESCO should increase efforts to assist countries to develop their national science systems, to strengthen university education in the sciences, particularly through the integration of research and education, and to improve the quality of science teaching, including through e-learning. In all of these endeavours, UNESCO category 1 and 2 centres and institutes, Chairs and associated university networks are important assets.

The Committee also recommended that outreach and partnerships need improvement (Recommendation 6) and that, for this purpose “UNESCO should make better use of its existing partnerships within the UNESCO family (Field Offices, National Commissions, category 1 and 2 centres and institutes, National Committees of the ISPs¹, Chairs, UNITWIN networks and Clubs) and the United Nations family.”

In accordance with the above recommendations and consistent with the findings of the internal review, the main strategy objective for the 2010-2011 biennium will therefore be to **ensure that existing and future Chairs in the Natural Sciences are clustered and linked to form networks on the basis of thematic groups, in order to reorient and align their main programme thrusts with UNESCO’s priority areas, build synergies, reduce the existing geographical imbalance and increase the financial sustainability of the chairs.**

¹ ISPs refer to the Intergovernmental and International Scientific Programmes (i.e. The International Geoscience Programme (IGCP), the International Hydrological Programme (IHP), the Intergovernmental Oceanographic Commission (IOC), the Man and the Biosphere (MAB) Programme and the Management of Social Transformations (MOST) Programme).

Existing UNESCO Natural Sciences Chairs: numbers, geographical distribution, themes covered, networking and activity reporting

Since the inception of the UNESCO Chairs programme, some 200 out of a total of more than 600 Chairs have been established in the Natural Sciences (See World Map on page 8

and Figure 1 and the tables with the list of Natural Sciences Chairs). On average, 10 Natural Sciences Chairs have been established annually.

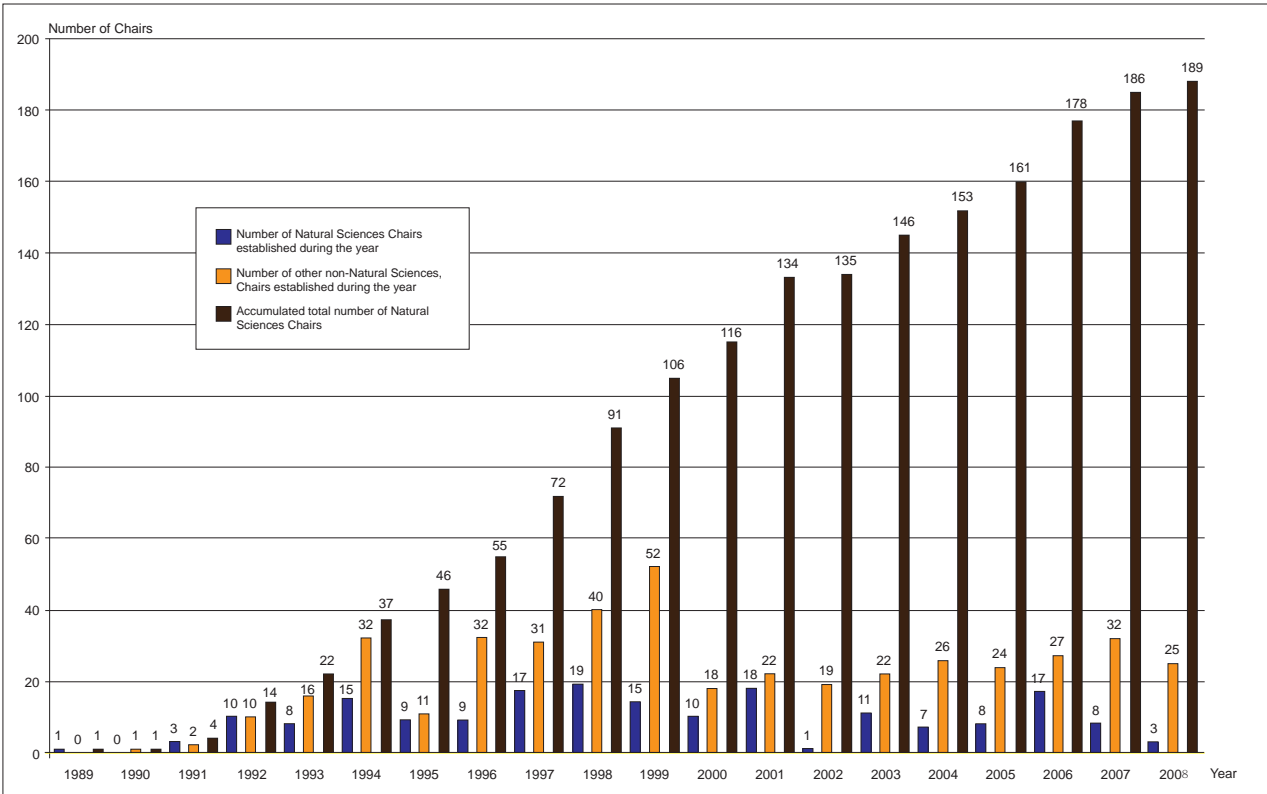


Figure 1 – Number of Natural Sciences and other Chairs established annually in the period 1989 – 2008

The corresponding percentage figures of Natural Sciences Chairs are provided in Figure 2. On average, the Natural Sciences

Chairs constitute thus about 30% of the UNESCO Chairs established annually.

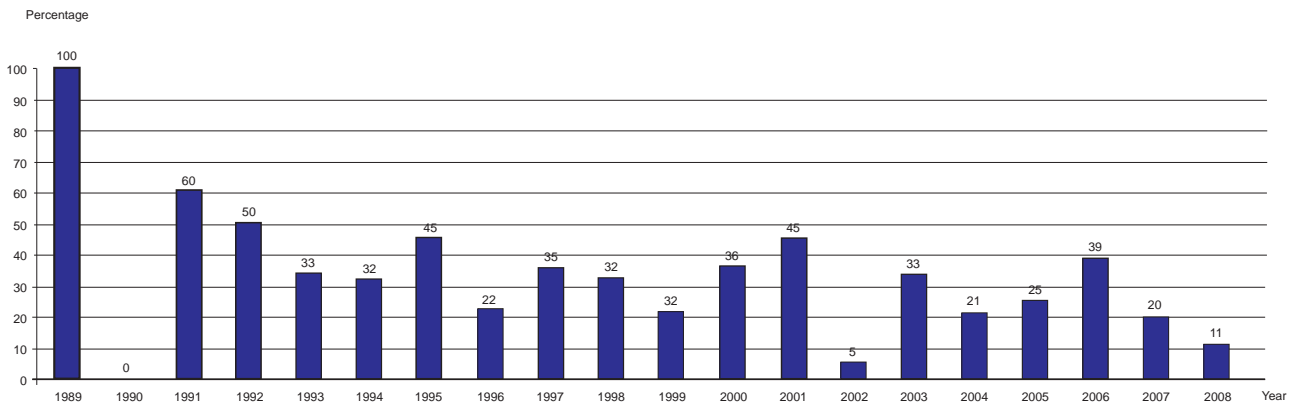


Figure 2 – Natural Sciences Chairs as a percentage of the total number of UNESCO Chairs established 1989-2008

Geographical distribution of Natural Sciences Chairs

The regional distribution of Natural Sciences Chairs is given in Figure 3. Overall, the number of Chairs established in the North largely surpasses those in the South. See

World Map indicating the distribution followed by a list with all Chair titles and respective host institutions.

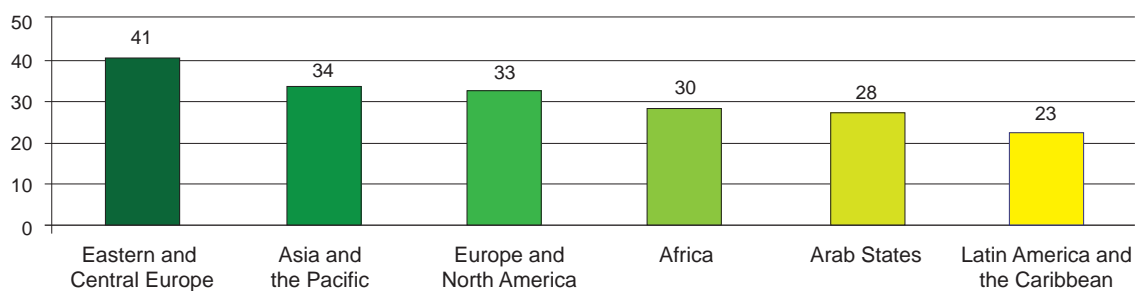


Figure 3 – Distribution of Natural Sciences Chairs according to UNESCO regional groups

Themes covered by Natural Sciences Chairs

All Divisions and Programmes in UNESCO's Natural Sciences Sector are engaged with Chairs, the focus of which reflects the diversity of issues covered by the Sector. The majority of the Natural Sciences Chairs are active in the

fields of basic and engineering sciences (see Figure 4). The evolution of the establishment of Natural Sciences Chairs according to more specific themes is illustrated in Figure 5.

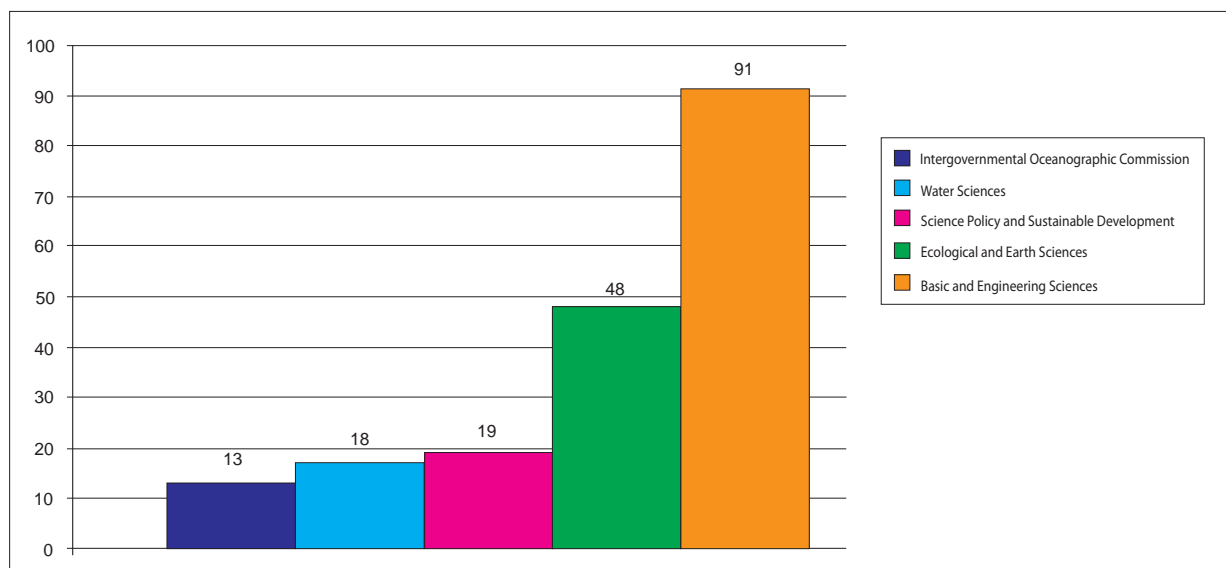
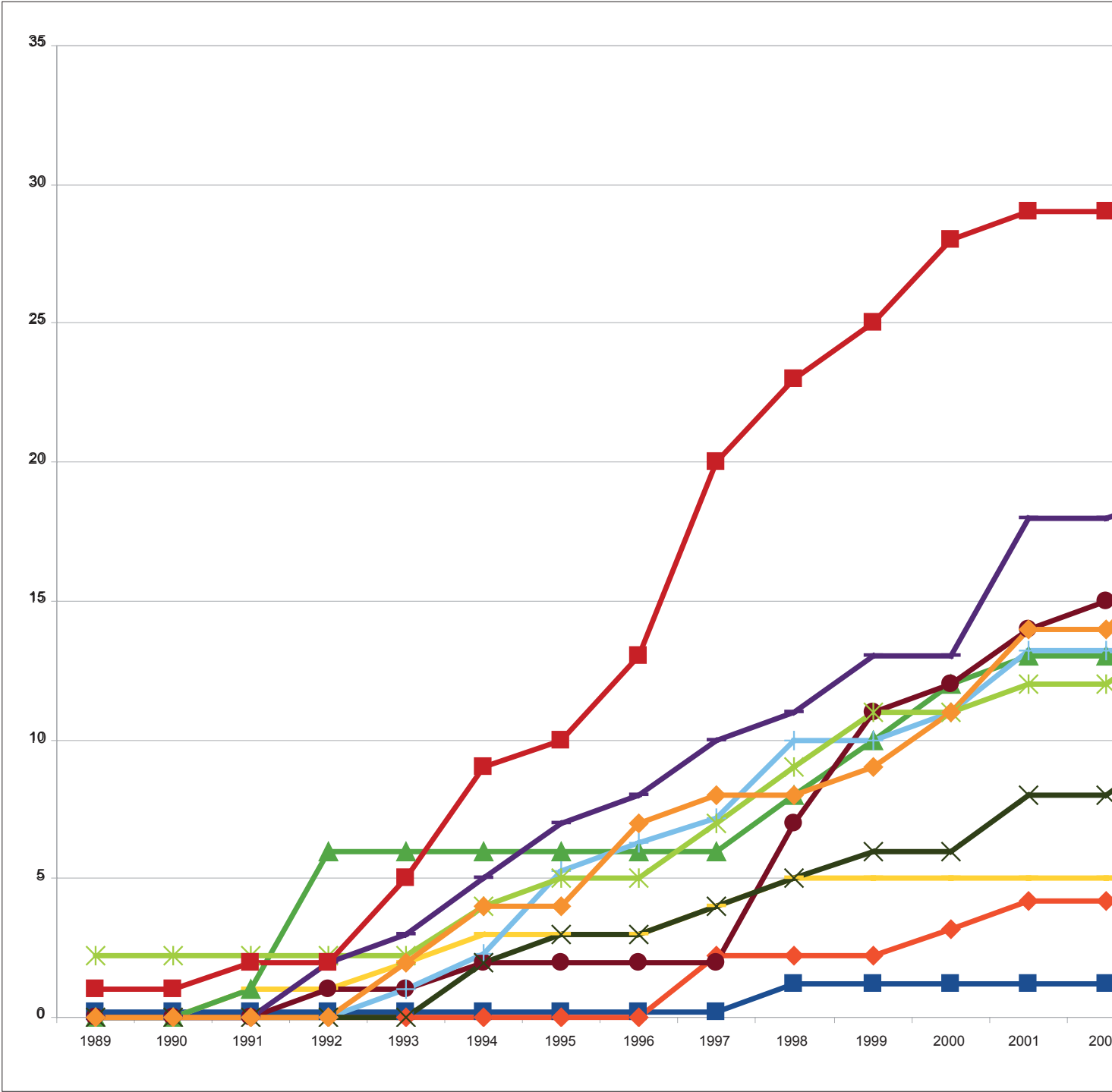


Figure 4 – Number of Natural Sciences Chairs associated with the different Natural Sciences Sector Divisions and Programmes

Natural Sciences Chairs and overall UNESCO priorities

Poverty reduction, Africa and gender balance are among UNESCO's main priorities. The Natural Sciences Sector addresses all these priorities including by promoting Chairs and networking for this purpose. One example is the UNESCO University Chairs 'Network of Networks' on "Women, Science, Technology and Development" (WSTD). WSTD is an inter-regional network composed of several interconnected networks involving Chairs from

Africa and Asia (e.g. Argentina, Brazil, Burkina Faso, Ivory Coast, Morocco Pakistan and Sudan). The network seeks to engage African and Asian universities and their scholars as active partners in fighting poverty by involving them more directly in rural poverty reduction strategies with a focus on transfer of science and technology and on reducing the disparity between men and women in the production and the use of the scientific knowledge.



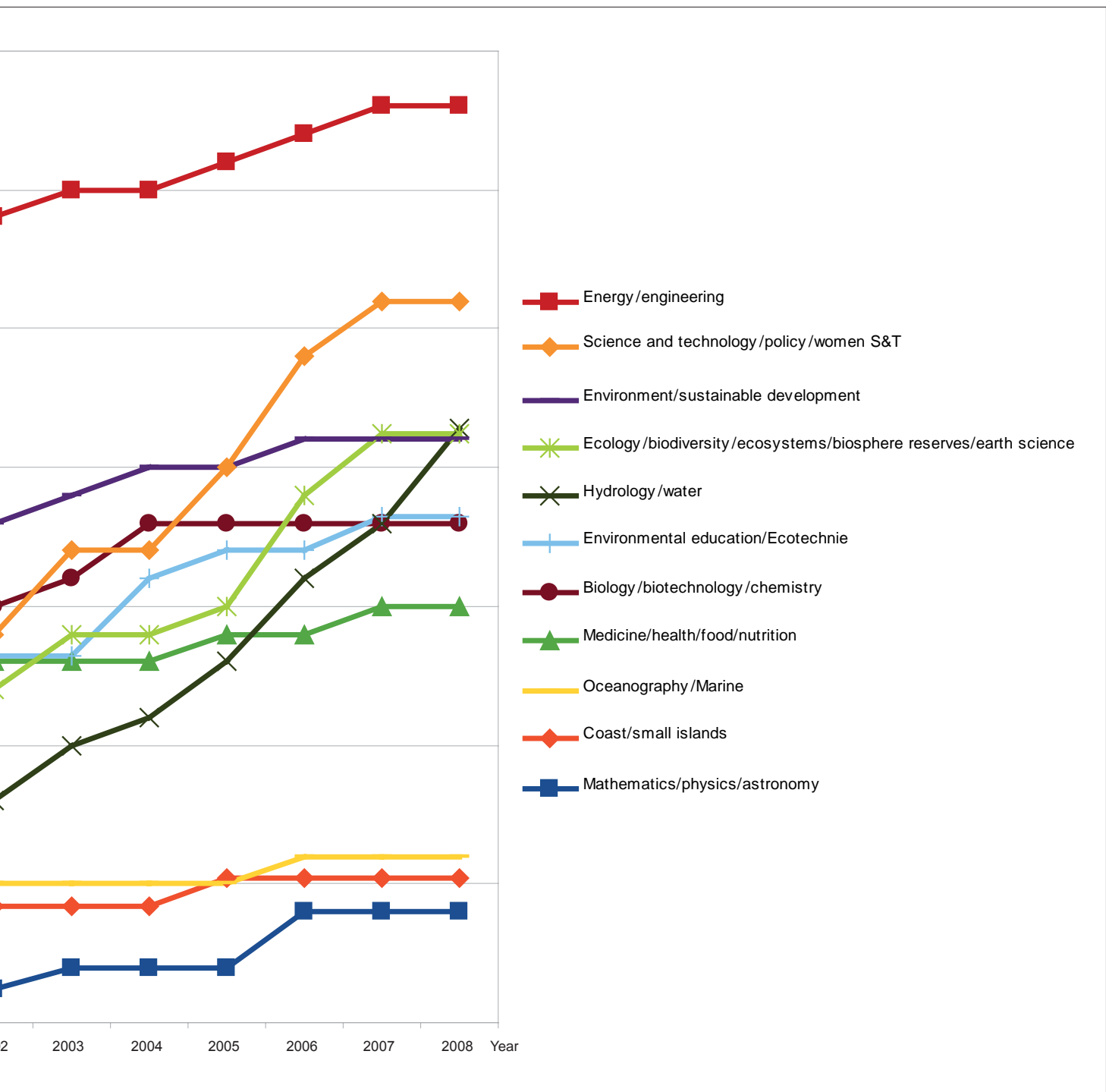


Figure 5 – Total number of Natural Sciences Chairs according to themes



UNESCO Chairs in the Natural Sciences



- Intergovernmental Oceanographic Commission
- Water Sciences
- Ecological and Earth Sciences
- Basic and Engineering Sciences
- Science Policy and Sustainable Development

When established, UNESCO gives each Chair a unique “ID number” for ease of reference. These numbers are used on this map together with a color code illustrating their location and thematic focus.

Details on the Chairs can be obtained on the following websites:

- <http://www.unesco.org/en/science/chairs>
- <http://portal.unesco.org/education/UNITWIN>

UNESCO Chairs in the Natural Sciences – Africa Region

Intergovernmental Oceanographic Commission

- 206 UNESCO Chair in Integrated Coastal Management and Sustainable Development – Université Cheikh Anta Diop – Dakar – Senegal
- 342 UNESCO Chair in Marine Sciences and Oceanographic Issues – Universidade Eduardo Mondlane – Maputo – Mozambique

Water Sciences

- 341 UNESCO Chair in Water Management – National University of Lesotho (NUL) – P.O. Roma 180 – Lesotho
- 426 UNESCO Chair in Geohydrology – University of the Western Cape – South Africa
- 805 UNESCO Chair for Water Management – University of Bangui – Bangui – Central African Republic

Ecological and Earth Sciences

- 152 UNESCO Chair in Man and Environment in Southern Africa – Universidade Eduardo Mondlane – Maputo – Mozambique
- 158 UNESCO Chair for “Geosciences – Natural Resources and Environment” – University of Niamey – Niamey – Niger
- 725 UNESCO Chair in Earth Sciences and Georesources Engineering Management – University of Ibadan – Ibadan – Nigeria
- 756 UNESCO Chair in Geosciences and Sustainable Development – University of Lomé – Lomé – Togo

Basic and Engineering Sciences

- 2 UNESCO Chair in Chemical and Environmental Engineering – Universidade Agostinho Neto – Luanda – Angola
- 97 UNESCO-AAU (Association of African Universities) Chair for Women in Science and Technology – University of Ghana – Legon – Ghana
- 100 UNESCO Chair in Technology and Rural Development – University of Conakry – Conakry – Guinea
- 150* UNESCO Chair in Tropical Medicine – Universidade Eduardo Mondlane – Maputo – Mozambique
- 153 UNESCO Chair for Environmental Education – National University of Equatorial Guinea (UNGE) – Malabo – Equatorial Guinea
- 154 UNESCO Chair in Pediatric Cardiology – Universidade Eduardo Mondlane – Maputo – Mozambique
- 252* UNESCO-NATURA Chair in Food Security and Nutrition for Health and Development – Sokoine University of Agriculture – Morogoro – Tanzania (United Republic of)
- 292 UNESCO Chair in Renewable Energy – University of Zimbabwe – Harare – Zimbabwe
- 310* UNESCO Chair in Immunology and Infectious Diseases – University of Zimbabwe – Harare – Zimbabwe
- 343 UNESCO-UNU Chair in the Concept and Practice of Zero Emissions in Africa – University of Namibia – Windhoek – Namibia
- 362* UNESCO-NATURA Chair in Food and Nutrition Sciences – Benin Agricultural University – Cotonou – Benin
- 449 UNESCO Chair in Biotechnology – University of Limpopo – Sovenga – South Africa
- 453 UNESCO Chair on Renewable Energies – University of Lomé – Lomé – Togo
- 505 UNESCO Chair on Renewable Energies – University Abdou Moumouni – Niamey – Niger
- 524 UNESCO Chair in Renewable Energy and Environment – The University of Zambia – Lusaka – Zambia
- 549 UNESCO Chair in Biotechnology – Jomo Kenyatta University of Agriculture and Technology – Nairobi – Kenya
- 705 UNESCO Chair “Water, Women, and Decision-making Power” – Centre Ivorien de Recherche Economique et Sociale (CIRES) – Abidjan – Côte d’Ivoire
- 724 UNESCO Chair in Mathematical Physics and Applications – Université d’Abomey-Calavi – Cotonou – Benin

Science Policy and Sustainable Development

- 26 UNESCO Chair in Science, Technology, and Environment – Université d’Abomey-Calavi – Cotonou – Benin
- 632 UNESCO-EOLSS Chair for Teaching and Research on the Environment – University of Mali – Bamako – Mali
- 684 UNESCO Chair in Technological Entrepreneurship – Tshwane University of Technology (TUT) – Pretoria – South Africa

UNESCO Chairs in the Natural Sciences – Arab Region

Intergovernmental Oceanographic Commission

- 145 UNESCO Chair for Training and Research in Ocean Sciences – Ibn Tofaïl University – Kénitra – Morocco
- 708 UNESCO Chair in Long-term Integrated Management of Coastal Zones – Institute for Ocean Sciences and Coastal Management (ISMAL) – Algiers – Algeria
- 747 UNESCO Chair on Marine Biology and Oceanography – The Sudan Institute for Natural Sciences (SIFNS), Ministry of Higher Education and Scientific Research – Khartoum – Sudan

Water Sciences

- 246 UNESCO Chair in Water Resources – Omdurman Islamic University – Khartoum – Sudan
- 258 UNESCO-NATURA Chair in Diagnostic Analysis of Farmer-Managed Irrigation – Institut National Agronomique de Tunisie (INAT) – Tunis – Tunisia
- 355 Interdisciplinary UNESCO Chair for Sustainable Water Management – Hassania School of Public Works – Casablanca – Morocco
- 416 UNESCO-EOLSS Chair in Wadi Hydrology – University of Jordan – Amman – Jordan
- 526 UNESCO Chair in Water in Desert and Arid Zones – Al-Fateh University – Tripoli – Libyan Arab Jamahiriya
- 634 UNESCO Chair in Environment and Water Resources – Ajman University of Science and Technology, The Institute of Environment and Water – Ajman – United Arab Emirates

Ecological and Earth Sciences






- 82 UNESCO-Cousteau Ecotechnie Chair/Network in Environment and Sustainable Development – The South Valley University – Aswan – Egypt
- 119 UNESCO Chair in Desert Studies and Desertification Control – Yarmouk University – Irbid – Jordan
- 148 UNESCO-Gas Natural Chair in Environmental Management and Sustainable Development – Mohamed V University – Rabat – Morocco
- 389 UNESCO-Gas Natural Chair for Sustainable Development Studies – Houari Boumediène University of Science and Technology – Algiers – Algeria
- 553 UNESCO-Cousteau Ecotechnie Chair in Environment and Sustainable Development – University of Bahrain – Isa Town – Bahrain
- 555 UNESCO Chair in Desertification – University of Khartoum – Khartoum – Sudan
- 590 UNESCO-Cousteau Ecotechnie Chair as a Resource Centre for Policy-Making, Education, Technical Assistance and Research for Sustainable Ecological Development – University of Balamand – Beirut – Lebanon
- 668 UNESCO-Cousteau Ecotechnie Chair – The ComputerMan College For Computer Studies – Khartoum – Sudan

Basic and Engineering Sciences

- 18 UNESCO Chair in Energy – University of Bahrain – Manama – Bahrain
- 147 UNESCO-NATURA Chair in Technical and Economic Feasibility Studies – Institut agronomique et vétérinaire Hassan II – Casablanca – Morocco
- 289 UNESCO Chair in Genetics – University of Sana'a – Sana'a – Yemen
- 428 UNESCO Chair in Petroleum Engineering – United Arab Emirates University – Al-Ain – United Arab Emirates
- 532 UNESCO Chair in Seafood Biotechnology – Sultan Qaboos University – Al-Khod – Oman
- 537 The UNESCO - His Royal Highness Prince Sultan Bin Abdulaziz AL-SAUD Chair in Health Education and Teacher Education – Sebai Institute for Development – Riyadh – Saudi Arabia
- 610 UNESCO Chair in Mathematics and Development – Tunis El Manar University, Tunis National School of Engineering, Laboratory for Mathematical and Numerical Modeling for the Engineering Sciences (ENIT-LAMSIN) – Tunis – Tunisia
- 624 UNESCO Chair in Women, Science and Technology – Sudan University of Science and Technology – Khartoum – Sudan
- 706 UNESCO Chair in "Water, Women and Decision-making" – Al Akhawayn d'Ifrane University – Ifrane – Morocco
- 746 UNESCO Chair in Mathematics and Theoretical Physics – Birzeit University – Birzeit, West Bank – Palestinian Autonomous Territories

Science Policy and Sustainable Development

- 748 UNESCO Chair on Transfer of Technology (UNESCOTT) – Industrial and Consultancy Centre, Ministry of Science and Technology – Khartoum – Sudan

-  Intergovernmental Oceanographic Commission
-  Water Sciences
-  Ecological and Earth Sciences
-  Basic and Engineering Sciences
-  Science Policy and Sustainable Development

UNESCO Chairs in the Natural Sciences – Asia and the Pacific Region

Intergovernmental Oceanographic Commission

- 116 UNESCO Chair in Naval Architecture and Ocean Engineering – Hiroshima University – Hiroshima – Japan

Water Sciences

- 710 UNESCO Chair in Sustainable Water Management – Hohai University – Nanjing – China
783 UNESCO Chair in Sustainable Groundwater Management – Institute of Geocology, Mongolian Academy of Sciences – Ulaanbaatar – Mongolia

Ecological and Earth Sciences

- 104 UNESCO-Cousteau Ecotechnie Chair in Ecotechnology – M.S. Swaminathan Research Foundation (MSSRF) – Chennai, Madras – India
285 UNESCO-Cousteau Ecotechnie Chair in Environmental Education – Vietnam National University – Hanoi – Viet Nam
556 Toyota/UNESCO Chair in Environmental Management – Prince of Songkla University – Songkhla – Thailand
623 UNESCO Chair in Sustainable Mountain Development – International University of Kyrgyzstan – Bishkek – Kyrgyzstan
707 UNESCO Chair in Biodiversity Informatics – The Macquarie University, The Biotechnology Research Institute – Sydney – Australia
709 UNESCO/COUSTEAU Ecotechnie Chair – Yunnan University – Yunnan – China
755 UNESCO/Cousteau Ecotechnie Chair in Antarctic and Southern Ocean Environmental Sciences – The University of Tasmania – Hobart – Australia

Basic and Engineering Sciences

- 14 UNESCO Chair in Tropical Architecture – James Cook University – Townsville – Australia
62 UNESCO-UNU Chair in Plant Biotechnology – Peking University – Beijing – China
65 UNESCO-UNIDO Chair in Clean Coal Technology – Central Coal Mining Research Institute (CCMRI) – Beijing – China
110 UNESCO Chair in Biology – University of Tehran – Tehran – Iran, Islamic Republic of
115 UNESCO Chair on Environmental Management and Infrastructure Development Engineering – Saitama University – Saitama – Japan
254 UNESCO-NKK Chair in Metallurgical Engineering – Chulalongkorn University – Bangkok – Thailand
256 UNESCO-KUBOTA Chair in Agricultural Machinery Engineering – Kasetsart University – Bangkok – Thailand

- 288 UNESCO-MHI Chair in Engineering of Automation of Thermal Power Plants and Environmental Protection Equipment – The Hanoi University of Technology – Hanoi – Viet Nam
298 UNESCO Chair in Physics and Astronomy – National University of Uzbekistan – Tashkent – Uzbekistan
340* UNESCO Interdisciplinary Chair in the Rational Use of Drugs – Chulalongkorn University – Bangkok – Thailand
429 UNESCO Chair in Continuing Engineering Education – Tsinghua University – Beijing – China
496 Obayashi-UNESCO Chair in Civil Engineering – Chulalongkorn University – Songkhla – Thailand
506 UNESCO Chair in Traditional Medicine – The Bukhara State Medical Institute – Bukhara – Uzbekistan
508 UNESCO Chair in Biotechnology – Indian Institute of Science – Bangalore Karn – India
557 Toyota/UNESCO Chair in Environmental Management – Nankai University – Tianjin – China
612 UNESCO/SHIMANO Chair in Cold Forging Technology – Shanghai Jiao Tong University – Shanghai – China
615 HUT/MHI/UNESCO Chair in Clean Coal Technologies and Environmental Protection – Hanoi University of Technology – Hanoi – Viet Nam
620 UNESCO/SHELL Chair in Coal Gasification – Institute of Coal Chemistry – Taiyuan, Sahanxi – China
627 UNESCO Chair in Green Chemistry – Uzbekistan National University – Tashkent – Uzbekistan
672 UNESCO Chair on Cooperation Between Higher Engineering Education and Industries – Beijing Jiaotong University – Beijing – China
757 UNESCO/FRAUNHOFER Society Chair on Information Technologies for Industry and Environment – The Northeastern University (NEU) – Shenyang – China

Science Policy and Sustainable Development

- 515 UNESCO Chair in Integrated Management and Sustainable Development in Coastal Regions and in Small Islands – The University of the Philippines – Diliman QC – Philippines
558 TOYOTA/UNESCO Chair in Children's Environmental Education – University of the Philippines Los Baños (UBLB) – Laguna – Philippines
633 UNESCO/ EOLSS Chair in Science and Technology Policies – Zhongshan (Sun Yat-Sen) University – Guangzhou – China

- Intergovernmental Oceanographic Commission
- Water Sciences
- Ecological and Earth Sciences
- Basic and Engineering Sciences
- Science Policy and Sustainable Development

* Chairs under review

UNESCO Chairs in the Natural Sciences – Eastern and Central Europe Region

Intergovernmental Oceanographic Commission

- 92 UNESCO Chair in Oceanography – Tbilisi State University – Tbilisi – Georgia
- 189 UNESCO Chair in Marine Geology and Geophysics – Moscow State University – Moscow – Russian Federation
- 374 UNESCO Chair in Marine Ecology – Far Eastern National University, Academy of Ecology, Marine Biology and BioTechnology (AEMBBT) – Vladivostok – Russian Federation
- 721 UNESCO Chair in Remote Sensing and Modeling in Oceanography – The Russian State Hydrometeorological University – St. Petersburg – Russian Federation

Water Sciences

- 191 UNESCO Chair in Ecologically Safe Development of Large Regions: The Volga Basin – The Nizhni Novgorod State Academy of Architecture and Civil Engineering – Nizhny Novgorod – Russian Federation
- 533 UNESCO Chair in Water Resources – Irkutsk State University – Irkutsk – Russian Federation
- 693 UNESCO Chair in Hydrogeology – Eotvos Lorand University – Budapest – Hungary

Ecological and Earth Sciences

- 49 UNESCO Chair in Sustainable Development and Ecological Awareness – "St. Kliment Ohridski" University of Sofia – Sofia – Bulgaria
- 91 UNESCO Chair in Environmental Sciences and Management – Technical University of Georgia – Tbilisi – Georgia
- 144 UNESCO-Cousteau Ecotechnie Chair – Technical University of Moldova – Chişinău – Moldova (Republic of)
- 175 UNESCO-Cousteau International Ecotechnie Chair/Network – University of Bucharest – Bucharest – Romania
- 183 UNESCO Chair in Environmental Education in Siberia – Altai State Technical University – Barnaul – Russian Federation
- 185 UNESCO Chair in Regional Studies for Environmental and Population Issues – North Ossetian State University – Vladikavkaz – Russian Federation
- 208 UNESCO Chair in Sustainable Development and Ecological Awareness – Technical University of Zvolen – Banska Stiavnica – Slovakia
- 393 UNESCO Chair in Ecology of a Technogenous Region – Donetsk State University (DonSU) – Donetsk – Ukraine
- 434 UNESCO Chair in Biosphere Reserves – Georgian State Agricultural University – Digomi, Tbilisi – Georgia
- 676 UNESCO Chair in Geodynamics – The Institute of Geodynamics "Sabba S.Stefanescu" of the Romanian Academy – Bucharest – Romania

Basic and Engineering Sciences

- 19 UNESCO Chair in Radiation and Environmental Management – International Sakharov Environmental University – Minsk – Belarus
- 21 UNESCO Chair in Energy Conservation and Renewable Energies – Belarusian National Technical University (BNTU) – Minsk – Belarus
- 46 Francophone UNESCO Chair for development engineering – RENED Technical University – Sofia – Bulgaria

- 174 UNESCO Chair in Engineering Sciences: Energy and Environment Programme – Polytechnical Institute of Bucharest – Bucharest – Romania
- 177 UNESCO Chair in Integrated Rural Development – University of Agricultural and Veterinary Sciences – Bucharest – Romania
- 192 UNESCO Chair in Renewable Energy and Rural Electrification – All-Russian Research Institute for Electrification of Agriculture – Moscow – Russian Federation
- 201 UNESCO Chair in Environmental and Engineering Geology for Sustainable Development – Moscow University of Engineering Ecology – Moscow – Russian Federation
- 302 UNESCO Chair in Ecologically Clean Engineering – Moscow State University of Environmental Engineering – Moscow – Russian Federation
- 375 UNESCO Chair in Life Sciences – Life Sciences International Postgraduate Educational Center – Yerevan – Armenia
- 379 UNESCO Chair in Environmental Biology – Hungarian Academy of Sciences – Szeged – Hungary
- 380* UNESCO Interdisciplinary Chair in Molecular Medicine – Polish Academy of Sciences – Warszawa – Poland
- 381 UNESCO Chair in Cryobiology – National Academy of Sciences of Ukraine – Kharkov – Ukraine
- 409 UNESCO Chair in Environmentally Clean Technologies – The Kharkiv National Automobile and Highway University – Kharkiv – Ukraine
- 494 UNESCO Chair in Cellular and Molecular Neuroscience – International Centre for Molecular Physiology – Kiev – Ukraine
- 495 UNESCO Chair in Continuing Engineering Education – Budapest University of Technology and Economics – Budapest – Hungary
- 507* UNESCO Chair in Healthy Living – Tbilisi State Medical University – Tbilisi – Georgia
- 550 UNESCO Chair in New Materials and Technologies – Krasnoyarsk State Technical University (KSTU) – Krasnoyarsk – Russian Federation
- 729 UNESCO Chair in Interdisciplinary Mechatronics – Kaunas University of Technology – Kaunas – Lithuania
- 744 UNESCO Chair on Renewable Energy and Sustainable Development – The V. I. Vernadsky Taurida National University – Simferopol – Ukraine

Science Policy and Sustainable Development

- 171 UNESCO-EOLSS Chair in Intellectual Entrepreneurship in the World of Work for Sustainable Development – Leon Kozminski Academy of Entrepreneurship and Management – Warsaw – Poland
- 203 UNESCO Chair/Network on Transfer of Technologies for Sustainable Development – International Centre of Educational Systems (ICES) – Moscow – Russian Federation
- 516 UNESCO Chair in Intellectual Modelling and Adaptation of Non-Conventional Technologies to the Problems of Advanced Education and Social Progress – Odessa Polytechnic University – Odessa – Ukraine
- 554 UNESCO Chair in Sustainable Coastal Development – Institute for Environmental Science and Management, University of Latvia (IESAM) – Riga – Latvia
- 723 UNESCO Chair in Interdisciplinary Complex Systems – University of Wrocław – Wrocław – Poland

UNESCO Chairs in the Natural Sciences

– Europe and North America Region

Intergovernmental Oceanographic Commission

- 95 UNESCO Chair in Marine Geology and Coastal Management – Christian Albrechts University of Kiel – Kiel – Germany
- 220 UNESCO Chair in Environmental and Marine Resources Management – Universidad de Las Palmas de Gran Canaria – Las Palmas de Gran Canaria – Spain

Water Sciences

- 618 UNITWIN Cooperation Programme: UNESCO Chair/International Network of Water-Environment Centres for the Balkans on «Sustainable Management of Water and Conflict Resolution» – Aristotle University of Thessaloniki – Thessaloniki – Greece
- 808 UNESCO Chair in Sustainable Rivers – University of Washington – Seattle – United States of America

Ecological and Earth Sciences

- 54 UNESCO Chair in Environment and Sustainable Development – University of Quebec at Montreal – Montreal – Canada
- 111 UNESCO Chair in Plant-Water Relationships in Desert Sand Dunes – Ben-Gurion University of the Negev – Beer-Sheva – Israel
- 199 UNESCO Chair for the Earth as Global System – Space Studies Institute of Cataluña, Catalan Research Foundation – Barcelona – Spain
- 231 UNESCO Chair in Environment and Sustainable Development – Universidad de Salamanca – Salamanca – Spain
- 248 UNESCO/Cousteau Ecotechnie Chair in Human Response to Environmental Stress – Göteborg University – Göteborg – Sweden
- 560 UNESCO Chair in Environmental Studies – Universidad Rey Juan Carlos – Madrid – Spain
- 566 UNESCO-SA NOSTRA Chair in Business Management and Environment – Universidad de las Islas Baleares – Palma de Mallorca – Spain
- 622 UNESCO Chair for Landscape and Environment – University of Montreal – Montreal – Canada
- 658 UNESCO-Cousteau Ecotechnie Chair in Global Coastal Assessment – University of Rhode Island – Narraganset – United States of America
- 665 UNESCO-Cousteau Ecotechnie Chair in Coastal Resources – The State University of New Jersey – New Jersey – United States of America
- 792 UNESCO Chair in Eremology – Ghent University – Ghent – Belgium

Basic and Engineering Sciences

- 112 UNESCO Interdisciplinary Chair in Biotechnology – «Tor Vergata» University of Rome – Roma – Italy
- 218 UNESCO Chair for Numeric Methods in Engineering – Polytechnical University of Cataluña – Barcelona – Spain
- 219* UNESCO Chair in Tropical Medicine – Universidad de Granada – Granada – Spain
- 263 UNESCO Chair in Mechatronics – Bogazççi University – Istanbul – Turkey
- 264 UNESCO Chair in Computer-Integrated Manufacturing – University of Galatasaray – Istanbul – Turkey
- 294 UNESCO Chair in Sustainable Energy Management – Technical University of Lisbon – Lisboa – Portugal
- 467 UNESCO Chair in Remote Medicine – Universidad de la Laguna – Tenerife – Spain
- 578 UNESCO Chair for Food, Agriculture and Environment Biotechnology for sustainable development (BIODEV) – University of Provence – Marseille – France
- 645 UNESCO Chair in Macromolecular Characterization – German Institute for Polymers – Darmstadt – Germany
- 660 UNESCO Chair for Environmental Applications of Membrane Science – Ecole Nationale Supérieure de Chimie de Montpellier (ENSCM) – Montpellier – France
- 685 UNESCO Chair in Remote Medicine for Multidisciplinary Distance Learning – University of Geneva – Geneva – Switzerland
- 751 UNESCO Chair on Natural Hazards in the Geosphere, the Hydrosphere and the Atmosphere – National Observatory of Athens – Athens – Greece
- 754 UNESCO Chair in Problem-Based Learning in Engineering Education – Aalborg University – Aalborg – Denmark
- 758 UNESCO Chair for Training of Trainers in Pedagogy and Clinical and Epidemiological Research in the Medical Sciences – Université François Rabelais – Tours – France

Science Policy and Sustainable Development

- 230 UNESCO Chair in Exact and Experimental Sciences – Universidad de Salamanca – Salamanca – Spain
- 451 Chaire UNESCO de Technique et Culture Pere Durán Farell – Universidad Politécnic de Cataluña – Madrid – Spain
- 651 UNESCO Chair for Innovation for Sustainable Development – Ecole Centrale Marseille – Marseille – France
- 763 UNESCO Chair for Technologies in Support of Development – École polytechnique fédérale de Lausanne – Lausanne – Switzerland

UNESCO Chairs in the Natural Sciences – Latin America and the Caribbean Region

Intergovernmental Oceanographic Commission

- 57 UNESCO Chair in Coastal Oceanography
– Universidad de Concepción – Concepción – Chile

Water Sciences

- 681 UNESCO Chair on Water Resources Sustainability
– The University of San Carlos de Guatemala
– Ciudad de Guatemala – Guatemala
- 814 UNESCO Chair in Water in the Knowledge Society
– Instituto Mexicano de Tecnología del Agua
– Jiutepec, Morelos – Mexico

Ecological and Earth Sciences

- 7 UNESCO-AUGM Chair in Ecology and Environment
– Universidad Nacional de La Plata – Montevideo
– Argentina
- 9 UNESCO-COUSTEAU Chair in Ecotechny
– Universidad Nacional de General San Martín
– Buenos Aires – Argentina
- 28 UNESCO Chair in Environment and Sustainable Development
– Universidad Mayor de San Simón
– Cochabamba – Bolivia
- 69 UNESCO Chair for Human Development and Environmental Education
– Universidad Pontificia Bolivariana – Medellín, Antioquia – Colombia
- 101 UNESCO Chair on Sustainable Utilization of Rain Forest Resources
– University of Guyana
– Georgetown – Guyana
- 604 Chaire UNESCO de Renforcement du Programme d'études théoriques d'écologie
– Fondation Universitaire de Popayán – Santafé de Bogotá
– Colombia
- 712 UNESCO Chair in Biodiversity Informatics
– Instituto Tecnológico de Costa Rica – Cartago – Costa Rica
- 737 UNESCO Chair in South-South Cooperation for Sustainable Development
– The Federal University of Pará – Belém – Brazil

Basic and Engineering Sciences

- 8 UNESCO-AUGM Chair in Microelectronics
– Universidad Nacional de Rosario – Rosario
– Argentina
- 61 UNESCO Chair in Environmental Engineering
– Universidad Católica de Valparaíso – Santander
– Chile
- 138 UNESCO Chair in Advanced Engineering
– Universidad Nacional Autónoma de México
– México – Mexico
- 166 UNESCO-AUGM in Environmental Basic Sciences
– Universidad Nacional de Asunción
– Asunción – Paraguay
- 313 UNESCO Chair for Biophysics and Molecular Neurobiology
– Universidad Nacional del Sur
– Bahía Blanca – Argentina
- 364 UNESCO Chair in Biomaterials
– Universidad de La Habana – La Habana – Cuba
- 376 UNESCO Chair for Formal and Developmental Biology
– Federal University of Rio de Janeiro-UFRJ
– Rio de Janeiro – Brazil
- 561 UNESCO Chair in "Women, Science and Technology"
– La Facultad Latinoamericana de Ciencias Sociales (FLACSO), Sede Académica Argentina
– Buenos Aires – Argentina
- 753 UNESCO Chair in "Water, Women and Development"
– Federal University of Ouro Preto UFOP, Ouro Preto, Minas Gerais
– Ouro Preto – Brazil

Science Policy and Sustainable Development

- 12 UNESCO Chair in Science and Technology Indicators
– Universidad Nacional de Quilmes
– Buenos Aires – Argentina
- 489 UNESCO-EOLSS Chair in Natural Resource Management, Land Planning and Environmental Protection
– Universidad de Concepción
– Concepción – Chile
- 728 UNESCO Chair «José Reis» in Scientific Divulgation
– Universidade de São Paulo – São Paulo – Brazil

- Intergovernmental Oceanographic Commission
- Water Sciences
- Ecological and Earth Sciences
- Basic and Engineering Sciences
- Science Policy and Sustainable Development

* Chair under review

Networking

Most UNESCO Natural Sciences Chairs are actively coordinating or participating in a broad range of networks that bring together universities and research institutions according to themes and geographical locations. These networks often have a positive multiplier effect by engaging institutions that otherwise are not directly associated with UNESCO as partners in the implementation of UNESCO programmes and projects. An example of such a network is the Arab Region Ecotechnie Network which groups together several UNESCO-Cousteau Ecotechnie Chairs, as well as other non-Ecotechnie Chairs in the region (see Figure AREN MAP).

Activity Reporting

The internal review revealed that some of the Natural Sciences Chairs were no longer particularly active. As a matter of fact, only 70% of the Natural Sciences Chairs have submitted activity reports. All UNESCO Chairs are requested to submit annual reports, which are important sources of information for UNESCO, Member States and fellow Chairs on their activities, progress made and difficulties encountered.

Based on these findings, the Natural Sciences Sector has been following-up with those Chairs that have not submitted their reports with a view to assess if the lack of reporting is based on communication problems, or if there are structural or other difficulties. If the Chair is facing more substantive challenges, the Sector is reviewing what it can do to ameliorate the situation or if the Chair should be considered for closure.

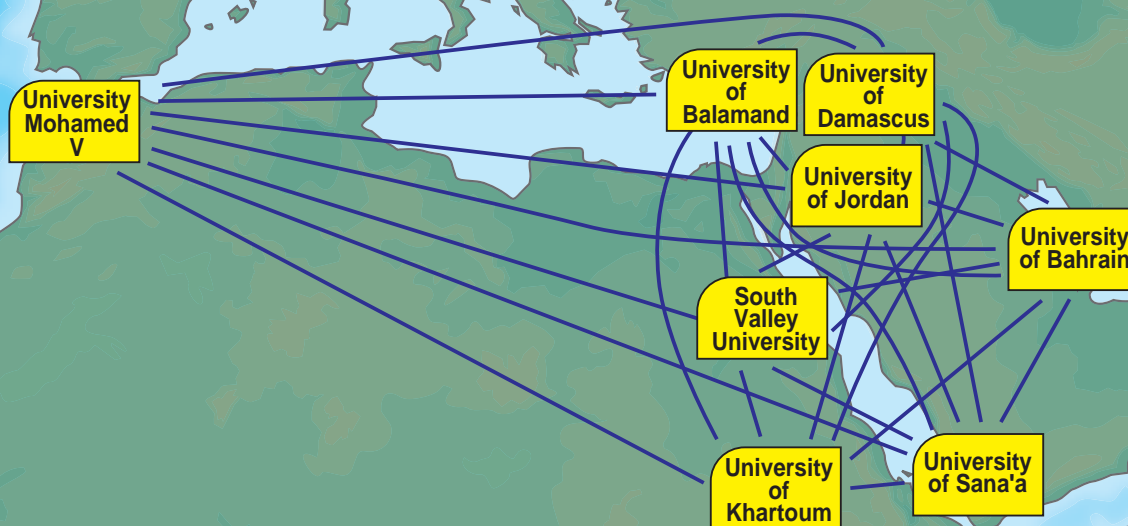
Working with Chairs

The UNESCO Chairs in the Natural Sciences are often appreciated partners that take active part in the work of the Organization, such as through their participation in UNESCO conferences and expert meetings, and through assisting in project implementation and in the drafting of documents, as well as in training activities. The Natural Sciences Sector is keen to ensure that in working with the Chairs, the partnerships are beneficial also to the Chair's host institution and the Member States concerned.

Financing of Natural Sciences Chairs

The success of the Natural Sciences Chairs is linked to their financial situation. It is difficult to make generalizations across the 189 Natural Sciences Chairs concerning their financial status. However, it can be noted that some Chairs are hosted in universities in the North with good access to university and public sector funds, while most Chairs in the South are struggling for sufficient financial resources. The present global financial and economic crises will likely not improve their situation, as public and private funds risk becoming increasingly scarce. It is therefore important that Natural Sciences programmes and units do what they can in order to mobilize sufficient regular and extrabudgetary sources together with the Chairs.

UNESCO Chairs in the Natural Sciences – The Arab Region Ecotechnie Network (AREN)



Ecotechnie Chairs in AREN

- UNESCO-Cousteau Ecotechnie Chair/Network in Environment and Sustainable Development – The South Valley University – Aswan – Egypt (82)
- UNESCO-Gas Natural Chair in environmental management and sustainable development – Mohamed V University – Rabat – Morocco (148)
- UNESCO-Cousteau Ecotechnie Chair in Environment and Sustainable Development – University of Bahrain – Isa Town – Bahrain (553)
- UNESCO-Cousteau Ecotechnie Chair as a Resource Centre for Policy-Making, Education, Technical Assistance and Research for Sustainable Ecological Development – University of Balamand – Beirut – Lebanon (590)

Non-Ecotechnie Chairs in AREN

- University of Sana'a – Sana'a – Yemen
- University of Jordan – Amman – Jordan
- University of Khartoum – Khartoum – Sudan
- The University of Damascus – Syria

The Arab Region Ecotechnie Network comprises eight universities in the region, three of which are UNESCO-Cousteau Ecotechnie Chairs. They are cooperating on a range of interdisciplinary environmental and sustainable development issues linking ecology, economics, social sciences and technology through joint seminars, projects, training courses and student exchanges.

The Ecotechnie Chairs are part of the UNESCO - Cousteau Ecotechnie Programme (UCEP), which is an international initiative to promote interdisciplinary education, research and policy-making in the field of the environment and development. UCEP's mission is to reduce barriers to change through new incentives and by providing future decision- and policy-makers with integrated, multidisciplinary education, training and research. It is a joint effort of the UNESCO MAB Programme and the Cousteau Society.

Establishment and Closure of Natural Sciences Chairs

Natural Sciences Chairs, like all UNESCO Chairs, are established in accordance with the general "Guidelines and Procedures for the UNITWIN/UNESCO Chairs Programme".¹ This implies that a project outline is submitted to UNESCO using pre-defined format included in the Guidelines through the respective UNESCO National Commission. The outline is then assessed by the competent Division/Unit in the Natural Sciences Sector in close consultation with the relevant Field Office. If assessed positively, a letter of agreement will be established between UNESCO and the institution hosting the Chair following which the Chair holder can be nominated by the host institution in consultation with UNESCO and the activities of the Chair can start.

Chairs are formally established through Letters of Agreement, the earlier versions of which could be cancelled at the initiative of the Director-General, while more recent Letters are time-limited to two years renewable by an exchange of letters between the parties.

According to the Guidelines and Procedures for the UNESCO UNITWIN Programme, circumstances under which UNESCO may close the Chair or network are as follows:

1. No progress report received from the Chair for over three years;
2. Progress reports received by UNESCO are evaluated negatively;
3. The activities of the Chair do not cohere with the mandate of UNESCO.

Concrete proposals concerning Chairs that Natural Sciences would like to see terminated, or that risk being terminated, taking into consideration the challenges that many Chairs in the South are facing, can be made by Natural Sciences Directors, together with staff at Headquarters and in the Field based on the questionnaire results, for the examination

of ADG/SC. This procedure was successfully tested in 2008, during which several non-active Chairs restarted their activities, while 13 Natural Sciences Chairs were closed by the Director-General.

To facilitate information management related to its Chairs, **Natural Sciences is developing a comprehensive section on the Natural Sciences Sector web site dedicated to the Natural Sciences Chairs programme with information on existing chairs, activity reports, new chair proposals and a discussion forum.**

Towards an Optimized Natural Sciences Chairs Programme

During the early stages of the programme, Chairs were mainly established with the purpose of providing support to institutions on issues they viewed as important, issues that sometime coincided with the programmes and priorities of UNESCO, but often did not.

The Sector is therefore screening existing Chairs regularly in order to identify:

- opportunities for strengthening existing Chairs;
- good practices and benefits derived from Natural Sciences Chairs;
- non-active Chairs or closing of Chairs when necessary;
- Chairs that primarily deal with non-priority topics.

With increasingly scarce resources, new Chair proposals are examined carefully in the light of Natural Sciences and UNESCO-wide programme priorities and sustainability.

With the view of establishing stronger partnerships with institutions that are active on Natural Sciences priority issues, the Sector should also take a much more pro-active role in the identification of potential new Chairs, in the South in particular.

¹ <http://unesdoc.unesco.org/images/0014/001439/143918e.pdf>

After reviewing the present list of Chairs and in line with current priority areas, it is clear that additional Chairs would be particularly welcome around themes such as:

- climate change;
- sustainable urban development;
- scientific assessments (science-policy interactions);

- nanotechnology and biodiversity informatics;
- biosphere reserves as learning sites.

It is satisfactory in this context to note that all the new proposals received in 2009 by the Natural Sciences Sector do address priority areas (see Box 1).

Box 1 – UNESCO Natural Sciences Chair proposals under consideration in 2009

Costa Rica

- UNESCO Chair in Biosphere Reserves and Natural and Mixed World Heritage Sites (University for International Cooperation), San José

Egypt

- UNESCO Chair for Women, Science, and Technology (Ain Shams University), Cairo

Hungary

- UNESCO Chair in Science and Society (Collegium Budapest)
- UNESCO Chair on Child Development – from genes to complete human well-being (University of Pécs)

Italy

- UNESCO Chair in Engineering for Human and Sustainable Development (University of Trento)
- UNESCO Chair in Integrated Water Resources Management and Water Culture (University for Foreigners of Perugia)

Nigeria

- UNESCO Chair in Environmental Sciences (University of Benin)
- UNESCO Chair in Biotechnology (University of Nigeria), Nsukka

Pakistan

- UNESCO Chair in Sustainable Halophyte Utilization (University of Karachi), Karachi
- UNESCO Chair on Awareness Raising Among Poor and Rural People for Improving the Quality of Life Through Science and Technology (Lahore College for Women)

Russia

- UNESCO Chair Protection of Biodiversity of Forest Ecosystems in the Context of Sustainable Development (Voronezh State Academy of Forestry Engineering)

Tanzania

- UNESCO IOC Chair in Marine Technology at the Institute of Marine Sciences (University of Dar Es Salaam)

USA

- UNESCO Chair in Biodiversity Informatics (University of Kansas)

Preferably, Natural Sciences Chairs should focus on key priority areas for UNESCO as defined in its programme and budget. The Biennial sectoral priorities for the Natural Sciences Sector contained in the draft UNESCO Programme and Budget for 2010-2011 (35 C/5) towards which Chairs are expected to contribute are:

- Biennial sectoral priority 1: Policies and capacity-building in science, technology and innovation for sustainable development and poverty eradication.
- Biennial sectoral priority 2: Sustainable management of freshwater, ocean and terrestrial resources, including renewable sources of energy, as well as disaster preparedness and mitigation.

In the draft 35 C/5, several references to activities involving Chairs are clearly identified under different lines of action related to the Natural Sciences that have to be duly implemented in the coming biennium (see Box 2).

While focusing on Chairs in the Natural Sciences, the Natural Sciences Sector is fully committed to promote interdisciplinarity and sectoral cooperation, including in the area of Chairs. In-line with the recommendations of the Overall Review Committee for Major Programmes II (Natural Sciences) and III (Social and Human Sciences), which underlined the essential links between the two Sectors which now are reinforcing cooperation in areas such as science ethics, climate change, water management and AIDS. Cooperation which increasingly will involve relevant chairs in the Natural and Social and Human Sciences.

The Natural Sciences Sector will also seek to ensure stronger collaboration among its Divisions and Programmes, and between the UNESCO Field Offices and Headquarters on complementary Chair themes and topics, such as for example the interface of water, energy and gender.

Box 2 – UNESCO Natural Sciences Chairs in the context of the draft UNESCO programme and budget for 2010-2011 (35 C/5)

Global priority Africa

- Particular focus will be given to strengthening cooperation with the UNESCO Chairs on water resources in Africa.

Global priority gender equality

- Through various partners, notably the UNESCO-L'OREAL Partnership "For Women in Science" and the UNITWIN/UNESCO Chairs Programme, activities in the basic and engineering sciences will place special emphasis on supporting young women scientists and will deploy for this purpose a variety of means. This will include allocating fellowships or grants and providing mentoring, awarding prizes to increase the visibility of successful women scientists, fostering training for women scientists at various levels, encouraging the creation of associations and networks of women scientists and engineers, reinforcing the cooperation of the Chairs specifically focused on women in S&T, and increasing the public understanding of science with a focus on girls and women.

Natural Sciences

- In order to improve its outreach and impact in Member States, Major Programme II will mobilize and enhance coordination of its wide-ranging inscribed country resources: IOC oceans research and monitoring systems, MAB biosphere reserves, natural World Heritage sites, IHP extended range of HELP, G-WADI and FRIEND centres, IGCP, IHP, IOC and MAB National Committees, UNESCO category 1 and 2 centres and institutes and UNESCO Chairs and Networks, and the National Commissions.

- A special effort will be made with regard to the 188 UNESCO Chairs in the Natural Sciences, which have been clustered and linked to form networks on the basis of thematic groups, in order to reorient and align their main programme thrusts with UNESCO's priority areas, build synergy, reduce the existing geographical imbalance and increase the sustainability of the Chairs' context.
- Water education activities will be strengthened through reinforced cooperation with the UNESCO-IHE, the UNESCO Chairs on water and external organizations contributing to the UN DESD.
- At least four regional workshops in cooperation with category 2 centres and water – related Chairs will assist in the strengthening of the knowledge base of the hydrological cycle, including river basins, aquifer systems and ecosystems. Benchmark: at least four regional workshops in cooperation with category 2 centres and water-related Chairs.

Improving governance and fostering intergovernmental cooperation to manage and protect oceans and coastal zones

- Member State requests for policy and capacity development responded to by integrating knowledge and experience available from all relevant IOC programmes. Benchmark: participation in IOC programmes, especially by women scientists, increased by 50% in IOC Chairs in Africa.

Summary of recommendations for the Natural Sciences Sector

1. The Sector should become more proactive in identification and proposal of possible new Chairs.
2. In order to be approved, new Chairs should, as far as possible, focus on issues of direct relevance to the Natural Sciences programmes and priorities and their financial sustainability should be sound.
3. The Sector could consider the phasing out of Chairs that have reached the objectives for which they were established, or of Chairs that do not contribute to the Sector's current programmes and priorities.
4. The Sector should pay particular attention to the needs and challenges of Chairs in the South.
5. The Sector's programmes and units must do what they can in order to mobilize sufficient regular and extrabudgetary sources to the Chairs.
6. The Sector will promote cooperation and interaction between its Divisions and the Field to help develop links between Chairs (i.e. North-South cooperation between Chairs) and on complementary Chair themes and topics.
7. The Sector will reinforce Chair cooperation with other Sectors, such as with the Social and Human Sciences Sector in areas such as science ethics, climate change, water management and AIDS.
8. Efforts could be made within the Sector (Headquarters and the Field) to increase the visibility of existing Chairs and to better share information on their activities so that they can become Sector-wide resources and partners (i.e. organizing meetings of Chairs sharing the same issue).
9. The Sector shall develop a comprehensive section on the Natural Sciences Sector web site dedicated to the Natural Sciences Chairs programme with information on existing Chairs, activity reports, new chair proposals and discussion forum.

**For further information about the
UNESCO Chairs in Natural Sciences Sector**

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