



TWAS, the academy of sciences
for the developing world, **and its
affiliated organizations**

twas



Establishment



- Founded 1983 in Trieste, Italy, by Abdus Salam and 40 other eminent scientists from the South (incl. 10 Nobel Laureates)
- Inaugurated 1985 by the Secretary General of the United Nations, Javier Perez de Cuellar



Headquarters



- Located at the Enrico Fermi Building, Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy
- Administered by the United Nations Educational, Scientific and Cultural Organization (UNESCO)





Administration



- International Atomic Energy Agency (IAEA) until 1990



- United Nations Educational, Scientific and Cultural Organization (UNESCO)





Regional Offices

Rio de Janeiro

Brazilian Academy of Sciences



Alexandria

Bibliotheca Alexandrina



Nairobi

African Academy of Sciences



Beijing

Chinese Academy of Sciences



Bangalore

J.N. Centre for Advanced
Scientific Research



Membership

- 841 Members in 89 countries
 - 711 “Fellows” in 73 countries in the South
 - 130 “Associate Fellows” in 17 countries in the North
 - 15 Nobel Laureates
 - > 25% in physical sciences



Objectives

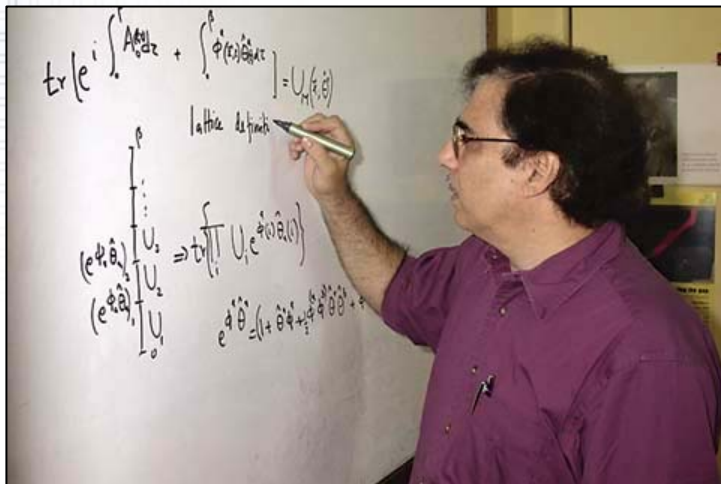
- Recognize, support and promote **excellence** in scientific research in the South
- Respond to the **needs of scientists** working under unfavourable conditions
- Support **South-South** scientific exchange and collaboration
- Promote **South-North** cooperation between individuals and centres of excellence
- Promote **dissemination of scientific information** and sharing of innovative experiences



Promoting Excellence



- Academy membership granted to the most distinguished scientists in the South
- TWAS prizes given for significant contributions by scientists in the South





Promoting Excellence



- Prizes for young scientists awarded on behalf of TWAS by organizations in the South
- Trieste Science Prize





Responding to Needs



- Merit-based competitive research grants in basic sciences given to young scientists in the South





Responding to Needs

- TWAS research units in LDCs
- Spare parts for scientific equipment supplied to laboratories in need





Supporting Exchange



- Postgraduate and postdoctoral fellowships for young scientists in collaboration with Brazil, China, India and Pakistan





Supporting Exchange



- Associateships for regular visits by senior scientists to centres of excellence in the South (in collaboration with UNESCO)
- Fellowships for advanced training and research



Promoting South-North Cooperation

- Support international meetings held in the South
- Support visits of internationally renowned scientists to institutions in the South (with ICSU, UNESCO and UNU)





TWAS General Conferences/Meetings

- To review status and prospects of science in the South and promote strategies for South-South and South-North cooperation

9th General Conference
held in China in October
2003 to celebrate
TWAS's **20th
anniversary**





TWAS General Conferences/Meetings



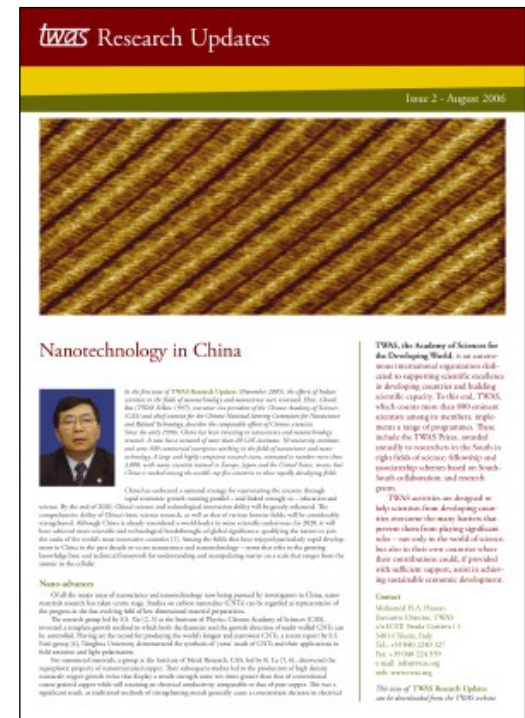
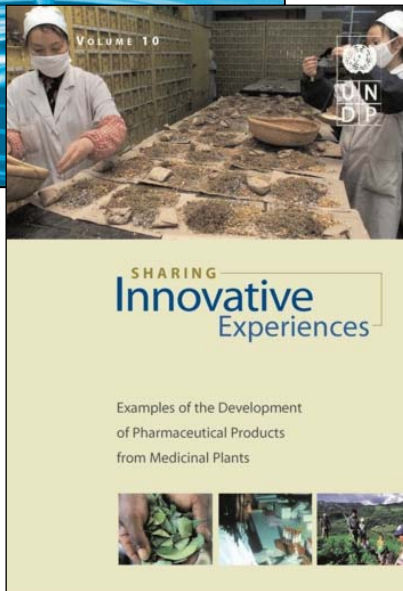
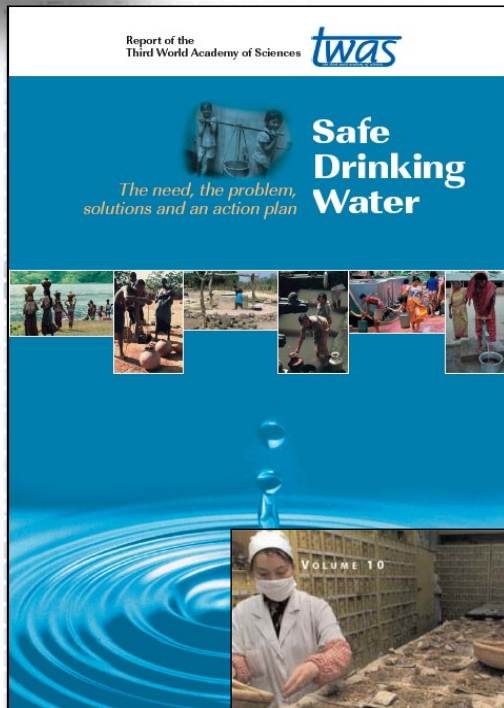
China 1987
Venezuela 1990
Kuwait 1992
Nigeria 1995
Brazil 1997
Senegal 1999
Iran 2000
India 2002
China 2003
Egypt 2005
Brazil 2006
Mexico 2008





Dissemination of Information

- Quarterly newsletter, TWAS Research Updates, proceedings
- Reports
- Innovative experiences



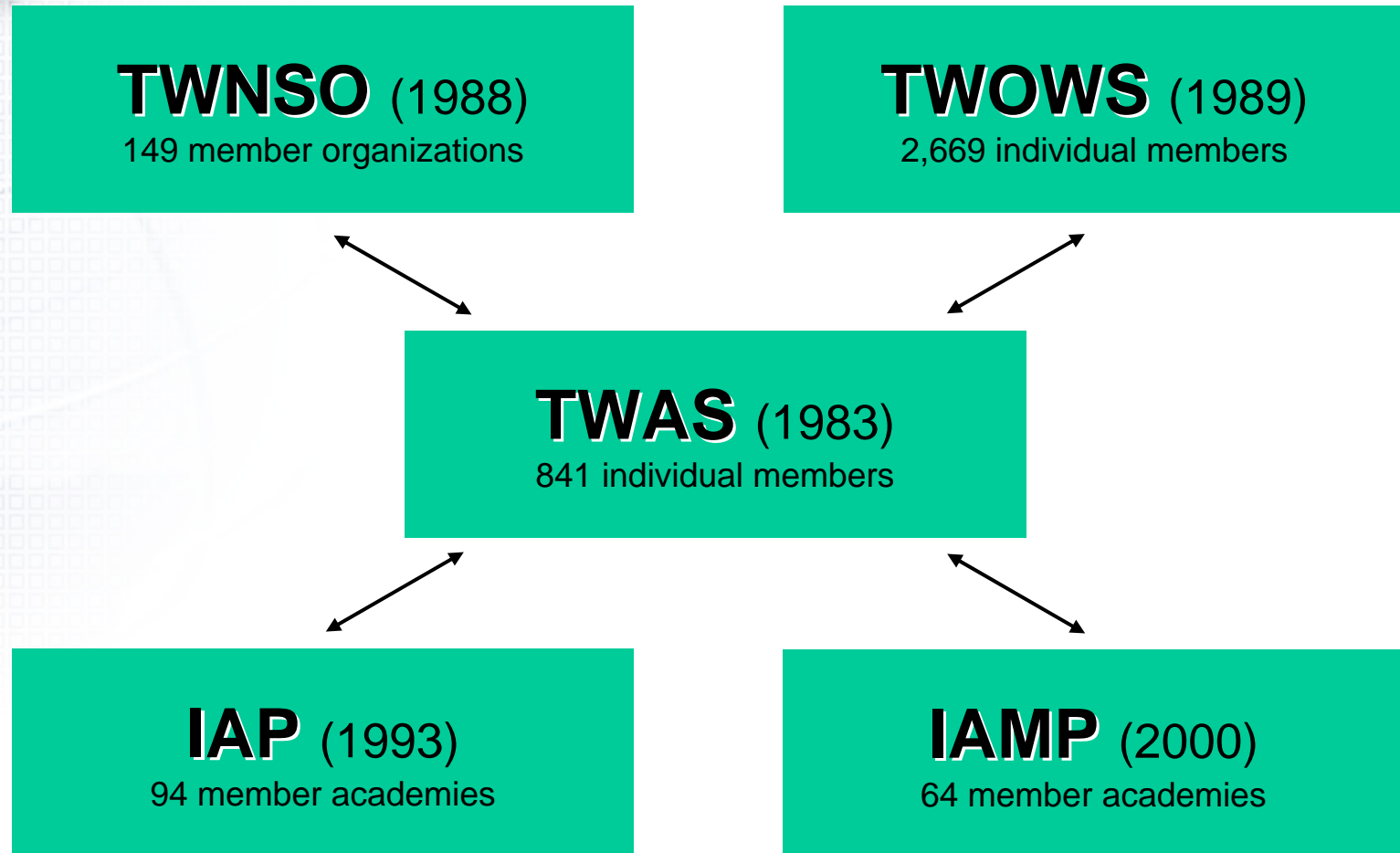


Main Sponsors

- Directorate General for Development Cooperation, Ministry of Foreign Affairs, Italy
- Department for Research Cooperation (SAREC), Swedish International Development Cooperation Agency (Sida)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- Kuwait Foundation for the Advancement of Sciences (KFAS)
- OPEC Fund for International Development

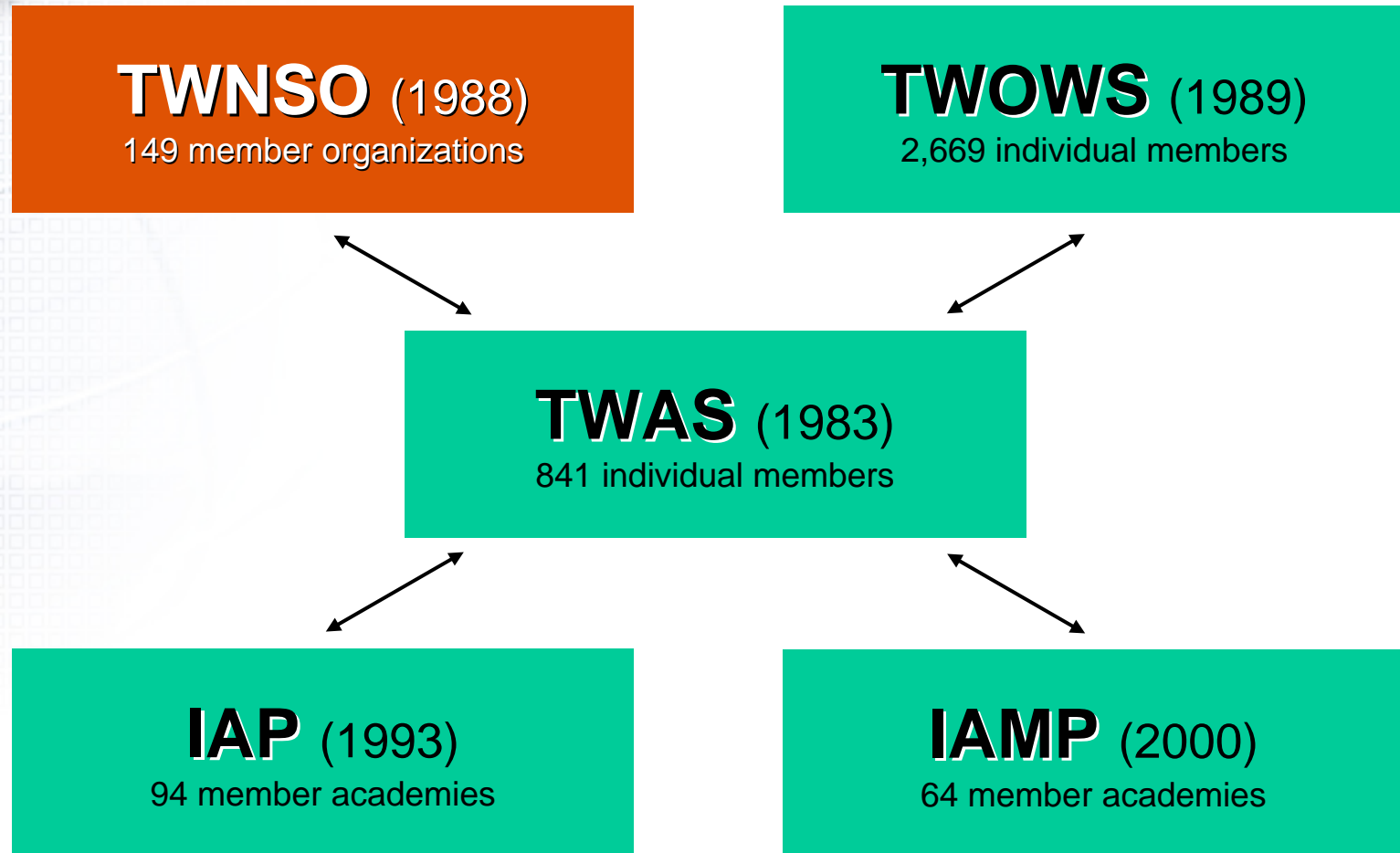


TWAS and Affiliated Organizations





TWAS and Affiliated Organizations





Affiliated Organizations: TWNSO

Third World Network of Scientific Organizations

- Founded in Trieste in 1988 at the initiative of TWAS
- 149 members in 77 nations of the South:
 - 38 ministries of science and technology and higher education
 - 48 science academies
 - 38 national research councils
 - 25 other S&T organizations



Affiliated Organizations: TWNSO

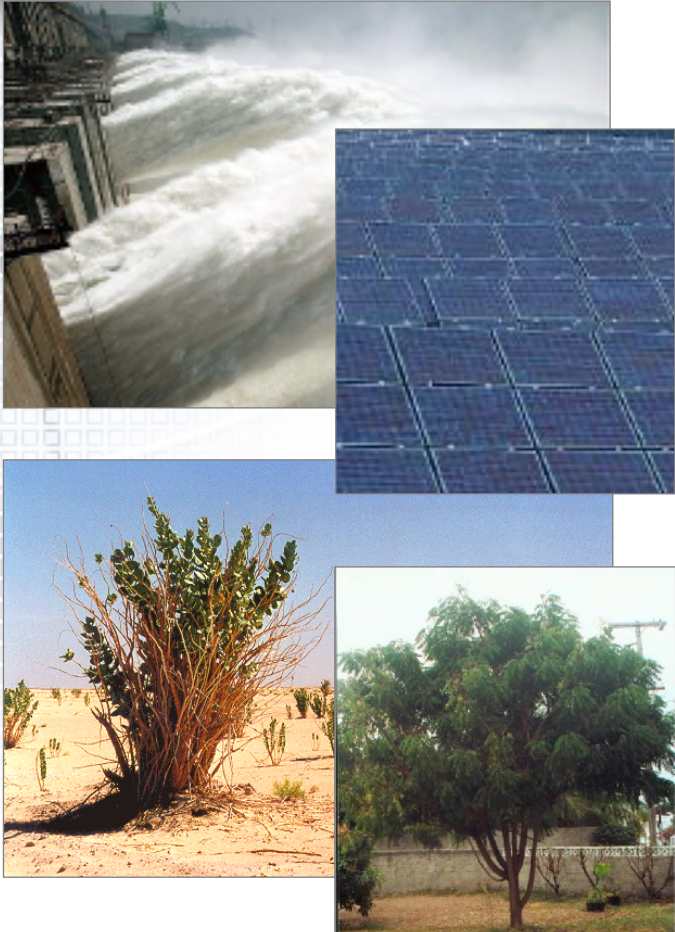
- TWNSO helps to
 - **Build** joint **political support** for science-based economic development
 - Develop and **share** innovative **experiences** in the application of S&T to sustainable development
 - Promote **joint research** with LDCs
 - Develop thematic networks of centres of excellence to **address** specific development-oriented **problems**



Affiliated Organizations: TWNSO

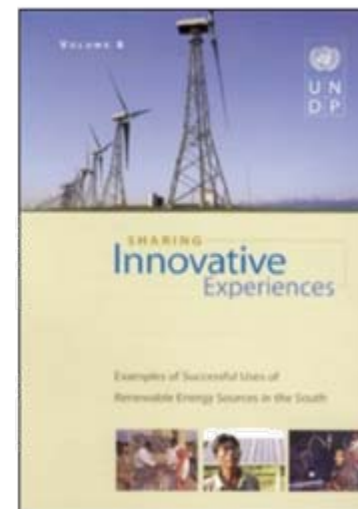
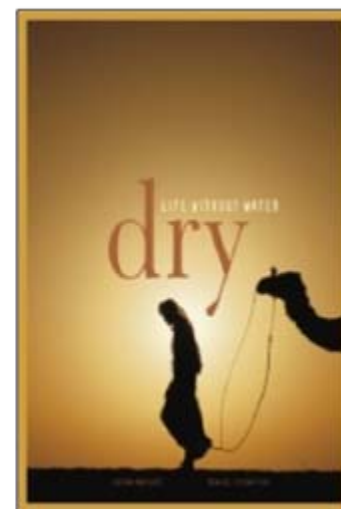
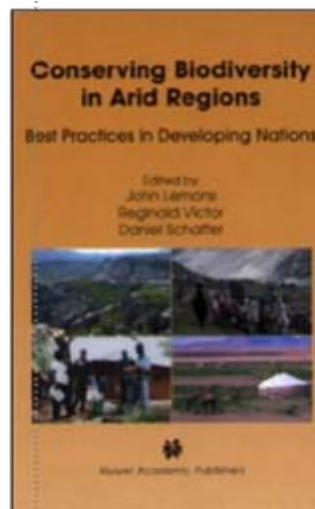
Address Specific Problems

- Conservation, management and sustainable use of **water** resources in the South
- Application of innovative renewable **energy** technologies in the South
- Sustainable utilization of **biodiversity** in arid and semi-arid lands
- Sustainable use of medicinal and indigenous **food** plants in developing countries





Sharing Innovative Experiences





Affiliated Organizations: TWNSO

Sponsors

- Global Environment Facility (GEF), Washington
- Special Unit for South-South Cooperation (SSC), United Nations Development Programme (UNDP), New York
- United Nations Environment Programme (UNEP), Nairobi
- World Meteorological Organization (WMO), Geneva
- OPEC Fund for International Development, Vienna
- United Nations Educational, Scientific and Cultural Organization (UNESCO), Paris

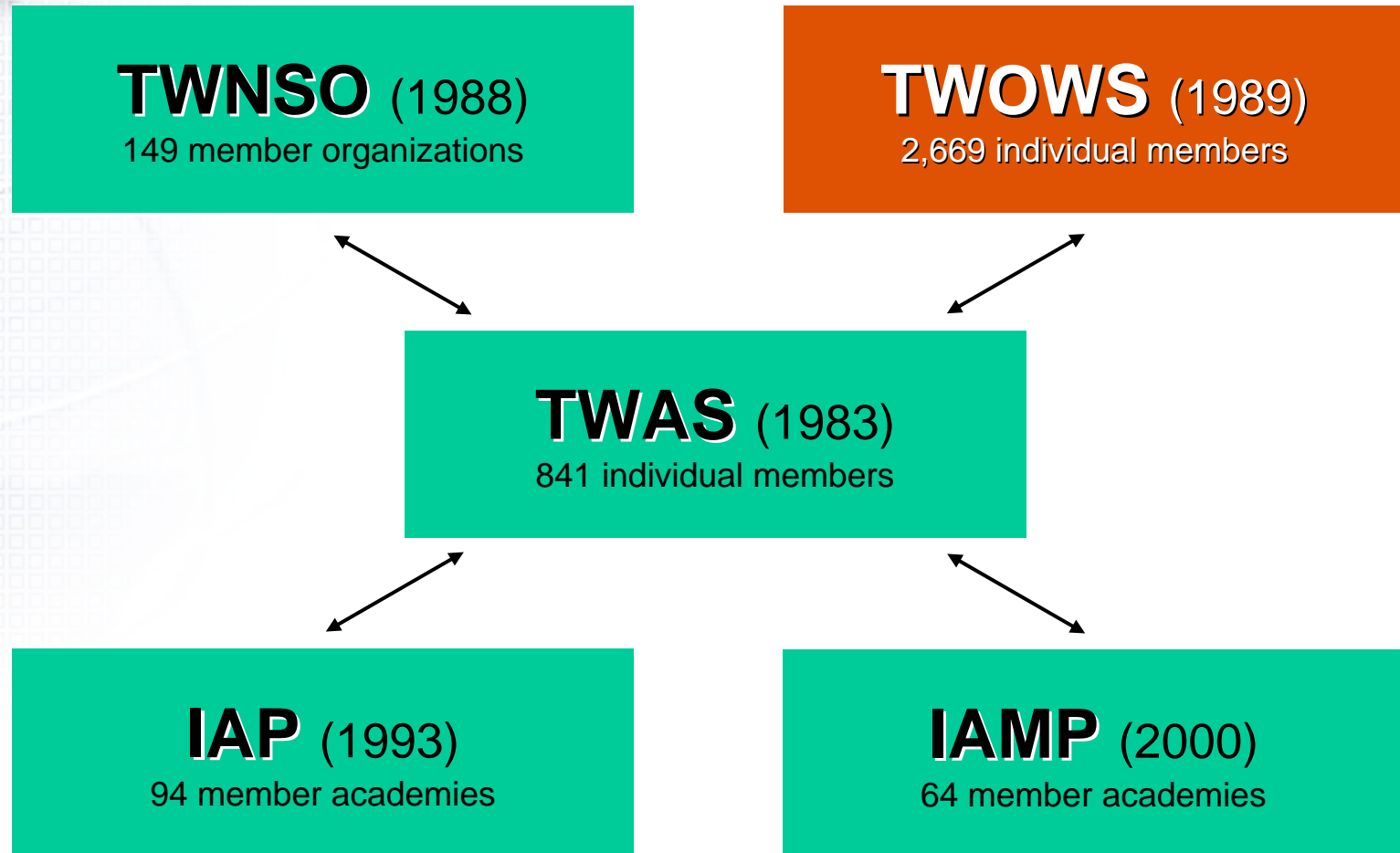




- January 2007: TWNSO to become the "**Consortium on Science, Technology and Innovation for the South**"
- Established by the Ministers of S&T and endorsed by the Foreign Ministers of the Group of 77 (2006)



TWAS and Affiliated Organizations





Affiliated Organizations: TWOWS

- Established in 1993, the **Third World Organization for Women in Science** unites nearly 2,700 women scientists and more than 80 institutions in 87 developing nations and 27 countries in the North



Trieste Conference 1988



Cairo Conference 1993



Cape Town Conference 1999



Bangalore Conference 2005



Affiliated Organizations: TWOWS

- With funds from the Department for Research Cooperation (SAREC) of the Swedish International Development Cooperation Agency (Sida), TWOWS offers **fellowships** for postgraduate training to young **women** scientists from **sub-Saharan African and Least Developed Countries** (LDCs) at centres of excellence in the South.





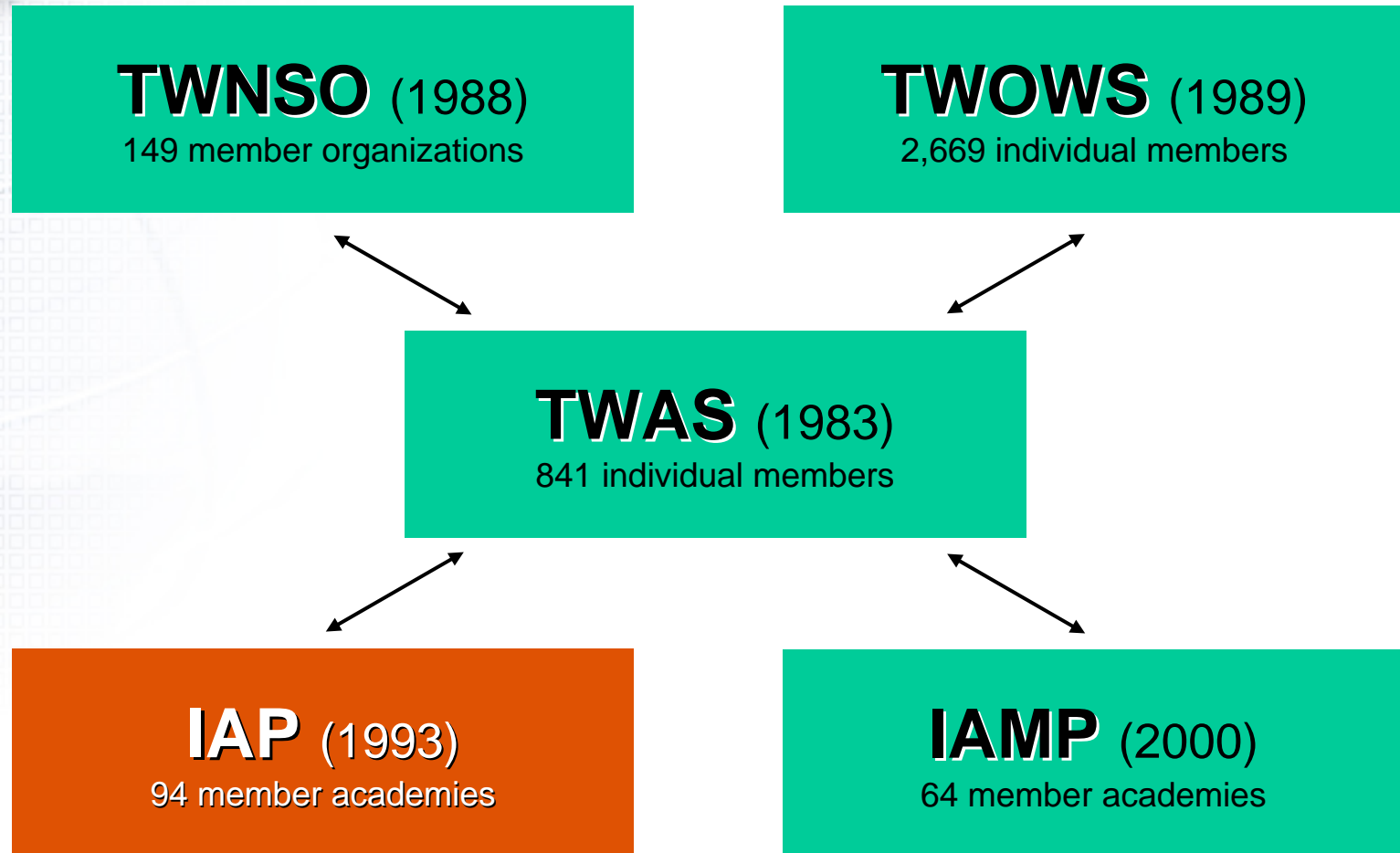
TWOWS Postgraduate Fellowships

- **1998:** TWOWS launches postgraduate fellowships for women
- Since 1998, 1,475 applications have been received from 47 Least Developed and Sub-Saharan African countries.
- Since 1998, 295 fellowships have been awarded to women scientists from 43 countries (1% in physics).
- Since 1998, 45 young women researchers have graduated with TWOWS support.





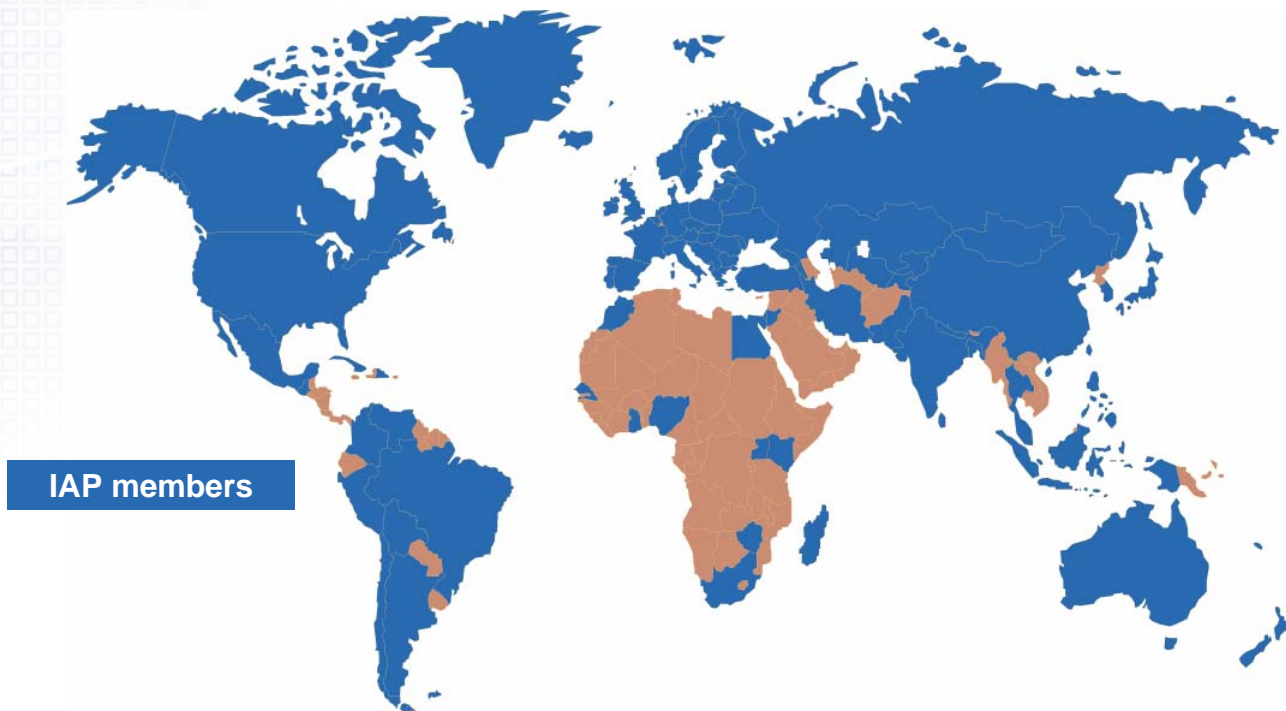
TWAS and Affiliated Organizations





Affiliated Organizations: IAP

- Launched in 1993, the **InterAcademy Panel on International Issues** is a global network of 94 science academies in 90 countries



iap



Affiliated Organizations: IAP

- IAP promotes:
 - Cooperation between member academies on science-related issues of global concern
 - Role of academies as independent, credible advisors to governments on policies and decisions based on S&T
 - Capacity building for academies in developing countries
 - Regional networks of academies in Africa (NASAC), Asia (FASAS, AASA), the Americas (IANAS), the Caribbean (CSU) and OIC countries (NASIC)



Affiliated Organizations: IAP

- IAP issues statements on topics of global concern (e.g., human cloning, biosecurity, evolution)

the INTERACADEMY PANEL
on international issues
iap
A GLOBAL NETWORK OF SCIENCE ACADEMIES

STATEMENT ON HUMAN CLONING

National academies of science from all parts of the world are united in supporting a worldwide ban on the reproductive cloning of human beings, and in calling for cloning to obtain embryonic stem cells for both research and therapeutic purposes to be excluded from this ban.

Reproductive cloning

Cloning is currently the subject of intense global debate. Some countries have already banned the reproductive cloning of humans. We urge all other countries to introduce and support appropriate regulations to ensure that reproductive cloning is subject to a universal ban.

Human reproductive cloning by somatic cell nuclear transfer (see "What is cloning?") raises many issues – ethical, social, economic and scientific. It is through scientific research that the prospect of human reproductive cloning has come to be an issue of public policy. Scientists therefore have a special responsibility in the associated public debate.

What is cloning?

Cloning of an organism commonly involves a technique called somatic cell nuclear transfer, where the nucleus of an egg cell (containing its genetic material) is removed and replaced with the nucleus of a somatic cell taken from the body of an adult. If the reconstructed egg cell is then stimulated successfully to divide, it may develop to the pre-implantation blastocyst stage. In reproductive cloning, the cloned blastocyst is then implanted in the uterus of a female and allowed to continue its development until birth. However, in cloning for research or therapeutic purposes, instead of being implanted in the uterus, the cloned blastocyst is converted into a tissue culture to make a stem cell line for research or clinical applications.

Scientific research on reproductive cloning in other mammals shows that there is a markedly higher than normal incidence of fetal disorders and loss throughout pregnancy, and of malformation and death among newborns. There is no reason to suppose that the outcome would be different in humans. There would thus be a serious threat to the health of the cloned individual, not just at birth but potentially at all stages of life – without obvious compensating benefit to the individual bearing this threat. Moreover, death of a fetus late in pregnancy could pose a serious threat to the health of the woman carrying it. Even on a purely scientific basis, therefore, it would be quite impossible for anyone to attempt human reproductive cloning given our current level of scientific knowledge.

It is not beyond the bounds of possibility that scientific knowledge could advance to the point where reproductive cloning by somatic cell nuclear transfer might be accomplished without undue risk. Such a situation would not of itself warrant the lifting of a ban on the practice, which would still face strong ethical, social and economic objections.

¹ Somatic cells are all types of cell other than egg or sperm cells or their precursors.
22 September 2003 1/3

the INTERACADEMY PANEL
on international issues
iap
A GLOBAL NETWORK OF SCIENCE ACADEMIES

IAP STATEMENT ON BIOSECURITY

*Knowledge without conscience is simply the ruin of the soul.
- C. Kolonel, 1347*

In recent decades scientific research has created new and unexpected knowledge and technologies that offer unprecedented opportunities to improve human and animal health and environmental conditions. But some science and technology can be used for destructive purposes as well as for constructive purposes. Scientists have a special responsibility when it comes to problems of "bad use" and the misuse of science and technology.

The 1972 Biological and Toxin Weapons Convention reinforced the international norm prohibiting biological weapons, stating in its provisions that "each state party to this Convention undertakes never in any circumstances to develop, produce, stockpile or otherwise acquire or retain: microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic or other peaceful purposes." Nevertheless, the threat from biological weapons is again a live issue. This statement presents principles to guide individual scientists and local scientific communities that may wish to define a code of conduct for their own use.

These principles represent fundamental issues that should be taken into account when formulating codes of conduct. They are not intended to be a comprehensive list of considerations.

- Awareness.** Scientists have an obligation to do no harm. They should always take into consideration the reasonably foreseeable consequences of their own activities. They should therefore:
 - always bear in mind the potential consequences – possibly harmful – of their research and recognize that individual good conscience does not justify ignoring the possible misuse of their scientific endeavours;
 - refuse to undertake research that has only harmful consequences for humankind.
- Safety and Security.** Scientists working with agents such as pathogenic organisms or dangerous toxins have a responsibility to use good, safe and secure laboratory procedures, whether codified by law or common practice.²

¹ "Science sans conscience n'est que ruine de l'âme."
² Such as the WHO Laboratory Biosafety Manual, Second Edition (Revised).
page 1 of 2

the INTERACADEMY PANEL
on international issues
iap
A GLOBAL NETWORK OF SCIENCE ACADEMIES

IAP STATEMENT ON THE TEACHING OF EVOLUTION

We, the undersigned Academies of Sciences, have learned that in various parts of the world, within science courses taught in certain public systems of education, scientific evidence, data, and testable theories about the origins and evolution of life on Earth are being concealed, denied, or confused with theories not testable by science. We urge decision makers, teachers, and parents to educate all children about the methods and discoveries of science and to foster an understanding of the science of nature. Knowledge of the natural world in which they live empowers people to meet human needs and protect the planet.

We agree that the following evidence-based facts about the origins and evolution of the Earth and of life on this planet have been established by numerous observations and independently derived experimental results from a multitude of scientific disciplines. Even if there are still many open questions about the precise details of evolutionary change, scientific evidence has never contradicted these results:

1. In a universe that has evolved towards its present configuration for some 11 to 15 billion years, our Earth formed approximately 4.5 billion years ago.
2. Since its formation, the Earth – its geology and its environments – has changed under the effect of numerous physical and chemical forces and continues to do so.
3. Life appeared on Earth at least 2.5 billion years ago. The evolution, seen after, of photosynthetic organisms enabled, from at least 2 billion years ago, the slow transformation of the atmosphere to one containing substantial quantities of oxygen. In addition to the release of the oxygen that we breathe, the process of photosynthesis is the ultimate source of food energy and food upon which human life on the planet depends.
4. Since its first appearance on Earth, life has taken many forms, all of which continue to evolve, in ways which palaeontology and the modern biological and biochemical sciences are describing and independently confirming with increasing precision. Commonalities in the structure of the genetic code of all organisms living today, including humans, clearly indicate their common primordial origin.

We also subscribe to the following statement regarding the nature of science in relation to the teaching of evolution and, more generally, of any field of scientific knowledge:

Scientific knowledge derives from a mode of inquiry into the nature of the universe that has been successful and of great consequence. Science focuses on (i) observing the natural world and (ii) formulating testable and refutable hypotheses to derive deeper explanations for observable phenomena. When evidence is sufficiently compelling, scientific theories are developed that account for and explain that evidence, and predict the likely structure or process of still unobserved phenomena.

Human understanding of value and purpose are outside of natural science's scope. However, a number of components – scientific, social, philosophical, religious, cultural and political –

page 1 of 2





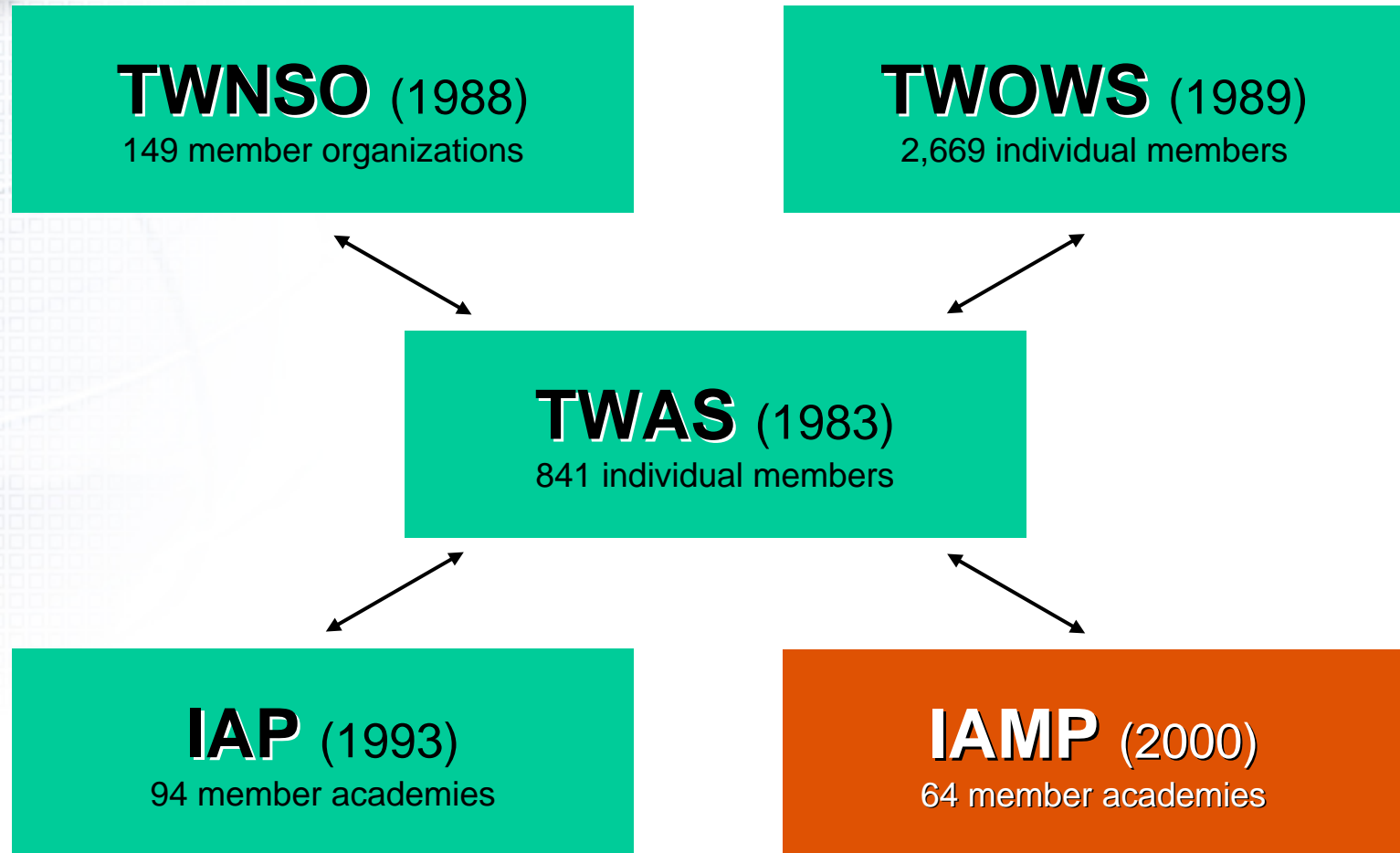
Affiliated Organizations: IAP



- Organizes general conferences every three years
 - Tokyo, 2000
 - Mexico City, 2003
 - Alexandria, 2006



TWAS and Affiliated Organizations





Affiliated Organizations: IAMP

- Established in 2000, the **InterAcademy Medical Panel** is a global network of the world's medical academies or the medical divisions of science academies.



INTERACADEMYMEDICALPANEL



Affiliated Organizations: IAMP

- The 64 members of IAMP seek to:
 - Improve global health, especially among the world's poorest nations.
 - Build capacity of academies to address health-related issues.
 - Provide independent scientific advice to national governments and international bodies for the promotion of health science and health care policy.



Affiliated Organizations: IAMP

- 2nd Global Meeting of IAMP in Beijing, China, in April 2006, together with the launch of the publications of the Disease Control Priorities Project (DCPP)
- Workshop on Reducing Maternal and Perinatal Mortality, 14-15 December 2007





Thank you

www.twas.org

www.twonso.org

www.twows.org

www.interacademies.net

www.iamp-online.org