ISLAMIC WORLD ACADEMY OF SCIENCES (IAS)

International NGO active in Science and Technology for Development

Founded in Amman, Jordan, 1986.

OVERVIEW 2015

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1 BACKGROUND

The establishment of the IAS was recommended by the OIC Standing Committee on Scientific and Technological Co-operation (COMSTECH), and approved by the Fourth Islamic Summit of OIC Heads of State, held in Casablanca, Morocco, in 1984.

The Academy, which commenced its activities in 1986, is an independent body that enjoys international status comparable to other international learned bodies of a similar nature throughout the world.

Today, the IAS boasts a membership of 104 Fellows who represent the scientific elite of OIC countries and communities worldwide. The IAS also has three Nobel Laureates, Heads of State as well as top OIC business leaders among its select group of Honorary Fellows.

By debating scientific issues with top decision-makers and the public, the IAS aims and has managed to influence science policy in many countries. It does this while closely guarding its treasured independence, and deriving its authoritative status from the contribution its Fellows make to the advancement of science worldwide.

The IAS has over the years grown to become a principal propagandist for science and technology in OIC political decision making circles. It has moreover evolved into a decision support/analysis unit, especially on matters related to science and technology, education, health and the environment; within the OIC.

The IAS has been successful in bridging the divide between the fans of science and its inimitable foes by often convincing Heads of State within the OIC to pay more attention to science and technology, and to education; and to divert more resources to endeavours in these domains; and to empower executive decision-makers in their countries to do more in order to rise in the international science, technology and education ranks.

Over the years, the IAS has realised that it may not be able to secure sufficient financial resources to implement fully its programme of action. However this has never prevented it from reaching out nationally, regionally and internationally; or from becoming involved in the majority of international science and technology activities affecting OIC countries. Indeed the IAS has been designated by many as the voice of science and technology in the Islamic world.

Box 1. Vision

IAS's main purpose is to increase interaction among scientists from member states of the OIC, and facilitate the exchange of views on the major contemporary issues affecting the development of the Islamic world.

IAS is designed to function as the *Islamic Brain Trust* meeting periodically to help guide the Islamic world, particularly in the area of science and technology.

2 THE LAUNCH

2.1 The launch

The decision to establish the Islamic Academy of Sciences (IAS) was taken at the 1984 Summit Conference of the OIC. The IAS was formally founded in 1986, with the patronage and support of Jordan and Pakistan, and under the inspired and farsighted leadership of the late Prof. M. A. Kazi FIAS; IAS Founding President from Pakistan; and the late Prof. Ali Kettani FIAS; IAS Founding Secretary General from Morocco.

Thirty-eight eminent scientists and academicians from various Islamic countries were invited to Amman (Jordan) in October 1986, to lay the constitutional and academic foundation of the Islamic World Academy of Sciences, as its Founding Fellows. The Founding Conference was patronised by His Royal Highness Prince El-Hassan Ibn Talal of Jordan. HRH accepted to be Founding Patron of the Academy together with General Zia Ul-Haq, the (late) President of Pakistan.

Box 2. Mission

IAS's mission is to provide a dynamic institutional set up that can assist in the utilisation of science and technology for the general development of Islamic countries and humanity at large

2.2 The IAS relaunched

The Islamic Academy of Sciences (IAS) was launched in 1986, with the blessings of Jordan and Pakistan. The IAS General Assembly at its annual meeting, held in Kuala Lumpur, Malaysia, in March 2005, decided, following a proposal from the IAS Council and Secretariat, to change the name of the Academy so that it becomes the "Islamic World Academy of Sciences." This was carried out primarily for the following reasons:

1) To reflect better the geographic catchment area of the Islamic world which is the birth place of the world's monotheistic religions;

2) To further highlight the thrust area that the IAS is involved in namely accelerating socioeconomic development in the Islamic world through scientific and technological means;

3) To differentiate between the IAS and other renowned specialist Islamic academies commissioned throughout OIC countries that focus on the study of the Islamic Faith and *'Aqeedah*' including the famous Islamic *Fiqh* Academy in Jeddah, Saudi Arabia; and

4) To facilitate the inclusion of non-Muslim scientific and scholarly talent from the OIC, as well as international personalities in IAS activities.

Since that meeting, the Academy Secretariat has taken all the legal and the constitutional steps to effect this change.

3 OBJECTIVES

The main objectives of the IAS are to:

(i) Serve as a consultative organisation of the Muslim *Ummah* and institutions of member states of the Organisation of the Islamic Conference (OIC), on matters related to science and technology;

(ii) Initiate scientific and technological programmes and activities in science and technology, and to encourage co-operation among research groups in the various Islamic countries on projects of common interest;

(iii) Encourage and promote research on major problems of importance facing Islamic countries and to identify future technologies of relevance for possible adoption and utilisation; and

(iv) Formulate standards of scientific performance and attainment, and to award prizes and honours for outstanding scientific achievements to individuals and to centres of excellence in all science and technology disciplines.

4 STRUCTURE

4.1 General

As a sovereign body, the IAS is governed by a General Assembly in which all founding and elected Fellows are member. The number of Academy Fellows was 104 on 1 October 2014. They represent more than 40 countries and many scientific disciplines. The Fellows of the Academy are eminent figures, each in his/her field has achieved a great deal and has contributed significantly both to his/her country's development and the global arena.

A Council, which is comprised of 11 IAS Fellows that is elected by the General Assembly for a 4-year term of office, oversees the management of the Academy.

4.2 General Assembly and Council

The General Assembly of the IAS normally meets once every year, in concomitance with the scientific meeting that the IAS convenes. The IAS Council normally holds two meetings every year, in which it draws up plans for future activities of the Academy and evaluates programmes under implementation. Administrative and financial matters are also assessed and decided.

4.3 IAS Secretariat

Box 3. IAS Secretariat

The Amman-based Secretariat is the IAS's executive arm responsible for maintaining its institutional set-up and implementing its programmes within the guidelines set by the Council and General Assembly

Jordan hosts the IAS Secretariat, which commenced fully its activities in April 1987.

Jordan, as well as offering the IAS an annual maintenance grant, accorded it the diplomatic immunities and privileges normally given to non-governmental organisations that are based in Jordan.

In 1987, HRH Prince El-Hassan of Jordan, Founding Patron of the IAS, graciously instructed the allocation of a plot of land to the Academy – on the outskirts of Amman – for the building of the IAS's permanent premises.

5 FINANCE

The IAS receives an annual grant from the government of Jordan that covers its local general and administrative expenses.

The programmes of the Academy are financed through regular grants from COMSTECH as well as the Islamic Development Bank (IDB). The IAS also undertakes joint programmes with many UN and other international agencies foremost among which is the UNESCO. Moreover, the Academy sometimes receives donations from local and international companies as well as charities in the various countries.

Two trust funds are administrated by the IAS which support some activities in the Islamic world – in some cases by prizes denoting public recognition of achievement, in others, by providing support to training workshops and other activities that are organised in the various countries. Furthermore, the Academy administers the Ibrahim Memorial Award and its related Fund, which was instituted by the Academy after (the late) Professor Muhammad Ibrahim, Founding Fellow of the IAS. This Award is awarded biannually to outstanding scholars working in the medical field from the various OIC-member countries.

Box 4. IAS Waqf

In its efforts to raise funds for the construction of its permanent headquarters, the Academy has established an endowment fund (Waqf), and it is hoped that sufficient funds will be raised for the building of its premises as well as for undertaking new activities. See Appendix F for IAS Waqf Details.

6 PROGRAMME

6.1 General

Box 5. Programme Objective

The programme of the Islamic World Academy of Sciences is designed to be a framework of science and technology activities in the Islamic world.

The IAS programme aims to highlight the harmonious correlation between knowledge, science and technology on the one hand, and Islamic Values on the other.

The programme contains major scientific capacity building elements in science and technology that are aimed specifically at the science community in OIC countries, especially those involved in Basic Sciences' research. Another part of the programme aims at bridging the scientist decision-maker divide and focuses on promoting government action in certain S&T areas. Such action can catalyse the overall process of socio-economic development in Islamic countries. Moreover, the programme of the IAS contains a multi-form information dissemination element that aims to cultivate public interest in science and scientific activities and address the various components of the IAS's target audience.

6.2 Programme Outline

The programme defines the scope of work of the Academy and is made up of the following three major sub-programmes (*Bracketed notes show activities already implemented)*.

6.2.1 Islam and Science

The IAS addresses this sub-programme regularly through the following activities:

(a) Publication of books on Islamic Scientific Thought (Journal published, 1990-1995)

The aim of this undertaking is to provide an objective assessment of the concordant relationship that exists between the components of each of the following topics:

(1) *Qur'an*, *Hadith* and Science (*Book published in 1999*);

(2) The concept of knowledge in Islam;

(3) Modern science and the Islamic Values System; and

(4) Islamic Thought and Modern Science (*Book published in 1997*).

(b) Publication of pamphlets on the links between Islamic practices and science

The following areas are amongst many, being studied:

(1) Science and the concept of *Halal* and *Haram*;

(2) Islamic Rituals;

(3) The Lunar Calendar; and

(4) Animal Sacrifices.

(c) Publication of books on contemporary scientific issues from an Islamic perspective

The purpose of this activity is to examine current scientific issues facing the Islamic *Ummah*. These include for example various aspects of research in genetic engineering, organs transplants, sustainable natural resources development, environmental degradation etc…

6.2.2 Science, Technology and Innovation Development

This is the major element of the programme of the IAS. It addresses the political decision-maker in some aspects as well as the scientists/academics in others.

(a) Implementing capacity-building/ policy-development activities on contemporary scientific issues

Such topics include:

(1) Materials Science *(Conference 2002);*

(2) Culture of Science *(Conference 2002);*

(3) Genetic Engineering and Biotechnology *(Conference 2001)*;

(4) Biomedical Technology *(Conference 2001)*;

(5) Food and Agriculture (*Conference 1987*);

(6) Plant Genetics *(Conference 2001)*;

(7) Physical Standards;

(8) New Materials *(Conference 1989/Conference 2002)*;

(9) Tropical Medicine (*Conference 1993*);

(10) Computer Technology *(Conference 2000)*;

(11) Energy *(Conference 2003);*

(12) Nuclear Technology *(Conference 2003)*;

(13) Space Sciences;

(14) Ocean Sciences;

(15) Microelectronics *(Conference 1989)*;

(16) Lasers and Fibre Optics *(Workshop in Tunisia, 2002);*

(17) Environmental Degradation *(Conference 1992 and Conference 2008)*;

(18) Robotics; and

(19) Remote Sensing.

(b) Promotion of science and technology excellence in the Islamic world

This part of the programme aims to create an environment in which meritorious achievements, inventions and contributions in science and technology are promulgated and rewarded, through the following means:

(1) Publication of a specialised science journal (*Journal has been published since 1988*);

(2) Preparation of model school books (*Conference 1999*);

(3) Research grants (*Standing activity*); and

(4) Prizes and medals (*IAS-COMSTECH Ibrahim Memorial Award*).

Effort has been directed towards providing the scientists and technologists of the Islamic world with appropriate academic fora through which they can interact with world-class scientists so that experiences may be shared.

Thus, conferences, seminars, and lectures have been organised and/or are planned in the following areas:

(1) Food Security (*Conference 1987*);

(2) Advanced Technologies (*Conference 1989*);

(3) Pollution and Environmental Degradation (*Conference 1992*);

(4) Nutrition (*Conference 1993*);

(5) Water Resources Management (*Conference 1994*);

(6) Science Education (*Conference 1999*);

(7) Natural Resources Development;

(8) Land Utilisation;

(9) Desertification (*Conference 1992*);

(10) Exploitation of Ocean Resources;

(11) Energy *(Conference 2003);*

(12) Information Technology *(Conference 2000)*; and

(13) Knowledge Society *(Conference 2009)*.

(c) Co-operation with OIC-Member States in Science and Technology

IAS aims to establish academic linkages with OIC-member states, and their S&T institutions. It is hoped that, through this co-operation, wide-ranging studies could be undertaken on the themes listed below. COMSTECH has published most of the profiles mentioned hereunder. The IAS hopes that the remaining profiles, as well some others on other topics, can be published with the help and co-operation of COMSTECH.

(1) S&T Profiles of Islamic Countries *(Conference 1988)*;

(2) Industrial and Commercial Profiles of Islamic Countries;

(3) Resource Atlas of the Islamic World;

(4) The Status of S&T Education in the Islamic World (*Conference 1999*);

(5) Energy Profile of Islamic Countries *(Conference 2003)*; and

(6) Food Profile of Islamic Countries (*Conference 1987*).

(d) Co-operation with regional and international organisations

Since its launch, the IAS managed to establish links and set up a framework for co-operation with a number of regional and international organisations. This has been achieved through the following means (which are covered in some detail in other parts of the report):

(1) Exchange of literature (*Books, Proceedings, Journals, etc…*);

(2) Exchange of Internet Hyperlinks;

(3) Co-operation agreements that set out modalities of collaboration; and

(4) Organising joint activities such as seminars and workshops.

6.2.3 Dissemination of Information

(1) The Academy, in pursuance of this objective, collects information on different aspects of S&T. Such information is evaluated and disseminated to scientific communities and the public at large, through the following means:

(a) The Internet (w*ebsite launched in 1997*)*(new website launched in 2011)*;

(b) Data Bases *(mini-database developed in 2004*);

(c) Monographs (*see 7.6.2*);

(d) Technology information bulletins *(through e-mail*);

(e) Newsletter (*42 issues have been published*); and

(f) Video and CD-based programmes.

(2) The Academy Programme Review Committee studied a number of ideas and proposed the following general themes that could be addressed by the Academy. The basic idea is to publish quality monographs on the following subjects:

(a) Materials Science and Technology *(Conference 2002);*

(b) Electronics and Computer Sciences and Technology;

(c) Energy *(Conference 2003);*

(d) Biotechnology *(Conference 2001)*;

(e) Biomedical Science and Technology (*Conference 2001*);

(f) Intellectual Property Rights *(Published in 2006)*;

(g) Reverse Engineering (*Monograph published in 2010*);

(h) S&T Indicators (*a fact sheet published in 2007*); and

(i) University Ranking in OIC-Countries (*preliminary study published in 2007*).

6.3 Principle Action Plan

The IAS has, since 1986, achieved two primary objectives that form cornerstones in its mission to assist in the development effort within OIC-member countries. As a policy-making body, it has been actively formulating and promoting science and technology policies that assist countries to streamline their national development effort. Secondly, the Academy has implemented important programmes that fall within its general mission, in particular the provision of experts to countries, publications, specialised training and Information Technology related activities…

The IAS has been pursuing this dual role in a focussed manner, and is constantly promoting its policies amongst OIC countries, while at the same time implementing specialised activities itself that help OIC countries. Some implemented and to be implemented activities are detailed in figures 1-4 as well as in Section 7.

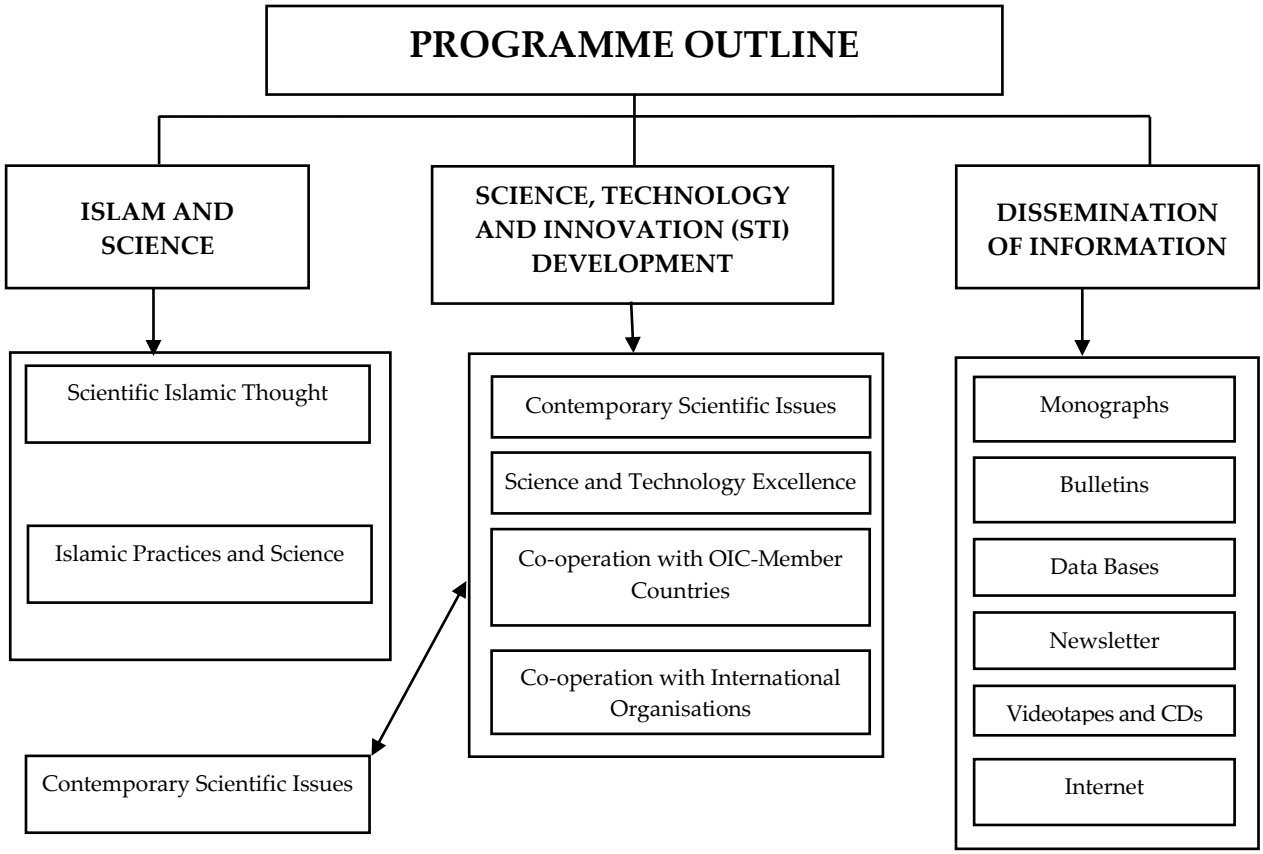

Figure (1)

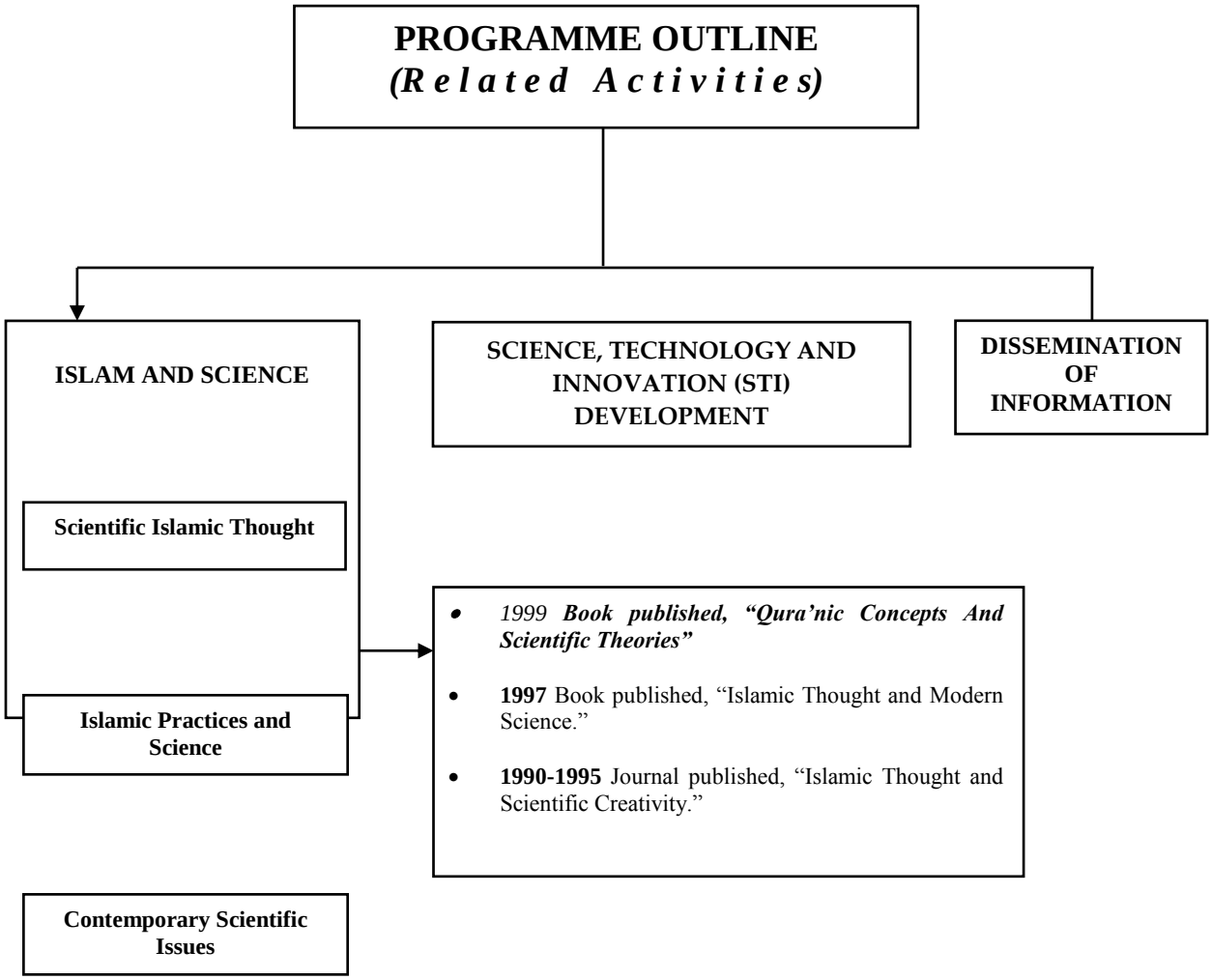
PROGRAMME OUTLINE
(Related Activities)
ISLAM AND SCIENCE
SCIENCE, TECHNOLOGY AND INNOVATION (STI) DEVELOPMENT
DISSEMINATION OF INFORMATION
Scientific Islamic Thought
Islamic Practices and Science
Contemporary Scientific Issues
1999 Book published, "Qura'nic Concepts And Scientific Theories"
1997 Book published, "Islamic Thought and Modern Science."
1990-1995 Journal published, "Islamic Thought and Scientific Creativity."

Figure (2)

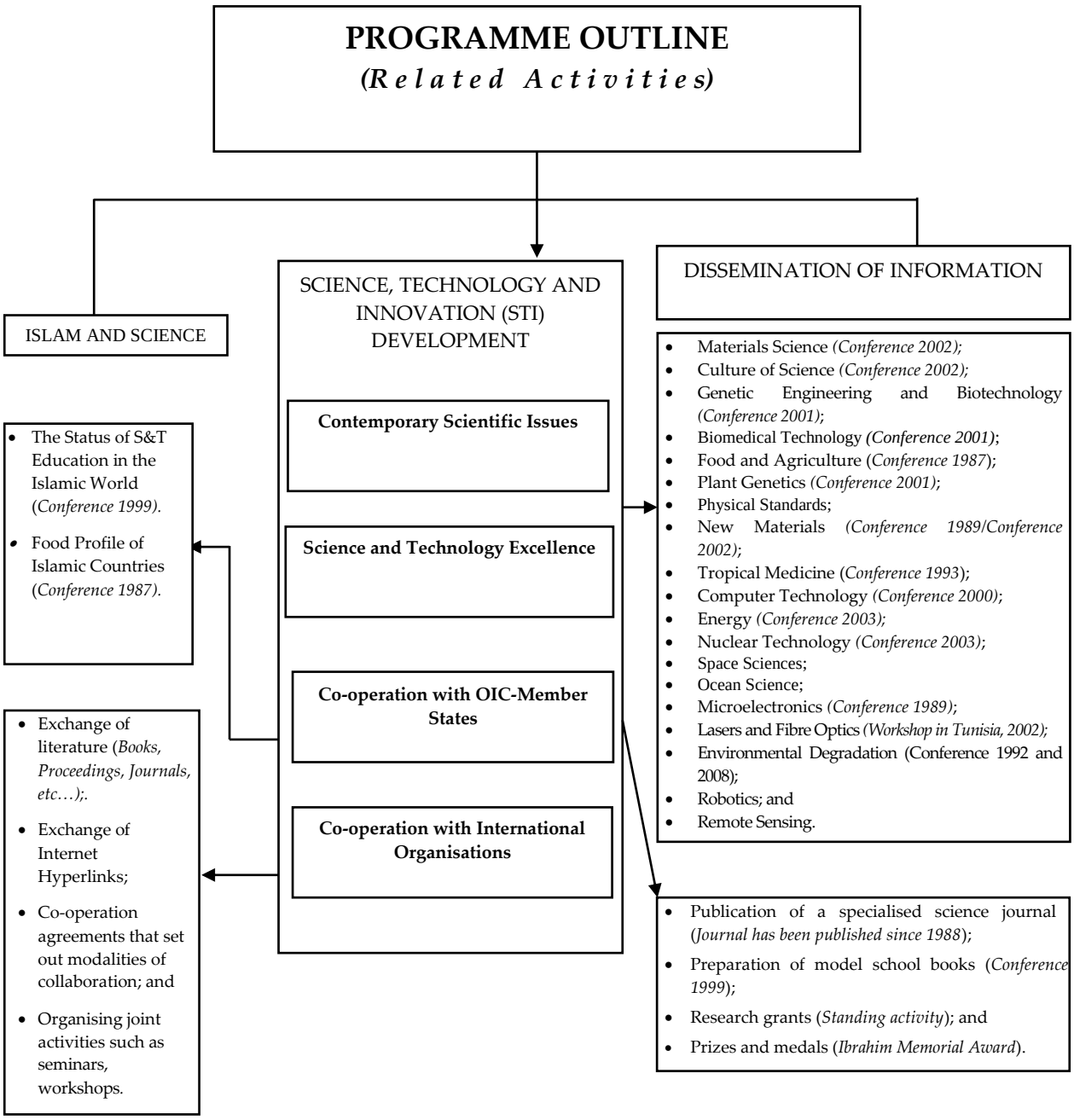
PROGRAMME OUTLINE
(Related Activities)
ISLAM AND SCIENCE
SCIENCE, TECHNOLOGY AND INNOVATION (STI) DEVELOPMENT
DISSEMINATION OF INFORMATION
The Status of S&T Education in the Islamic World (Conference 1999).
Food Profile of Islamic Countries (Conference 1987).
Contemporary Scientific Issues
Science and Technology Excellence
Co-operation with OIC-Member States
Co-operation with International Organisations
Exchange of literature (Books, Proceedings, Journals, etc…);.
Exchange of Internet Hyperlinks;
Co-operation agreements that set out modalities of collaboration; and
Organising joint activities such as seminars, workshops.
Materials Science (Conference 2002);
Culture of Science (Conference 2002);
Genetic Engineering and Biotechnology (Conference 2001);
Biomedical Technology (Conference 2001);
Food and Agriculture (Conference 1987);
Plant Genetics (Conference 2001);
Physical Standards;
New Materials (Conference 1989/Conference 2002);
Tropical Medicine (Conference 1993);
Computer Technology (Conference 2000);
Energy (Conference 2003);
Nuclear Technology (Conference 2003);
Space Sciences;
Ocean Science;
Microelectronics (Conference 1989);
Lasers and Fibre Optics (Workshop in Tunisia, 2002);
Environmental Degradation (Conference 1992 and 2008);
Robotics; and
Remote Sensing.
Publication of a specialised science journal (Journal has been published since 1988);
Preparation of model school books (Conference 1999);
Research grants (Standing activity); and
Prizes and medals (Ibrahim Memorial Award).

Figure (3)

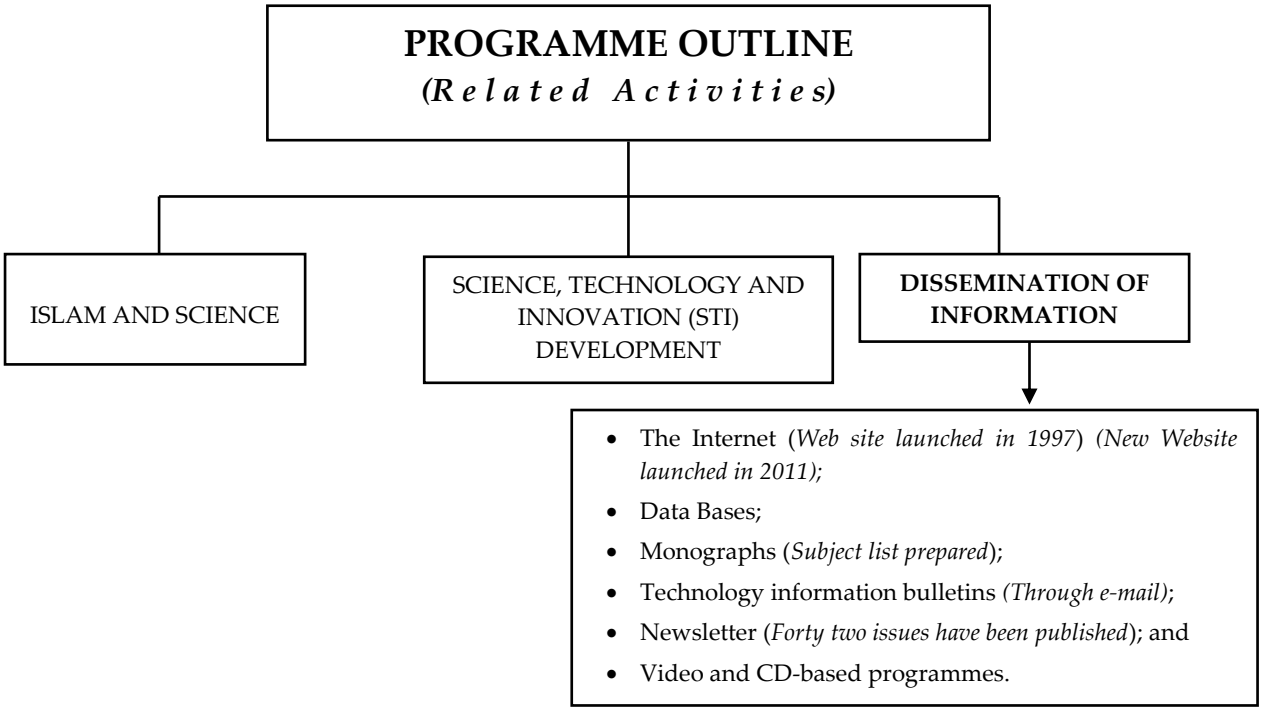

Figure (4)

7 ACTIVITIES

7.1 General

Since its establishment, the IAS has been implementing regular and *ad hoc* activities that are in line with its programme. The objective of all such activities has been to advance the science and technology sector in OIC and developing countries. This, the IAS believes, can generate increased interest in this sector, enabling countries to reap the fruits of its outputs in the areas of education, health, industry, and human welfare in general.

Box 7. What have we accomplished?

The IAS has built itself into an action-oriented institution of the *Ummah* utilising most of its limited resources for activities that accelerate the pace of development of OIC-Member countries.

Operating on a year to year basis, the Academy has been promoting joint Islamic action through its specialised scientific conferences; publishing a series of Conference Proceedings (Policy Documents), journals, books, newsletters, and establishing a quality medical journal that is of an international standard; as well as organising a number of quality training programmes.

Most of all, the Academy has managed to define a very useful dual role for itself namely as a programme implementation and policy-making body dedicated to contributing to the development of the *Ummah* and humanity.

Further, the Academy has established numerous contacts with a number of international non-governmental organisations, as well as governments throughout the world.

Some activities of the Islamic World Academy of Sciences, over the last few years, are summarised bellow:

7.2 Co-operation with other organisations

In its ongoing interaction with regional and international institutions, the IAS maintains contact and exchanges information with more than one hundred similar organisations all over the world. These include:

- OIC Standing Committee for Scientific and Technological Co-operation (COMSTECH), Pakistan;
- Islamic Development Bank (IDB), Saudi Arabia;
- United Nations Educational, Scientific and Cultural Organisation (UNESCO), Egypt and France;
- Islamic Educational, Scientific and Cultural Organisation (ISESCO), Morocco;
- The World Academy of Sciences (TWAS), Italy;
- OIC General Secretariat, Jeddah, Saudi Arabia;
- InterAcademy Panel on International Issues (IAP), Trieste, Italy;
- InterAcademy Medical Panel (IAMP), Trieste, Italy;
- International Union of Academies (IUA), Brussels, Belgium;
- InterAction Council (IAC), Canada; and

7.3 Seminars and Conferences

The conferences of the IAS are open fora that aim at developing a common understanding of a certain topic, and formulating core policies that can assist developing countries to overcome related development difficulties.

The conferences are also intended to be educational opportunities for participants from the host country, and settings at which specialised organisations can forge long-term co-operation links.

Box 8. IAS Conferences

The Academy has been convening near-annual international conferences since its launch. Each such conference is held in a different country every year and supported by a number of international agencies. The host country normally provides local accommodation and hospitality for the participants whilst the Academy and the other co-sponsors pay for the travel of delegates and the other expenses including the publishing of proceedings. The host country is also expected to contribute to the scientific content of the conference.

The conferences aim to provide OIC Heads of State with a scientific roadmap for their national development in the context of the topic at hand

7.3.1 Food Security in the Muslim World, Amman, Jordan, 1987

Under the patronage of Jordan's Prince El-Hassan Ibn Talal, IAS Founding Patron, the Academy convened its first seminar in Amman during 1987 on *Food Security in the Muslim World.*

The seminar concluded with a declaration on *Food Security in the Muslim World* that included a number of recommendations for the decision-makers, planners, and the scientific community in developing countries.

The proceedings of the seminar and a three-language summary were later published and distributed by the IAS, and copies were presented to prominent world figures, as well as Ministers of Agriculture throughout the Islamic world.

7.3.2 Science and Technology Policies for Self-Reliance in the Muslim World, Islamabad, Pakistan, 1988

This was the major activity of the Academy for 1988. It was convened in Islamabad during December of that year, and was sponsored by the IAS, COMSTECH, IFSTAD, as well as the government of Pakistan. It came in conformity with the Academy's programme to promote S&T concepts in the Muslim world.

The Academy issued a declaration at the end of the conference urging the *Ummah* to give the task of formulating S&T policies a high priority. The proceedings of this conference were published in a quality volume by the Academy and distributed internationally.

7.3.3 Co-operation and Co-ordination among Islamic Institutes, Amman, Jordan, 1989

Under the patronage of Jordan's Prince El-Hassan Ibn Talal, the Academy and *Al Albait* Foundation, Jordan; jointly organised a seminar during June 1989, the theme of which was *Co-operation and Co-ordination among Institutes of Research and Studies and their Applications within the Framework of Islamic Thought.*

7.3.4 New Technologies and the Development of the Muslim World, Kuwait City, Kuwait, 1989

Under the patronage of HH the Emir of Kuwait and the (then) Chairman of the Organisation of the Islamic Conference, the conference on *New Technologies and Development of the Muslim World,* was held in Kuwait during December 1989. The conference was jointly organised and sponsored by the IAS and the Kuwait Foundation for the Advancement of Sciences (KFAS).

The Academy issued a declaration at the end of the conference that emphasised the widening technological gap between OIC and industrially advanced countries.

The declaration called for the acceleration of efforts to rejuvenate regional co-operation with the ultimate goal of establishing a Muslim Common Market, and for the removal of barriers constraining the movement of capital, scientific manpower and technology-based products among Islamic countries.

The proceedings of this conference have subsequently been published.

7.3.5 Technology Transfer for Development in the Muslim World, Antalya, Turkey, 1990

Under the patronage of the President of Turkey, the conference on *Technology Transfer for Development in the Muslim World,* was held in Antalya, (Turkey), during November 1990.

The conference was organised by the IAS, by the Turkish Scientific and Technical Research Council (TUBITAK), the Islamic Foundation for Science, Technology and Development (IFSTAD), the Islamic Development Bank (IDB) as well as the UNESCO.

The proceedings of this conference have subsequently been published.

7.3.6 Science and Technology Manpower Development in the Islamic World, Amman, Jordan, 1991

Under the patronage of Jordan's Prince El-Hassan Ibn Talal, the IAS convened its fifth international conference on *Science and Technology Manpower Development in the Islamic World*, in Amman (Jordan), during December 1991.

The conference was a joint activity between the Academy, the Islamic Foundation for Science, Technology and Development (IFSTAD), the Islamic Development Bank (IDB), Jordan's Royal Scientific Society (RSS), and the World Bank.

The proceedings of this conference have subsequently been published.

7.3.7 Environment and Development in the Islamic World, Kuala Lumpur, Malaysia, 1992

The IAS convened its sixth annual conference in Kuala Lumpur, (Malaysia), from 10-14 August 1992.

The conference which was entitled *Environment and Development in the Islamic World,* was held under the patronage of the Prime Minister of Malaysia; Dr Mahathir Mohamad, and was designed to identify the global environmental issues of relevance to the Islamic world. It also addressed a number of concepts related to environment and development thereby identifying possible roles for NGOs that are active in this domain. The conference, which was co-sponsored by the Ministry of Science, Technology and Environment of Malaysia, the Islamic Foundation for Science, Technology and Development (IFSTAD), the Islamic Development Bank (IDB) as well as the United Nations Environment Programme (UNEP), concluded with the publishing of the IAS Kuala Lumpur Declaration that addressed a number of environmental issues, and proposed some courses of actions for adoption by OIC-countries in the area of the environment.

The proceedings of this conference have subsequently been published.

7.3.8 Health, Nutrition, and Development in the Islamic World, Dakar, Senegal, 1993

The President of Senegal hosted the seventh IAS annual conference in Dakar, (Senegal), 22-26 November 1993.

The conference, which was entitled, *Health, Nutrition, and Development in the Islamic World,* reviewed the state of population health in the various OIC regions, highlighted the major epidemics and diseases confronting the Islamic and developing worlds, and apprised national strategies adopted by countries in combating these diseases.

The conference was conceived as a joint activity between the Islamic World Academy of Sciences (IAS) and the University Cheikh Anta Diop of Dakar (UCAD). It was co-sponsored by the Islamic Development Bank (IDB), the World Bank, the UNESCO, the ISESCO, as well as the WHO.

The proceedings of this conference have subsequently been published.

7.3.9 Water in the Islamic World: An Imminent Crisis, Khartoum, Sudan, 1994

The IAS convened its eighth international conference in Khartoum (Sudan) in December 1994. The conference, entitled, *Water in the Islamic World: An Imminent Crisis*, was held under the patronage of the President of Sudan.

The conference aimed to assess the water security situation in the Islamic world and to develop innovative proposals for future activities in water resources management.

The conference was conceived as a joint activity between the Academy, and the National Centre for Research, Sudan. It was co-sponsored by Ministry of Education and Scientific Research, Sudan; the Islamic Development Bank (IDB); COMSTECH, UNESCO, ISESCO, United Nations Environment Programme (UNEP) and the World Bank.

The proceedings of this conference have subsequently been published and marketed internationally, gradually becoming an extensively-cited reference on water resources issues in the Middle East.

7.3.10 Science and Technology Education for Development in the Islamic World, Tehran, Iran, 1999

In July 1999, and under the patronage of the President of Iran, and then chairman of the OIC Summit, the Academy convened its Ninth Conference in Tehran, under the title of *Science and Technology Education for Development in the Islamic World*.

The conference was held with the active support and participation of many Iranian institutions including the Iranian Organisation for Science and Technology (IROST), and the Academy of Sciences and the Academy of Medical Sciences of Iran. The conference was also supported by the OPEC Fund for International Development, the IDB, UNESCO, ISESCO, and the World Bank.

The policy document resulting from the conference in the form of the conference proceedings book was later published (ISBN 9957-412-00-7).

7.3.11 Information Technology for Development in the Islamic World, Tunis, Tunisia, 2000

During November 2000, and under the patronage of HE the President of Tunisia, the Academy convened its Tenth Conference in Tunis, Tunisia; under the title of *Information Technology for Development in the Islamic World*.

The conference apprised the status of information and communication technologies in the Islamic world, and proposed measures for adoption by governments in order to catch up with the information age and bridge the new digital gap that was developing both between and within countries.

The conference concluded with the publication of the IAS Tunis Declaration on Information Technology for Development in the Islamic World.

The declaration was subsequently presented to over 1,500 specialists and over 100 agencies throughout the Islamic world. The proceedings volume has also been published (ISBN 9957-412-03-5).

7.3.12 Biotechnology and Genetic Engineering for Development in the Islamic World, Rabat, Morocco, 2001

Under the patronage of Morocco's King Muhammad VI, the IAS convened its eleventh conference in Rabat (Morocco), in October 2001. The conference addressed the theme of *Biotechnology and Genetic Engineering*, and was hosted by the Academy of Morocco. A number of Moroccan and international organisations, including the COMSTECH and the OPEC Fund for International Development as well as the IDB and the ISESCO supported this international activity in which many local specialists participated.

The proceedings book of this conference was published in 2004 (ISBN 9957-412-07-8).

7.3.13 Materials Science and Technology and Culture of Science, Islamabad, Pakistan, 2002

Under the patronage of the President of Pakistan, the IAS convened its twelfth international conference in Islamabad (Pakistan), during October 2002. The conference addressed the themes of *Materials Science and Technology* and *Culture of Science.*

The conference was organised and sponsored by the IAS, Pakistan Academy of Sciences, COMSTECH, Islamic Development Bank (IDB), OPEC Fund for International Development and the Islamic Organisation for Medical Sciences.

At the conclusion of the conference, delegates adopted the IAS Islamabad Declaration on Materials Science and Technology and Culture of Science. The declaration proposed the implementation of an R&D policy that addresses the link between technological advancement and societal response. It highlighted the impacts of globalisation and developments in Information Technology (IT), Biotechnology (BT), and Nanotechnology (NT) on the knowledge production systems.

On the theme of *Culture of Science*, the declaration emphasized that understanding the processes by which information concerning science and technology diffuses from the laboratory to the outside world is central to understanding social-transformation.

The proceedings book of this conference was published in 2004 (ISBN 9957-412-06-x).

7.3.14 Energy for Sustainable Development and Science for the Future of the Islamic World and Humanity, Kuching, Sarawak, Malaysia, 2003

Under the patronage of the Chief Minister of Sarawak, the IAS convened its thirteenth international conference in Kuching, over the period 29 September – 2 October 2003. The conference addressed the themes of *Energy for Sustainable Development* and

Science for the Future of the Islamic World and Humanity. It was an open scientific activity in which over 250 participants representing over 25 countries participated.

The conference attempted to define energy priorities for OIC member countries. Aspects of energy R&D were discussed in a session that included an outstanding paper on *Contemporary Problems and Achievements in Desulphurisation of Oil, Gas, Petroleum Products and Waste Waters*, which was presented by Prof. Akhmet Mazgarov FIAS from Tatarstan, Russia. That was followed by a visio-conference presentation on Hydrogen energy entitled, *Towards New Energy for Sustainability: The Strategy in Iceland*.

The proceedings volume of this conference has also been published (ISBN 9957-412-08-6).

7.3.15 Science, Technology and Innovation for Socioeconomic Development of OIC–Member Countries: Towards Vision 1441, Kuala Lumpur, Malaysia, 2005

Under the patronage of the Prime Minister of Malaysia, the IAS convened its fourteenth science conference in Kuala Lumpur, Malaysia, during March 2005. The conference addressed the theme of *Science, Technology and Innovation for Socio-economic Development of OIC–Member Countries: Towards Vision 1441.*

The main aim of the conference was to engender recognition among the political leadership of the OIC of the inextricable link between S&T advancement and socioeconomic development, and draw the attention of the OIC science community to, and promote, Vision 1441.

At the conclusion of the conference, the IAS adopted the Malaysia-IAS 2005 Kuala Lumpur Declaration on *Science, Technology and Innovation for Socio-economic Development of OIC–Member Countries: Towards Vision 1441.* The declaration reiterated its support for *Vision 1441*, and its constituent elements, and proposed a number of strategies to help OIC countries to achieve the various targets outlined therein.

In its operative component, the declaration invited the Chairman of the OIC and the OIC Secretary General, to initiate consultations for the establishment of a Trust Fund for the promotion and exchange of knowledge and technology in OIC-Member countries, and for the establishment of an inventory of publications and documents produced by OIC STI agencies since 1981.

The proceedings of this conference has subsequently been published (ISNB 9957-412-11-6).

7.3.16 Higher Education Excellence for Development in the Islamic World, Ankara, Turkey; November 2006

Under the patronage of the Prime Minister of Turkey, the IAS convened its fifteenth international science conference in Ankara, Turkey, during November 2006. The conference addressed the theme of *Higher Education Excellence for Development in the Islamic World*, and was organised and sponsored by the IAS; Bilkent University; the IDB; COMSTECH; Opec Fund for International Development; ISESCO; and the International Conference on Higher Education (ICHE).

The conference, which coincided with the 20th Anniversary of the IAS, sought to engage the widest range of institutions and individuals involved in higher education in Turkey, the region, the OIC; as well as some international agencies.

In addition to an outstanding keynote address by Prof. Richard R. Ernst Hon. FIAS, Nobel Laureate from Switzerland, entitled: *Goals of Higher Education: Knowledge and Critical Foresight, Leading to Societal Responsibility;* the founder of the host institution Prof. Ihsan Dogramaci, presented a concise history of *Higher Education in Turkey* in which he outlined some of the factors lying behind the success of Turkey in establishing private non-profit universities.

The IAS Ankara Declaration, adopted at the conclusion of the conference, highlighted that very few OIC universities were ranked among the world's top 500 universities. It emphasised that to attain and sustain quality in higher education, certain components are particularly relevant; notably careful selection of staff, continuous staff development and mobility, as well as student mobility within and between countries. A special mention was made in the declaration of the Bologna Process adopted by many European countries which represents a good model for harmonizing academic degree standards and quality assurance standards.

The proceedings volume of this conference has subsequently been published (ISBN 978-9957-412-18-0).

7.3.17 Science and Technology and Innovation for Sustainable Development in the Islamic World: Policies and Politics Rapprochement, Kazan, Tatarstan (Russia); August 2008.

Under the patronage of the President of the Republic of Tatarstan, the IAS convened its 16th Conference in Kazan, the capital of the autonomous Republic of Tatarstan in the Russian Federation, 25 to 28 August 2008. The conference addressed the theme of *Science, Technology and Innovation for Sustainable Development in the Islamic World: Politics and Policies Rapprochement.*

Alongside the conference, the IAS and the UNESCO organised a special symposium at Kazan State University on the 'History of Islamic Science, Technology and Innovation.'

The IAS Declaration, adopted at the conclusion of the conference, emphasized that science and technology are not exogenous factors that determine a society's evolution independently from its historical, social, political, cultural, or religious backgrounds. They are *the* tool within humanity's reach for the fulfillment of human needs while maintaining the quality of the natural environment indefinitely, i.e. the means to master that socioecological process that has been defined as 'Sustainable Development.'

On the topic of the 'History of Islamic Science,' the declaration recognized that historians of science have propagated a number of theories related to the rise and possible decline of Islamic science.

A need to revisit this issue has risen not only to highlight the contribution that the Islamic civilization has made to world civilization, but also to learn about the deep rooted underlying reasons for this decline in order to learn from the lessons of the

past, as well as promote harmony between cultures and peoples in today tensions ridden world, the declaration re-iterated.

The IAS 2008 Kazan Declaration pronounced that it was imperative that interest of the OIC science community, and ultimately the public, is rejuvenated in what has become known as the accepted narrative of the 'Rise and Decline of Islamic Science,' and perhaps to question what has been described as the classical narrative including some theories related to the subject.

The proceedings volume of this conference has subsequently been published (ISBN 978-9957-412-19-7).

7.3.18 Towards the Knowledge Society in the Islamic World: Knowledge Production, Application and Dissemination, Shah Alam, Malaysia; December 2009.

Under the patronage of His Royal Highness Sharafuddin Idris Shah, the Sultan of the State of Selangor, Malaysia; the IAS convened its seventeenth science conference in Shah Alam, the capital of Selangor, 14 to 17 December 2009.

The conference was under the title; Towards the Knowledge Society in the Islamic World: Knowledge Production, Application and Dissemination.

Over 150 participants representing over 25 countries participated in the conference including the representatives of no less than 15 academies of sciences.

Alongside the conference, meetings of the IAS Council, IAS General Assembly, and the General Assembly of the Network of Academies of Sciences in Islamic Countries (NASIC) were also convened.

The aim of the conference was to promote the watchword that knowledge was becoming a major component in production processes, and that a new economic paradigm was emerging in which the most important factor was not the availability of capital, labour, raw materials or energy, but the intensive use of knowledge and information.

The conference also aimed to highlight that knowledge has become a pillar of the wealth and power of nations.

At the OIC level, the conference re-examined the actions that were required to invigorate; (a) Knowledge production, (b) Knowledge application and (c) Knowledge dissemination; in order to help OIC countries build knowledge societies and achieve rapid socioeconomic development.

At the conclusion of the four-day conference, which also included a number of specialised meetings and site visits, the IAS adopted the IAS 2009 Selangor Declaration on *Towards the Knowledge Society in the Islamic World: Knowledge Production, Application and Dissemination*.

The declaration appealed to OIC decision makers to implement specific actions such as sizeably increasing R&D expenditure, promoting the central role of the university as originator of scientific output, and promoting scientific and technological cooperation among developing countries. Moreover, it called for the creation of links between knowledge generation and enterprise development and for prompt action to

ensure that young scientists cultivate a sense of hope and purpose so that they may contribute to shaping a sustainable future. It added that "future generations in OIC countries must be educated and not indoctrinated, they must learn – and not be taught – to work hard and learn to work together as teams rather than as individuals."

7.3.19 Knowledge Society for the Innovation Economy, Shah Alam, Malaysia, December 2010.

Under the patronage of HRH the Sultan of Selangor, the IAS convened a special symposium in Shah Alam (near Kuala Lumpur), Malaysia; on 8-9 December 2010 on the topic of "Knowledge Society for the Innovation Economy." This activity was organized by the IAS and the International Islamic Academy of Life Sciences and Biotechnology (IIALSB) together with the University of Industry of Selangor (UNISEL). The Islamic Development Bank (IDB) and the OPEC Fund for International Development (OFID) were the sponsors of the event.

The symposium examined the interaction between Education, Research and Innovation. This so-called Knowledge Triangle is the key driver of growth as well as a knowledge-based society, today.

The symposium, which came as follow-up action to the 17th IAS Science Conference on 'Towards a Knowledge Society in the Islamic World' which was held at the same venue in 2009, aimed to bring together international experts who are active in research to specifically discuss the current progress of nanotechnology, biotechnology and health technology. Around 200 participants attended the symposium including approximately 20 IAS Fellows and invited speakers from outside Malaysia, as well as academicians, decision-makers, scientists, researchers, presidents/representatives of academies of sciences.

7.3.20 The Islamic World and the West: Rebuilding Bridges through Science and Technology, Doha, Qatar, October, 2011.

Under the patronage of H E Sheikh Hamad Bin Jassim Bin Jaber Al-Thani, the Prime Minister and Foreign Minister of the State of Qatar, the Islamic World Academy of Sciences (IAS) convened its 18th international science conference in Doha, the capital of the State of Qatar, during 22-24 October 2011.

The theme of the conference was *The Islamic World and the West: Rebuilding Bridges through Science and Technology.* The conference was followed by the 9th Doha Interfaith Conference, 24- 26 October 2011 under the title: *Social Media and Inter-Religious Dialogue: A New Relationship*, which was organized by the Doha International Centre for Interfaith Dialogue (DICID).

IAS Conference, which coincided with IAS's 25th Anniversary, was an open activity in which over 200 local and international participants representing over 35 countries participated. Among the participants were 55 Fellows of the IAS, the representatives of 25 academies of sciences from around the world including the Netherlands, Hungarian, Portuguese, American, French and Russian academies of sciences; as well as the majority of academies of sciences of the OIC. Prior to the conference, the 19th Meeting of the General Assembly of the Islamic World Academy of Sciences –in which HRH Prince El-Hassan bin Talal, Founding Patron of the IAS participated- as well as the 37th Meeting of the IAS Council were arranged.

At the conclusion of the 18th IAS Conference, which also included a number of side-meetings and site visits, the IAS adopted the IAS 2011 Doha Declaration on *The Islamic World and the West: Rebuilding Bridges Through Science and Technology.*

The declaration stressed that despite the political upheaval, military conflict, natural disaster as well as economic boom and bust witnessed by many countries in the Islamic world, the same period witnessed renewed interest by some OIC countries in reinvigorating science and technology (S&T) and higher education, with the launch of a number of top-down initiatives to support education and research in countries such as Qatar, the United Arab Emirates, Saudi Arabia and Jordan.

It reiterated that Islam has been and can be the driving force behind an all-encompassing renaissance in STI for a better tomorrow for Muslims and humanity and that the current low level of achievement in the Islamic world is the cumulative effect of multiple factors and not the result of a single dominant cause. The declaration also highlighted that governance in many OIC countries is in a state of turmoil with polities torn between upholding national security and adopting good governance practices with 2011 witnessing a tsunami of political events sweeping through the Arab region of the Islamic world.

7.3.21 Science and Technology in Muslim World: Achievements and Prospects, Astana, Kazakhstan, May 2012.

Under the patronage of His Excellency Nursultan Nazarbayev HON. FIAS, the President of Kazakhstan, the IAS convened a special symposium in 'Palace of Peace and Accord' Astana (Kazakhstan) during May 2012, and under the title: *Science and Technology in the Muslim World: Achievements and Prospects*.

This activity was organized by the IAS and the R.B. Suleimenov Institute of Oriental Studies of the Ministry of Education and Science of the Republic of Kazakhstan. The Islamic Development Bank (IDB) and the COMSTECH were the sponsors of the event.

Around 100 participants attended the symposium including approximately 20 IAS Fellows and invited speakers from outside Kazakhstan, as well as academicians, decision-makers, scientists, researchers, professors of many universities in Kazakhstan.

Alongside that symposium, the 38th Meeting of the IAS Council was convened.

7.3.22 Achieving Socioeconomic Development in the Islamic World through Science, Technology and Innovation, Dhaka, Bangladesh, May, 2013.

Under the patronage of Her Excellency the Prime Minister of Bangladesh, the Islamic World Academy of Sciences (IAS) convened its 19th international science conference in Dhaka, the capital of the People's Republic of Bangladesh, during 6-9 May 2013. The theme of the conference was 'Achieving Socioeconomic Development in the Islamic World through Science, Technology and Innovation (STI).'

The conference addressed a number of key issues in the domain of science, technology and innovation (STI) for development, and represented an attempt by the IAS to engage the Bangladeshi decision-making and science communities and draw possible lessons from the Bangladesh experience that could be of benefit to the wider community of OIC-Member States.

The conference which was inaugurated by the Prime Minister of Bangladesh on Monday 6 May 2013 was preceded on Sunday 5 May 2013, by a ceremony which was organised on the premises of the Bangladesh University of Health Sciences (BUHS), to honour one of the Founding Fellows of the IAS from Bangladesh: Prof. Mohammad Ibrahim (1911-1989). During the ceremony, Prof. Liaquat Ali, an outstanding Bangladeshi medical researcher, was honoured as the recipient of the 2013 IAS Ibrahim Memorial Award.

At the conclusion of the 19th IAS Conference, the IAS adopted the IAS 2013 Dhaka Declaration on Achieving Socioeconomic Development in the Islamic World through Science, Technology and Innovation.

It is essential, the declaration reiterated that OIC countries focus on a limited number of priorities and regional smart specialization activities where some networks already successfully operate or some new ones may be developed, and consider the quality of statistical data on STI and the statistical system on research and development, as precondition leading to the development of sound and effective strategy in STI.

The declaration further called for the promotion of scientific and technological cooperation among developing and OIC countries and for the creation of links between knowledge generation and enterprise development. To further promote the development of local technology, OIC countries need to improve their incentive regimes including taxation and must try to promote technological innovation and generate markets for new products and services within their societies, the declaration suggested.

The IAS also intends to work further with the two Bangladeshi champions of science it identified as a result of the conference, the medical scientist Prof. Liaquat Ali and the entrepreneur industrialist Mr Abdul Muktadir, to disseminate the fresh and exciting ideas of these two role models to young researchers and aspiring entrepreneurs throughout the Islamic and Developing world.

7.3.23 Future Conferences

The IAS maintains contact with a number of countries including, Morocco, Indonesia, Tajikistan, Azerbaijan, Australia, Netherlands as well as United Arab Emirates regarding the hosting of future IAS conferences. Approaches were also made to countries such as Mauritius and Oman; to secure an invitation for its 20th International Science Conference.

The Academy also plans to convene joint seminars with organisations in, Albania, Egypt, Turkey, Tunisia, and Jordan.

7.4 The Medical Journal of the IAS

The *Medical Journal of the Islamic World Academy of Sciences*, which first appeared in August 1988, is a quality publication comparable to international scientific journals. The Journal has established itself as a major scientific publication in the Islamic world and has been granted an ISS number (ISSN 1016-3360). It is a forum for scientists and technologists in developing countries through which they can get their research work published.

The Journal, which is published in Turkey and distributed internationally, was launched with the help of the Kuwait Foundation for the Advancement of Sciences

(KFAS), and has since, received some grants from the Academy Secretariat and COMSTECH.

In order to strengthen the Journal, and in response to the large number of medical articles it receives; the Journal was re-launched as a medical publication catering for the need of medical scientists in the Islamic world and beyond.

An electronic version of the Medical Journal of the Islamic World Academy of Sciences was subsequently launched on the Internet where it has the URL address of www.medicaljournal-ias.org.

The uploading of the Journal in electronic format on the Internet http://www.medicaljournal-ias.org/tr/ and the subsequent adoption of the PDF format has made the scientific articles published more accessible to a wider readership; and gained them more citations.

7.5 Website (iasworld.org)

During the last decade, international information flow was streamlined into a new and exciting medium; the Internet.

The IAS, being conscious of such developments, undertook the task of constructing its own web site (http://www.ias-worldwide.org), which came into being in August 1997. The planning and part of the design of the site was done in-house.

The aim of this activity is to provide information about the Academy, its Fellows, activities and publications to the scientific communities, scholars and the public at large. Such a site would enable the Academy to increase its visibility, establish contact with a number of donor agencies and to interact more efficiently with scientists throughout the world.

In 2011, after developing and designing it in-house, the IAS launched its new website **(www.iasworld.org)**. The new website contains basic information about the IAS, its Fellows, activities and publications. It also contains a special section of online digital resources as well as a dedicated IAS YouTube channel that archives many of the lectures given at IAS conferences in the past. In 2014 the IAS added some Arabic content to its website.

The IAS and Al-Manhal (an Internet-based publishing platform) have signed an agreement in late 2010 whereby Al-Manhal would undertake to upload a digital version of all IAS publications on its online platform. Once uploaded, the material can be accessed through Al-Manhal database, which is an international platform with a long list of international subscribers.

The IAS has also created a Facebook page on the Internet.

7.6 Publications

7.6.1 Proceedings

In its efforts to disseminate scientific information, the IAS publishes annually the proceedings of the annual conference it organises. A process that was started with the publication of the proceedings of the Academy's Founding Conference. Such a process ensures that the papers that are presented at the conferences are made available to the scientists and decision-makers that are concerned with Third world

issues. The Academy's second publication was the proceedings of its first seminar, *Food Security in the Muslim World,* which was held in Amman during 1987.

Since then, the Academy has published the proceedings of its conferences in the form of a quality volume, both in terms of content and packaging. This is done after a specialised committee referees and edits the included papers from scientific, linguistic and relevance points of view.

From 1988 to 1997, the Academy published seven books, which were the proceedings volumes of the 1988-1994 Academy Conferences.

During 2000, the Academy published the proceedings of its Ninth Conference, *Science and Technology Education for Development in the Islamic World*, which was convened in Tehran (Iran) during July 1999.

That was followed by the proceedings book of the Tenth Academy Conference, *Information Technology for Development in the Islamic World,* which was held in Tunisia in 2000.

During 2004, the Academy published the proceedings volumes of its 2001 and 2002 Conferences on *Biotechnology* and *Materials Sciences* respectively. That was followed in 2006, with the publishing of the proceedings volume of the 2003 Conference which was entitled *Energy for Sustainable Development and Science for the Future of the Islamic World and Humanity*.

In 2008, the Academy published the proceedings volume of the 2005 Conference on *Science, Technology and Innovation for Socioeconomic Development, Towards Vision 1441.* That was followed by the proceedings book of the 2006 Conference on *Higher Education Excellence for Development in the Islamic World*, in 2009.

In 2014, the Academy published the proceedings volume of the 2008 Conference on *Science and Technology and Innovation for Sustainable Development in the Islamic World: Policies and Politics Rapprochement.*

7.6.2 Books

(a) General

In its efforts to address important topics relevant to scholars and thinkers in OIC countries, the Academy often undertakes the publication of books by eminent Muslim scientists and intellectuals.

One such undertaking has been the publication of a book entitled*, Islamic Thought and Muslim Modern Science*, by Dr M A Kazi, IAS Founding President and Fellow. The book represents the author's view of the relationship between Islam and science in today's world.

Another book by the same author has also been published by the Academy. The book carries the title *Qur'anic Concepts and Scientific Theories*.

Back in 1983, the National Science Council of Pakistan and Hamdard Foundation published what was to become a very famous book. The name chosen by the then editor Hakim Said for the book was "Personalities Noble." The book contained brief profiles of 26 towering scholars of the golden age of Islam. Demand on the book was such that within a few years only a few rare copies were still in existence.

Realising the importance of the book, and appreciating its value as a reference, the IAS published a second revised edition of "*Personalities Noble,"* in both English and Arabic, during 2000.

To disseminate knowledge on the scientific achievements of Islamic countries especially during the Golden Age of Islam, the IAS published in 2013, the arabic language a book entitled *الاكتشافات العلمية في الحضارة الاسلامية* "The Discoveries in the Islamic Countries".

The Academy has exhibited its various publications at the various book fairs that were organised in Jordan and in the Middle East, including the Cairo, Abu Dhabi, Sharja, and the Beirut International Book Fair as well as the book fairs organized alongside the IAS conferences.

(b) Islamic World Academy of Sciences Declarations Booklet

The conferences organised by the IAS generally aim to engender acknowledgement by the political leadership of the OIC of the inextricable link between advancement in S&T and socioeconomic development and to provide OIC Heads of State with a scientific roadmap for their national development in the context of the discussed topics.

This publication is a compilation of the various statements (declarations) that were issued by the IAS at the end of each conference starting with the 1987 IAS Conference.

Not only are some of the statements still as valid today as when they were issued, but the tone and comprehensiveness thereof, demonstrate an action-oriented mature understanding by the OIC science community of some of the major problems facing their countries.

(c) Islamic World Academy of Sciences Outreach Seminar Booklet

Some academies of sciences, such as the IAS, often organise outreach activities to which politicians, diplomats, academics and civil servants working at scientific institutions are invited. Such activities aim to expose the attendees to the latest scientific and development concepts as well as contemporary ideas on the attainment of socio-economic development. Such S&T fora often reiterate and show the value of science as a means of knowledge generation.

This publication contains the presentations that were made at an outreach seminar organised by the Islamic World Academy of Sciences at the Royal Scientific Society in Amman, Jordan, during December 2004.

(d) (d)Intellectual Property Rights: An Introduction for Scientists and Technologists

An eminent Fellow of the Islamic World Academy of Sciences, and immediate past-President of the Egyptian Academy of Sciences; Prof. M. B. E. Fayez FIAS, volunteered to prepare this specialised yet lucid document on the rather complex and topical issue; namely Intellectual Property Rights.

This subject has been high on the mind of many within the science community of the OIC, and was discussed extensively at the April 2005 meeting of the Network of Academies of Sciences in Islamic Countries (NASIC), held in Islamabad (Pakistan), where the IAS and the Egyptian Academy of Sciences decided to publish a booklet

on the subject entitled, 'Intellectual Property Rights: An Introduction for Scientists and Technologists.' This booklet was published in 2006.

(e) Reverse Engineering: The Permissible but not Well-Recognized

Another booklet has been prepared by Prof. M. B. E. Fayez FIAS, and immediate past-President of the Egyptian Academy of Sciences.

The topic of this book relates to scientific research and to development of the relevant results to the level that enables their useful applications reverse engineering is seen as an effort by scientific researchers in a research and development institution to learn for their own benefit the facts that lie behind the commercial success of a certain product. This booklet was published in 2010

(f) 'The Discoveries in the Islamic Countries' *الاكتشافات العلمية في الحضارة الإسلامية*

In 2013, the IAS published the Arabic-language version of the book ‘Les decouvertes en pays d’Islam.’ The English-language version of the book was earlier published by the International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC) to disseminate knowledge on some of the scientific achievements in the Islamic civilisation, especially during the Golden Age of Islam.

(g) The Essentials of Science, Technology and Innovation Policy

In 2013, the IAS published the third print of a book by Tan Sri Dr Omar Abdel Rahman FIAS under the title The Essentials of Science, Technology and Innovation Policy. The book is a major reference on the topic and a qualitative addition to the available references in the OIC on the subject.

7.6.3 Newsletter

The Academy, through its Secretariat, regularly publishes the *Newsletter* of the Islamic World Academy of Sciences.

This widely distributed publication which goes to more than 2500 addressees worldwide aims to publicise the various activities the Academy undertakes, and to put across the Academy's short and long-term programmes. It also contains general news about the Academy, its Fellows, and staff.

7.6.4 Overview of the Islamic World Academy of Sciences

The Secretariat of the Academy publishes, every two years, an *Overview* of the Academy summarising the programme of the Academy, its activities and detailing the various Academy procedures.

This publication also provides information about the background to the founding of the Academy and lists its achievements, particularly in the area of international co-operation.

7.6.5 Other Publications

Upon the request of COMSTECH, and under its sponsorship, the Academy published, for more than six years, the Arabic version of COMSTECH's *Islamic Thought and Scientific Creativity*, the high quality quarterly publication.

The IAS published a total of 20 issues over a five-year period.

The publication of this journal was undertaken with the support of the Amman-based Royal Academy for Islamic Civilisation Research, *Al Albait Foundation*.

7.7 S&T Manpower Development

7.7.1 General

In its endeavours to contribute to building the S&T capacity of OIC-member countries, the IAS regularly organises or co-sponsors qualitative training programmes in the various countries.

The Academy is focussing on the following areas for such activities:

(a) Corrosion of Metals and /or Non-Destructive Inspection;

(b) Wastewater Treatment and Management in Industry;

(c) Laser Physics and Applications; and

(d) Science-Based Decision-Making in OIC Countries.

The Academy adopts a dynamic policy to activities of this nature and tries to assist other organisations that undertake such programmes through the provision of experts or financial assistance whenever possible.

7.7.2 Laser Physics and Applications

The IAS and COMSTECH, in association with the University of Tunis El Manar, and the African Laser Atomic and Molecular Physics Network (LAM), organized the Sixth International Workshop on Laser Physics and its Applications, in Tunis, Tunisia, during December 2002. The purpose of the activity was to introduce the new applications of lasers and discuss the progress of laser physics, lasers in medicine, environment and telecommunications.

Scientists, physicists, researchers, engineers, and optical industrialists from more than 40 countries participated in this activity

The workshop was co-sponsored by: the Abdus Salam International Centre for Theoretical Physics (ICTP), Italy; the Swedish International Development Cooperation Agency (Sida), Sweden; and the Ministry of High Education of Tunisia.

The IAS, along with COMSTECH, also helped in the convening of the *School of Molecular Physics*, which was held in Tunis (Tunisia) during December 2005, with Prof. Zohra Benlakhdar FIAS, UNESCO L'Oreal Laureate, as chief organiser.

7.8 Culture of Science Initiative (CSI)

Science cannot flower without being adequately funded by civil society institutions including the public, private and the non-governmental and inter-governmental sectors. Science in turn should better respond to the needs of society and people. Governments and NGOs such as the IAS should create innovative national and international funding mechanisms in support of science.

It is against such a backdrop that the Islamic World Academy of Sciences launched its Culture of Science Initiative or CSI. That is to achieve a gradual revival and rejuvenation of interest in science and technology in the Islamic world.

The IAS has been actively promoting this initiative, particularly among decision-makers in the various OIC-Member Countries, with some success. This has often manifested itself in increased funding to science and scientific activities in some countries.

The IAS however realises that this is long-term activity, and that the Islamic world is a long way off from the stage when S&T and education budgets/issues become an integral part of the political vernacular of parliamentarians and politicians (A case in point is the MP/Scientist interaction program, recently launched by the British Royal Society).

8 INTERNATIONAL RELATIONS

8.1 General

A primary function of the Academy is to act as a Pan-Islamic affiliating body to the relevant international organisations. Through this, Muslim scholars can have a channel of communication, through the Academy, with such international agencies as the UNESCO, the World Bank, etc.

At the level of the OIC, examples of the co-operation that exists between the Academy and other institutions are outlined below:

8.2 Co-operation with COMSTECH

The Islamic World Academy of Sciences and COMSTECH have had solid relations, since COMSTECH helped to create the Academy in 1986, in compliance with the OIC Summit recommendations.

Over the years, COMSTECH has, along with the host country (Jordan), supported the Academy financially, and sponsored a number of S&T capacity building activities that were organised by the IAS.

The IAS and COMSTECH regularly exchange information on programmes and act, each within its catchment area, to promote S&T activities and encourage OIC countries to increase their S&T expenditure.

COMSTECH also provides a small annual grant to the IAS Medical Journal, has sponsored the publication of a number of books by the IAS, and has contributed to the budget allocated by the IAS for the Ibrahim Memorial Award, which is awarded biannually to outstanding medical researchers from the Islamic world.

8.3 Co-operation with the IDB

The IDB has been helping to finance Academy conferences since 1990. It has often delegated its own specialists to present papers describing its activities within the scope of the theme of the annual IAS Conference.

The Academy has signed a number of agreements with the IDB on co-operation in the field of Information Technology, one of which specified the financial support IDB will provide to help the academy to upgrade its computer set-up and web site on the Internet, including building databases on the Academy's web page on areas of relevance to the development of OIC member countries. These databases are envisioned to be a rich source of information for students, scientists, etc., throughout the world.

The IAS has furthermore been active in promoting the IDB's Prize for Science and Technology, which aims to encourage and promote excellence among OIC S&T institutions.

8.4 Co-operation with the UNESCO

As the IAS is a non-profit NGO it is working towards joining (become affiliated into) the UNESCO Communities. With this in mind, the IAS contributed to the successful convening of the UNESCO History of Islamic Science, Engineering and Technology (HISET) Symposium at UNESCO Headquarters in 2006. The IAS has subsequently helped in the convening of the second and the third event in the series (ISSTI III) which were held in Kuala Lumpur and Kazan, respectively. The fourth event was held in Kuala Lumpur (Malaysia) in 2010, also with the help and support of the IAS, while ISSTI V was organised by the IAS alongside its conference which was held in Qatar during October 2011.

Moreover, the IAS, during March 2009, participated in the launch of the UNESCO International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC) in Kuala Lumpur and has implemented a number of programmes with this newly founded centre since.

Furthermore, the IAS –through Prof. Adnan Badran FIAS and Moneef Zou'bi, DG-IAS- was commissioned to author the 'Arab States Chapter' of the UNESCO Science Report 2010, a task that has been successfully accomplished.

The IAS also has been invited through Dr Moneef Zou'bi to author the 'Arab States Chapter' of the UNESCO Science Report for 2015.

8.5 Co-operation with the ISESCO

In its effort to establish scientific and academic relations with similar Islamic organisations, the Academy signed a co-operation agreement with the Islamic Educational, Scientific, and Cultural Organisation (ISESCO), in 1989.

Since, the Academy has liaised extensively with the ISESCO, the participation of which was noticeable in a number of IAS Conferences, including the 1993, 1994 and 1999 Academy Conferences.

ISESCO has moreover co-sponsored the 2001 Conference of the IAS on Biotechnology, held in Rabat (Morocco), and contributed a paper at that conference on Biotechnology Research in OIC countries. Furthermore, ISESCO participated and sponsored the IAS Conferences of 2006 and 2008.

8.6 Co-operation with TWAS

The Academy signed a co-operation agreement with The World Academy of Sciences (TWAS) some years ago. That was a first step towards enhancing co-operation between these two international academies, which have been in close liaison recently on their scientific activities. The IAS often joins TWAS at its scientific meetings and both academies exchange information in the context of G77, as well as TWNSO meetings, especially as the IAS has been a member of the Third World Network of Scientific Organisation (TWNSO) for a number of years.

8.7 Co-operation with the InterAcademy Panel (IAP)

In order to interact fully with 100 or so national and international academies of sciences the world over, the IAS joined the Inter-Academy Panel, which is a global

network of science academies. The IAS was elected to join the IAP at latter's General Assembly Meeting which was held in Alexandria, Egypt, during December 2006.

A number of IAS-IAP activities could be implemented in order to bring to the forefront the role of academies of sciences as independent advisory science *Think Tanks* in their respective catchment areas.

The IAP has issued a number of statements during 2011 -2014 which were reviewed and endorsed by the IAS. Many were circulated.

8.8 Co-operation with the OIC General Secretariat

Upon a proposal from Jordan and with the support of Prof. Ekmeleddin Ihsanoglu, Secretary General OIC, the Islamic Council of Foreign Ministers (ICFM) approved, at its June 2006 meeting which was held in Baku (Azerbaijan), the affiliation of the IAS to the OIC system. This newly acquired status for the IAS would provide it further direct access to OIC Summit and the Heads of State of the OIC and other OIC-affiliated organizations.

In 2013, Prof. Ekmeleddin Ihsanoglu, Former Secretary General OIC attended the 19th IAS conference which was held in Dhaka, May 2013.

8.9 Co-operation with Academies of Sciences

The IAS has signed Memoranda of Understanding with the Kazakhstan, the Azerbaijan, and the Uzbekistan Academies of Sciences. These agreements lay the foundation for long-term co-operative relationships between OIC institutions and these republics and their scientific infrastructure.

Since 2003, the IAS has been liaising with the Academy of Sciences Malaysia. Both academies worked closely to convene the OIC Conference on Science and Technology, which was held in Kuala Lumpur (Malaysia), during October 2003; and have worked together to organise the 14th IAS Science Conference, held in the Malaysian capital during March 2005. The IAS has also supported the Academy of Sciences Malaysia in its efforts to convene the "International Symposium on Science, Technology and Innovation: Towards a Prosperous and Secure Islamic World," which was held in Kuala Lumpur, in August 2007.

Contacts with the US National Academy of Sciences have been ongoing for over ten years, resulting in the participation of top US NAS representatives in some IAS activities. Moreover, the US NAS has regularly nominated its Foreign Secretary to participate in IAS conferences.

In 2005, the IAS participated in the NAS seminar on *Science-Based Decision-Making*, held in Tunisia; and has commenced arrangements so that similar joint programmes could be organised in the Middle East. The IAS has subsequently been involved in a number of water-related activities arranged by the NAS including the publishing of the proceedings of the 2005 Tunisia seminar.

The IAS has been actively supporting the Palestine Academy of Science and Technology (PALAST) through facilitating the participation of PALAST officials in the various scientific activities in the Middle East, as well as providing help and advice to this sister academy on a regular bases.

The Bangladesh Academy of Sciences played an important part in organising the 19th IAS conference which was held in Dhaka, Bangladesh, and a number of the BAS Fellows took part in the conference.

8.10 Co-operation with the Inter Academy Medical Panel (IAMP)

The Inter Academy Medical Panel on Global Health Issues (IAMP) is an association created by the world's academies of medicine and academies of sciences or engineering having members from the health sciences for the purpose of working together through bilateral, regional and worldwide. The IAS was elected to join the IAMP at latter's General Assembly Meeting which was held in Kuala Lumpur, Malaysia, during March 2010.

Since, the IAS has circulated a number of statements issued by the IAMP and distributed copies of the IAS Medical Journal to the various member academies of the IAMP.

8.11 Co-operation with the International Union of Academies (IUA)

During November 2007, the IAS was elected to the membership of the International Union of Academies (IUA) (Union Académique Internationale). This is the oldest and largest federation of academies and learned societies in the world. Based in Brussels, it was established in 1919.

During September 2011, the IAS hosted a meeting of the executive council of the IUA at IAS Headquarters in Amman, where a number of IUA matters as well as a number of possible joint initiatives between the IAS and IUA were discussed.

During January 2014, the IAS co-organised an international conference in Erlangen (Germany) under the title *The Impact of Arabic Sources on Divination and the Practical Sciences in Europe and Asia* in association with the International Union of Academies (IUA).

The IAS will co-organise a second IUA International Conference on the "Impact of Arab Sciences in Europe and Asia from the Middle Ages to the Modern Period," to be held at the Bibliotheca Alexandrina, during November or December 2015.

8.12 Co-operation with the InterAction Council (IAC)

The InterAction Council was established in 1983 as an independent international organization to mobilize the experience, energy and international contacts of a group of statesmen who have held the highest office in their own countries.

The IAS, through IAS President –who is a member of the IAC- and IAS-DG, has participated in the special symposium that was organised by the IAC on *The Global Water Crisis: Addressing an Urgent Security Issue*, Toronto (Canada), March 2011. Subsequently, the IAS submitted a number of recommendations that were adopted by the IAC. Furthermore, IAS President and the DG participated in the 30th IAC annual Meeting, held in China during May 2012, in which the latter presented a paper on *'A Snapshot of Water Hotspots in the Middle East: Transforming Potential Challenges into Opportunities for Peace and Development.'*

In May 2013, IAS President presented a keynote address at the 31st Annual Plenary Meeting of the Interaction Council, 9-11 May 2013, Manama, Bahrain, under the title *Uprisings in the Arab World: The Reality beyond the Failure of Politics and Policies.*

During November 2013, the IAS-DG contributed a paper to the InterAction Council publication entitled The Arab Pseudo-Spring? A Snapshot of the Underlying Politics and Economics, and the Challenge of Water Insecurity.

On 20 October 2014, the Council launched its latest publication, "Water, Energy, and the Arab Awakening." This book is the third in the Council's "Global Agenda" series and the second book the Council has published in partnership with the United Nations University Institute of Water, Environment and Health (UNU-INWEH).

8.13 International Outreach

During 2009, IAS-DG as well as a number of IAS Fellows were invited to contribute to the report published by the US-Islamic World Forum which was entitled, 'A New Millennium of Knowledge: The Arab Human Development Report on Building a Knowledge Society, Five Years On'. Since then, the IAS has helped in organising two follow-up conferences on the theme of 'Building an Arab Knowledge Society' that were held in Alexandria in June and December 2010.

In 2010, the IAS –through IAS DG and Council Member M. Hassan- was involved in the publication by the Brookings Institute of an important report entitled, 'Scientific, Intellectual, and Governance Cooperation on Emerging Environmental Challenges in the Muslim World.'

Moreover, the IAS participated in a special session of the 2012 US-Islamic Forum on 'Water Security and Cooperation in the Middle East and North Africa (MENA)' which was held in Doha (Qatar), 29-31 May 2012.

The IAS hosted a meeting of executive council of the prestigious Rosenberg International Forum on Water Policy in Amman during January 2012, and acted as lead local agency responsible for organising the 8th International Rosenberg Forum which was held in Aqaba (Jordan) during March 2013, in which the IAS President, the IAS Treasurer and IAS-DG presented main papers.

9 ACADEMY FELLOWSHIP

9.1 General

Box 9. IAS Fellows

IAS Fellows (male and female members) are of more than 40 nationalities, and represent numerous educational, scientific as well as research and development institutions. The number of Fellows stood at 104 on 1 October 2014.

Membership of the IAS is made up of Founding and elected Fellows. They are eminent scientists with sizeable contributions to the development of science and technology and related topics, in their countries and internationally. The Secretariat of the Academy organises an election every year through which existing Fellows nominate and then elect new members to the Academy Fellowship. Since its establishment in 1986, 98 Fellows have been elected through annual postal ballots, the results of which are announced at the end of year General Assembly.

9.2 Honorary Fellowship

The Honorary Fellowship is awarded by the Academy to eminent personalities outstanding in their fields, who have promoted science and technology in the Islamic

world, and internationally. As of 1 October 2014, the IAS had thirteen Honorary Fellows who come from Kazakhstan, Turkey, Sarawak/Malaysia, Egypt, Saudi Arabia, Switzerland, North Cyprus, Kuwait, Tatarstan (Russian Federation), the USA, Qatar and Malaysia.

9.3 Corporate Members

In 2013, the IAS General Assembly adopted the IAS Council's proposal to incorporate the 'Corporate Membership' category of Fellowship into the relevant IAS Bye-Laws.

In 2014, the IAS invited a number of companies to become corporate members; the Jordan Islamic Bank and the Jordan Phosphate Mines Company were the first to join the IAS as Golden Corporate Members.

10 VISION 1441

The 2003 OIC Summit adopted a sensible yardstick to measure development in the domain of science and technology to which people can relate; namely Vision 1441.

Vision 1441 is a set of goals, a number of targets and performance indicators relating to the state of science and technology that OIC countries are aiming to achieve by the year 2020. They include:

(1) Raising the expenditure on R&D to 1.4% of GNP by the year 2020 (1441 Hijri);

(2) Raising the number of SREs (scientists, researchers and engineers) to 1441 per million population by the 2020; and

(3) Raising the scientific output of the Islamic world to 14% of the world total.

The impact of Vision 1441 lies in two main dimensions:

(a) By incorporating quantitative and time-bound targets, the Vision demands specificity in development actions and emphasize systematic measurement; and

(b) By defining the goals in terms of outcomes - as distinct from inputs and outputs – it draws attention to the multi-sectoral determinants of outcomes.

These new elements may warrant changes in some practices and programs adopted by countries.

Vision 1441 manifests a commitment by OIC-Member countries - rich and poor - to doing all they can to achieve a reasonable level of S&T advancement.

The IAS has been promoting Vision 1441 actively, and has organised a number of meetings on the subject that have been designed particularly to encourage the various OIC countries to implement policies to achieve the parameters set out in Vision 1441, and is also actively involved in the OIC Task Force on Vision 1441.

Appendix A

Patrons of the Islamic World Academy of Sciences

His Excellency the President of the Islamic Republic of Pakistan.

His Royal Highness Prince El-Hassan Ibn Talal of the Hashemite Kingdom of Jordan, Founding Patron.

Honorary Fellows of the Islamic World Academy of Sciences

(in alphabetical order)

Prof. **Richard R. Ernst**, 1991 Nobel Laureate (Chemistry), Switzerland.

Mr. **Fouad Alghanim**, President, Alghanim Group, Kuwait.

Prof. Ekmeleddin **Ihsanoglu,** OIC Secretary General, Turkey.

Sheikh **Saleh Kamel**, Chairman, Dallah Elbaraka Group, Saudi Arabia.

Datuk Patinggi Tan Sri Haji Dr **Abdul Taib Mahmud**, Chief Minister, State of Sarawak, Malaysia.

Dr **Adnan M. Mjalli**, Chairman of the Board, President and CEO, TransTech Pharma, Inc., USA.

His Excellency Dato' Seri Dr **Mahathir Mohamad**, Former Prime Minister of Malaysia.

Prof. **Ferid Murad**, 1998 Nobel Laureate (Medicine), USA.

His Excellency **Nursultan Abishevich Nazarbayev**, President of the Republic of Kazakhstan.

H E Mr **Mintimer Shaimiev**, President of the Republic of Tatarstan/ Russian Federation.

His Excellency Sheikh **Hamad Bin Jassim Bin Jabr Al Thani**, Prime Minster of Qatar, Qatar.

Sheikh **Hamad Al-Zamil**, Chairman, Al-Zamil Group, Saudi Arabia.

Prof. **Ahmed Zewail**, 1999 Nobel Laureate (Chemistry), Egypt/USA.

Corporate Members of the Islamic World Academy of Sciences

Golden Corporate Members:

The Jordan Islamic Bank.

Jordan Phosphate Mines Company.

List of Fellows of the Islamic World Academy of Sciences (1 October 2014)

1.	Prof. Mohammad **Abdollahi**	Iran	Toxicology/ Pharmacology
2.	Prof. Zakri **Abdul Hamid**	Malaysia	Genetics
3.	Prof. Omar **Abdul Rahman**	Malaysia	Veterinary Medicine
4.	Prof. Naim **Afgan**	Bosnia-Herzegovina	Mechanical Engineering
5.	Prof. Ishfaq **Ahmad**	Pakistan	Physics
6.	Prof. Askar **Akayev**	Kyrgyzstan	Computer Engineering
7.	Prof. Sajjad **Alam**	Bangladesh/USA	Physics
8.	Prof. M Shamsher **Ali**	Bangladesh	Physics
9.	Prof. Qurashi Mohammed **Ali**	Sudan	Medicine/ Anatomy
10.	Prof. Huda Saleh Mehdi **Ammash**	Iraq	Biology
11.	Prof. Wiranto **Arismunandar**	Indonesia	Mechanical Engineering
12.	Prof. Muhammad **Asghar**	France	Physics
13.	Prof. Attia A **Ashour**	Egypt	Mathematics
14.	Prof. Allaberen **Ashyralyev**	Turkmenistan	Mathematics
15.	Prof. Saleh A **Al-Athel**	Saudi Arabia	Mechanical Engineering
16.	Prof. Ahmad Abdullah **Azad**	Bangladesh/Australia	Biochemistry
17.	Prof. Agadjan **Babaev**	Turkmenistan	Geography
18.	Prof. Adnan **Badran**	Jordan	Biology
19.	Prof. Ibrahim Gamil **Badran**	Egypt	Medicine
20.	Prof. Farouk **El-Baz**	USA	Geology
21.	Prof. Kazem **Behbehani**	Kuwait	Immunology
22.	Prof. Azret Yusupovich **Bekkiev**	Balkar/Russia	Physics
23.	Prof. Naci **Bor**	Turkey	Medicine
24.	Prof. Rafik **Boukhris**	Tunisia	Medicine
25.	Prof. David (Mohamed Daud) A. **Bradley**	UK	Physics

26. Prof. Noor Mohammad **Butt**	Pakistan	Physics
27. Prof. Muhammad Iqbal **Choudhary**	Pakistan	Organic Chemistry
28. Prof. Abdallah **Daar**	Oman/ Canada	Medicine
29. Prof. Ali Al **Daffa'**	Saudi Arabia	Mathematics
30. Prof. Mamadou **Daffe**	Mali/France	Biochemistry
31. Prof. Fakhruddin **Daghestani**	Jordan	Mechanical Engineering
32. Prof. Ramazan **Demir**	Turkey	Biology
33. Prof. Oussaynou Fall **Dia**	Senegal	Geology
34. Prof. Ugur **Dilmen**	Turkey	Medicine
35. Prof. Mustafa **Doruk**	Turkey	Metallurgical Engineering
36. Prof. Mehmet **Ergin**	Turkey	Chemical Engineering
37. Prof. Nesreen **Ghaddar**	Lebanon	Metallurgical Engineering
38. Prof. Mehdi **Golshani**	Iran	Physics
39. Prof. Kadyr G **Gulamov**	Uzbekistan	Physics
40. Prof. Ameenah **Gurib-Fakim**	Mauritius	Chemistry
41. Prof. Hashim M **El-Hadi**	Sudan	Veterinary Medicine
42. Prof. Mohammad **Hamdan**	Jordan	Mathematics
43. Prof. Adnan **Hamoui**	Syria	Mathematics
44. Prof. Kemal **Hanjalic**	Bosnia-Herzegovina	Mechanical Engineering
45. Prof. Mohamed H A **Hassan**	Sudan	Mathematics
46. Prof. Tasawar **Hayat**	Pakistan	Mathematics
47. Prof. Ali Ali **Hebeish**	Egypt	Chemistry
48. Prof. Bambang **Hidayat**	Indonesia	Astronomy
49. Prof. Rabia **Hussain**	Pakistan	Microbiology
50. Prof. Abdul Latif **Ibrahim**	Malaysia	Microbiology
51. Prof. Aini **Ideris**	Malaysia	Veterinary Medicine
52. Prof. Mohammad Shamim **Jairajpuri**	India	Zoology
53. Prof. Mohammad Qasim **Jan**	Pakistan	Geology

54. Prof. Hamza **El-Kettani**	Morocco	Physics and Chemistry
55. Prof. Salambek **Khadjiev**	Chechnya	Chemistry
56. Prof. Idriss **Khalil**	Morocco	Mathematics
57. Prof. Abdul Qadeer **Khan**	Pakistan	Metallurgical Engineering
58. Prof. Hameed Ahmed **Khan**	Pakistan	Physics
59. Prof. M. Ajmal **Khan**	Pakistan	Biology
60. Prof. Mostefa **Khiati**	Algeria	Medicine
61. Prof. Abdelhafid **Lahlaidi**	Morocco	Medicine
62. Prof. Zohra Ben **Lakhdar**	Tunisia	Physics
63. Prof. Malek **Maaza**	Algeria	Neutronics
64. Prof. Abdel Salam **Majali**	Jordan	Medicine
65. Prof. Ahmed **Marrakchi**	Tunisia	Electronic Engineering
66. Prof. Akhmet **Mazgarov**	Tatarstan/Russia	Petrochemistry
67. Prof. Syed Qasim **Mehdi**	Pakistan	Molecular Biology
68. Prof. Amdoulla **Mehrabov**	Azerbaijan	Materials Science
69. Prof. Sami **Al- Mudhaffar**	Iraq	Biochemistry
70. Prof. Zaghloul **El-Naggar**	Egypt	Geology
71. Prof. Ibrahim Saleh **Al- Naimi**	Qatar	Chemistry
72. Prof. Anwar **Nasim**	Pakistan	Genetics
73. Prof. Munir **Nayfeh**	Jordan/ United States	Physics
74. Prof. Robert **Nigmatulin**	Tatarstan/ Russia	Physics/ Mathematics
75. Prof. Gulsen **Oner**	Turkey	Medicine
76. Prof. Ramdane **Ouahes**	Algeria	Chemistry
77. Prof. Korkut **Ozal**	Turkey	Civil Engineering
78. Prof. Sinasi **Ozsoylu**	Turkey	Medicine
79. Prof. Munir **Ozturk**	Turkey	Biology
80. Prof. Iqbal **Parker**	South Africa	Biochemistry
81. Prof. Syed Muhammad **Qaim**	Germany	Nuclear Chemistry

82. Prof. Subhi **Qasem**	Jordan	Agriculture
83. Prof. Atta-ur-**Rahman**	Pakistan	Chemistry
84. Prof. Najih Khalil **El-Rawi**	Iraq	Civil Engineering
85. Prof. Makhmud **Salakhitdinov**	Uzbekistan	Mathematics
86. Prof. Hussein Samir **Salama**	Egypt	Entomology
87. Prof. Eldar Yunisoglu **Salayev**	Azerbaijan	Physics /Mathematics
88. Prof. Jawad A. **Salehi**	Iran	Electronic Engineering
89. Prof. Mohammad **Salimullah**	Bangladesh	Physics
90. Prof. Boudjema **Samraoui**	Algeria	Biology
91. Prof. Lorenzo **Savioli**	Italy	Medicine
92. Prof. Misbah-Ud-Din **Shami**	Pakistan	Chemistry
93. Prof. Ali **Al-Shamlan**	Kuwait	Geology
94. Prof. Ahmad **Shamsul-Islam**	Bangladesh	Botany
95. Prof. Muthana **Shanshal**	Iraq	Chemistry
96. Prof. Ahmedou M **Sow**	Senegal	Medicine
97. Prof. Mahmoud **Tebyani**	Iran	Electronic Engineering
98. Prof. Ahmet Hikmet **Ucisik**	Turkey	Materials Science
99. Prof. Gulnar **Vagapova**	Tatarstan/ Russia	Medicine
100. Prof. Ibrahima **Wone**	Senegal	Medicine
101. Prof. Bekhzad **Yuldashev**	Uzbekistan	Physics/ Mathematics
102. Prof. Khalid **Yusoff**	Malaysia	Medicine
103. Prof. Khatijah Mohd **Yusoff**	Malaysia	Microbiology
104. Prof. Mikhael **Zalikhanov**	Balkar/Russia	Glaciology/ Biology

Deceased Fellows of the Islamic World Academy of Sciences

Prof. Mohammad **Ibrahim**	Bangladesh	(1911-1988).
Prof. Djibril **Fall**	Senegal	(1930-1992).
Prof. Salimuzzaman **Siddiqui**	Pakistan	(1897-1994**).**
Prof. Abdus Salam **Mia**	Bangladesh/USA	(1925-1995).
Prof. Suleiman Gabir **Hamad**	Sudan	(1937-1996).
Prof. Mohammad R **Siddiqi**	Pakistan	(1908-1998).
Prof. Abdullah M **Sharafuddin**	Bangladesh	(1930-1998).
Prof. Achmad **Baiquni**	Indonesia	(1923**-**1998).
Prof. Mumtaz Ali **Kazi**	Pakistan	(1928-1999).
Prof. Faramaz **Maksudov**	Azerbaijan	(1930-2000).
Prof. Mahjoub Obeid **Taha**	Sudan	(1937-2000).
Prof. Ali **Kettani**	Morocco	(1941-2001).
Prof. Mohamed Kamel **Mahmoud**	Egypt	(1926-2003).
Prof. Samaun **Samadikun**	Indonesia	(1931-2006).
Prof. Iftikhar Ahmad **Malik**	Pakistan	(1936-2008).
Prof. J (Younis) Ario **Katili**	Indonesia	(1929-2008).
Prof. Ibrahima Mar **Diop**	Senegal	(1921-2008).
Prof. Syed Zahir **Haider**	Bangladesh	(1927-2008).
Prof. Muhammad Ilyas **Burney**	Pakistan	(1922-2008).
Prof. Badri **Muhammad**	Malaysia	(1943-2009).
Prof. Pulat **Khabibullaev**	Uzbekistan	(1936-2010).
Prof. Mohammed A **Waqar**	Pakistan	(1941-2010).
Prof. Souleymane **Niang**	Senegal	(1929-2010).
Prof. Ahmad Nawawi **Ayoub**	Malaysia	(1937-2010).
Prof. Kamal H. **Batanouny**	Egypt	(1936-2011).
Prof. Mohamed B E **Fayez**	Egypt	(1927-2011).
Prof. Mazhar M **Qurashi**	Pakistan	(1925-2011).
Prof. Mahmoud **Hafez**	Egypt	(1912-2011).
Prof. Jamal **Nazrul-Islam**	Bangladesh	(1939-2013).
Prof. **Riazuddin**	Pakistan	(1930-2013).
Prof. Naeem Ahmad **Khan**	Pakistan	(1928 -2013).
Prof. Mehmet Nimet **Ozdas**	Turkey	(1921-2014).

Appendix B

Laureate(s) of the IAS Ibrahim Memorial Award

Prof. Ugur **Dilmen**	Turkey	1996.
Prof. Mohammad **Abdollahi**	Iran	2006.
Prof. Mohammed Manna **Al-Qattan**	Saudi Arabia	2007.
Dr Faris **Gavrankapetanovic**	Bosnia	2009.
Dr Saima **Riazuddin**	Pakistan	2011.
Prof. Liaquat **Ali**	Bangladesh	2013.

Appendix C

Council of the
Islamic World Academy of Sciences (2009-2013)

President:	Abdel Salam Majali	Jordan.
Vice-President:	Farouk El Baz	Egypt.
Vice-President:	Mehmet Ergin	Turkey.
Vice-President:	Misbahuddin Shami	Pakistan.
Treasurer:	Adnan Badran	Jordan.
Secretary General:	Mohamed H A Hassan	Sudan.
Member:	Amdulla Mehrabov	Azerbaijan.
Member:	Anwar Nasim	Pakistan.
Member:	Syed Muhammad Qaim	Germany.
Member:	Najih Khalil El-Rawi	Iraq.
Member:	Khatijah Mohd Yusoff	Malaysia.
Member (Ex-officio):	Moneef R. Zou'bi	DG- IAS/Jordan

IAS Executive Staff

Dr Moneef R. Zou'bi	Director General.
Ms Taghreed Saqer	Executive Secretary.
Ms Lina Jalal Dedan	Programme Officer.
Mr Hamzah Daghestani	Finance Officer.
Mr Habes Majali	Public Relations Officer.
Mr Hamdi Bader Ahmad	Driver.
Mr Saleh As'ad.	Office Manager.

Appendix D

Publications of the Islamic World Academy of Sciences
Conference Proceedings

1) *The Islamic Academy of Sciences* - Proceedings of the Founding Conference (1986) - Published by the Islamic Academy of Sciences - **Editor: A. Kettani (Morocco).**

2) *Food Security in the Muslim World* - Proceedings of the first international conference, Amman (Jordan) (1987) - Published by the Islamic World Academy of Sciences - **Editor: S. Qasem (Jordan).**

3) *Science and Technology Policy for Self-Reliance in the Muslim World* - Proceedings of the second international conference, Islamabad (Pakistan) (1988) - Published by the Islamic World Academy of Sciences - **Editors: F. Daghestani (Jordan), H. El-Mulki (Jordan), and M. Al-Halaiqa (Jordan).**

4) *New Technologies and Development of the Muslim World* - Proceedings of the third international conference, (Kuwait) (1989) - Published by the Islamic World Academy of Sciences - **Editors: F. Daghestani (Jordan), and S. Qasem (Jordan).**

5) *Technology Transfer for Development in the Muslim World* - Proceedings of the fourth international conference, Antalya (Turkey) (1990) - Published by the Islamic World Academy of Sciences - **Editors: F. Daghestani (Jordan), A. Altamemi (Jordan), and M. Ergin (Turkey).**

6) *Science and Technology Manpower Development in the Islamic World* - Proceedings of the fifth international conference, Amman (Jordan) (1991) - Published by the Islamic World Academy of Sciences - **Editors: F. Daghestani (Jordan), A. Altamemi (Jordan), and H. El-Mulki (Jordan).**

7) *Environment and Development in the Islamic World* - Proceedings of the sixth international conference, Kuala Lumpur (Malaysia) (1992) - Published by the Islamic World Academy of Sciences - **Editors: S. Al-Athel (Saudi Arabia), and F. Daghestani (Jordan).**

8) *Health, Nutrition and Development in the Islamic World* - Proceedings of the seventh international conference, Dakar (Senegal) (1993) - Published by the Islamic World Academy of Sciences - **Editors: N. Bor (Turkey), A. Kettani (Morocco), and Moneef R. Zou'bi (Jordan).**

9) *Water in the Islamic World: An Imminent Crisis* - Proceedings of the eighth international conference, Khartoum (Sudan) (1994) - Published by the Islamic World Academy of Sciences - **Editors: M. Ergin (Turkey), H. Dogan Altinbilek (Turkey), and Moneef R. Zou'bi (Jordan).**

10) *Science and Technology Education for Development in the Islamic World*- Proceedings of the ninth international conference, Tehran (Iran) (1999) – Published by the Islamic World Academy of Sciences , **Editors: M. Ergin (Turkey), M. Doruk (Turkey), and Moneef R. Zou'bi (Jordan) (ISBN 9957-412-7).**

11) *Information Technology for Development in the Islamic World***-** Proceeding of the tenth international conference, Tunis (Tunisia) (2000) – Published by the Islamic

World Academy of Sciences, **Editors: M. Ergin (Turkey), M. Doruk (Turkey), and Moneef R. Zou'bi (Jordan) (ISBN 9957-412-03-5).**

12) *Biotechnology and Genetic Engineering for Development in the Islamic World***-** Proceedings of the eleventh international conference, Rabat (Morocco) (2001) – Published by the Islamic World Academy of Sciences, **Editors: A. S. Majali (Jordan), M. Ergin (Turkey), and Moneef R. Zou'bi (Jordan) (ISBN 9957-412-07-8).**

13) *Materials Science and Technology and Culture of Science**,*** Proceedings of the twelfth international conference, Islamabad (Pakistan), (2002) – Published by the Islamic World Academy of Sciences, **Editors: M. Ergin (Turkey), and Moneef R. Zou'bi (Jordan) (ISBN 9957-412-06-x).**

14) *Energy for Sustainable Development and Science for the Future of the Islamic World and Humanity,* Proceedings of the thirteenth international conference, Kuching, Sarawak (Malaysia), (2003) – Published by the Islamic World Academy of Sciences, **Editors: M. Ergin (Turkey), and Moneef R. Zou'bi (Jordan) (ISBN 9957-412-08-6).**

15) *Science Technology and Innovation for Socioeconomic Development of OIC-Member Countries: Towards Vision 1441***,** Proceeding of the fourteenth international conference, Kuala Lumpur (Malaysia), (2005) – Published by the Islamic World Academy of Sciences, **Editors: M. Ergin (Turkey), and Moneef R. Zou'bi (Jordan) (ISBN 9957-412-11-6).**

16) *Higher Education Excellence for Development in the Islamic World*, Proceeding of the fifteenth international conference, Ankara (Turkey), (2006) – Published by the Islamic World Academy of Sciences, **Editors: M. Ergin (Turkey), and Moneef R. Zou'bi (Jordan) (ISBN 978-9957-412-18-0).**

17) *Science and Technology and Innovation for Sustainable Development in the Islamic World: Policies and Politics Rapprochement*, Proceeding of the sixteenth international conference, Kazan (Tatarstan), (2008) – Published by the Islamic World Academy of Sciences, **Editors: M. Ergin (Turkey), and Moneef R. Zou'bi (Jordan) (ISBN 978-9957-412-19-7).**

18*)* ***Towards the Knowledge Society in the Islamic World: Knowledge Production, Application and Dissemination,*** Proceeding of the seventeenth international conference, Shah Alam, *Selangor (Malaysia); 2009* - Published by the Islamic World Academy of Sciences, **Editors: M. Ergin (Turkey), and Moneef R. Zou'bi (Jordan) (ISBN 978-9957-412-22-7). In press.**

19) ***The Islamic World and the West: Rebuilding Bridges through Science and Technology,*** **Doha (Qatar), 2011 -** Published by the Islamic World Academy of Sciences, **Editors: M. Ergin (Turkey), and Moneef R. Zou'bi (Jordan). In press.**

20) ***Achieving Socioeconomic Development in the Islamic World through Science, Technology and Innovation***, Dhaka (Bangladesh), 2013 – Published by the Islamic World Academy of Sciences, **Editors: M. Ergin (Turkey), and Moneef R. Zou'bi (Jordan). In press.**

Books

1) *Islamic Thought and Modern Science* - Published by the Islamic World Academy of Sciences (1997) - **Author: Mumtaz A. Kazi**.

2) *Qur'anic Concepts and Scientific Theories* - Published by the Islamic World Academy of Sciences (1999) – **Author: Mumtaz A. Kazi.**

3) *Personalities Noble* **Editor: Hakim Mohammed Said**, Second Revised Edition, Published by the Islamic World Academy of Sciences (2000), **Editor: Moneef R. Zou'bi** (Arabic-English). **(ISBN: 9957-412-01-6).**

4) *Declarations of the Islamic World Academy of Sciences* – Published by the Islamic World Academy of Sciences (2005), **Editor: Moneef. R. Zou'bi (ISBN: 9957-412-09-4)**.

5) *Islamic World Academy of Sciences Outreach,* – Published by the Islamic World Academy of Sciences (2005), **Editor: Moneef R. Zou'bi (ISBN: 9957-412-10-8)**.

6) *Intellectual Property Rights: An Introduction for Scientists and Technologists* – Published by the Islamic World Academy of Sciences (2006), **Author: Mohamed B. E. Fayez (ISBN: 978-9957-412-18-0)**.

7) *Reverse Engineering: The Permissible but not Well-Recognized* -Published by the Islamic World Academy of Sciences (2010), **Author: Mohamed B. E. Fayez (ISBN: 978-9957-412-20-3)**.

8) *The Discoveries in the Islamic Countries* – Arabic Edition Published by the Islamic World Academy of Sciences (2012), **Author: Ahmed Djebbar (ISBN: 978-9957-412-23-4)**.

9) *The Essentials of Science, Technology and Innovation Policy* – Published by the Islamic World Academy of Sciences (2013), **Author: Tan Sri Dr Omar Abdel Rahman (ISBN: 978-983-9445-95-4).**

Periodicals

1) *Medical Journal of the Islamic World Academy of Sciences* (ISSN 1016-3360) - quarterly – Founding Editor: Prof. Naci Bor FIAS (Turkey); Chief Editor: Prof. Sinasi Ozsoylu FIAS (Turkey); Associate Editor: Prof. Ugur Dilmen FIAS, Ankara, Turkey.

2) *Newsletter of the Islamic World Academy of Sciences* - quarterly – Chief Editor: **Moneef R. Zou'bi**.

3) *Islamic Thought and Scientific Creativity* (in Arabic) - quarterly Journal of the Organisation of the Islamic Conference (OIC) Standing Committee on Scientific and Technological Co-operation (COMSTECH). Arabic version published by the IAS with the support of the Royal Academy for Islamic Civilisation Research (Al-Albait Foundation) (publication ceased in 1996).

Appendix E

IAS SUPPORTERS

The Hashemite Kingdom of Jordan

The Islamic Republic of Pakistan

The State of Kuwait

The Republic of Turkey

Malaysia

The Republic of Senegal

The Republic of Sudan

The Islamic Republic of Iran

The State of Qatar

The Republic of Tunisia

The Kingdom of Morocco

The State of Sarawak/Malaysia

The Republic of Indonesia

The Republic of Tatarstan/ Russian Federation

The State of Selangor/Malaysia

The Sultanate of Oman

The State of Selangor/ Malaysia

The Republic of Kazakhstan

The People's Republic of Bangladesh

The OIC Standing Committee on Scientific and Technological Co-operation (COMSTECH), Pakistan.

The Islamic Development Bank (IDB), Saudi Arabia.

The OPEC Fund for International Development, Vienna, Austria.

Arab Potash Company, Jordan.

United Nations Educational Scientific and Cultural Organisation (UNESCO), France.

Islamic Educational Scientific and Cultural Organisation (ISESCO), Morocco.

The World Bank, USA.

The United Nations Environment Programme (UNEP), Kenya.

Kuwait Foundation for the Advancement of Sciences (KFAS).

Turkish Scientific and Technical Research Council (TUBITAK).

The Royal Scientific Society (RSS), Jordan.

Pakistan Ministry of Science and Technology.

Ministry of Science, Technology and the Environment, Malaysia.

University Cheikh Anta Diop, Dakar, Senegal.
Ministry of Higher Education and Scientific Research, Sudan.
National Centre for Research, Sudan.
Ministry of Culture and Higher Education, Iran.
Iranian Research Organisation for Science and Technology (IROST).
The Academy of Sciences, Tehran, Iran.
The Academy of Medical Sciences, Tehran, Iran.
Saudi Arabian Oil Company, Saudi Arabia (ARAMCO).
Ihlas Holding, Turkey.
Arab Bank, Jordan.
Jordan Kuwait Bank, Jordan.
Rafia Industrial Company, Jordan.
Secretariat of State for Scientific Research and Technology, Tunisia.
Academy of the Kingdom of Morocco.
Petra Private University, Jordan.
Higher Council of Science and Technology (HCST), Jordan.
Pakistan Academy of Sciences.
Majlis Islam Sarawak, Malaysia.
Tabung Baitulmal Sarawak, Malaysia.
Sasakawa Peace Foundation, Japan.
Perdana Leadership Foundation, Putrajaya, Malaysia.
Royal Jordanian Airlines, Jordan.
Arab Jordan Investment Bank, Jordan.
National Centre for Human Resources Development, Jordan.
Al Bukhary Foundation, Malaysia.
Bilkent University, Turkey.
US National Academy of Sciences, USA.
International Islamic Charity Organisation, Kuwait.
Islamic Organisation of Medical Sciences, Kuwait.
Arab Gulf Programme for Development (AGFUND), Saudi Arabia.
Fouad Alghanim & Sons Group of Companies, Kuwait.
Saudi Basic Industries Corporation (SABIC), Riyadh, Saudi Arabia.
Tatarstan Academy of Sciences, Tatarstan, Russian Federation.
World Islamic Call Society, Tripoli, Libya.
Jordan Phosphate Mines Company, Amman, Jordan.
International Islamic Academy of Science and Biotechnology (IAB), Malaysia.
University of Industry of Selangor (UNISEL), Malaysia.

Ministry of Foreign Affairs of Qatar: The Permanent Committee for Organizing Conference, Qatar.

Doha International Centre for Interfaith Dialogue (DICID), Qatar.

R.B. Suleimenov Institute of Oriental Studies, Kazakhstan.

Prime Ministry of Bangladesh, Bangladesh.

Foreign Ministry of Bangladesh; Bangladesh.

University Grants Commission of Bangladesh, Bangladesh.

Bangladesh Academy of Sciences, Bangladesh.

Sheikh Mohammed bin Hamad Al Thani, Qatar.

Eng. Awni Shaker Al Aseer, Saudi Arabia.

Eng. Amjad Abu Aisheh, Jordan.

Appendix F

IAS Waqf

IAS Waqf	IAS Endowment Fund
Islamic World Academy of Sciences	Islamic World Academy of Sciences
Jordan Islamic Bank	Arab Bank
Shmeisani Branch	Fifth Circle Branch
Account No.: 809/$91	Account No.: 0134/32907/711
Telephone: 5677107	Telephone: 5526870
Fax: +9626-5691700	Fax: +9626-5536874
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Appendix G

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