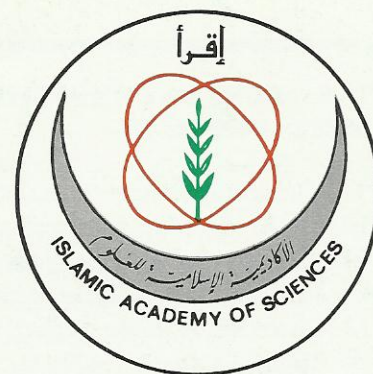


NEWSLETTER

THE ISLAMIC ACADEMY OF SCIENCES

APRIL 1988



ISSUE NO. 3

UNDER THE CHAIRMANSHIP OF H.R.H. CROWN PRINCE AL-HASSAN, JORDAN ESTABLISHES THE HIGHER COUNCIL OF SCIENCE AND TECHNOLOGY

The Higher Council of Science and Technology (HCST), has been established in Jordan by law in September 1987 under the Chairmanship of H.R.H. Crown Prince Al-Hassan to act as the national focal point for science and technology policy.

This has come about as a result of several continuous efforts to strengthen the S&T capabilities of Jordan and to move from an implicit to an explicit S&T policy.

Action started during the preparation phase of the Social and Economic Development Plan of Jordan (1986-1990). The Sectorial Science and Technology Committee for this plan which was chaired by IAS Fellow Dr. Daghestani, identified in the plan, among other actions, the need for a national structure for S&T policy and planning. As a consequence, H.E. the Prime Minister of the Hashemite Kingdom of Jordan formed the National Committee for S&T (NCST) entrusted with studying the S&T situation in Jordan and proposing to the Cabinet the appropriate organization for science and technology in Jordan.

The NCST was chaired by H.E. Dr. Hisham El-Khatib and had 15 prominent Jordanians as members in-



H.R.H. CROWN PRINCE AL-HASSAN AND DR. ADNAN BADRAN

cluding IAS Fellows Dr. A. Majali and Dr. F. Daghestani. the NCST proposed to the cabinet the establishment of HCST.

The HCST Council Members include, the Chief of the Jordanian Armed Forces, the Minister of Planning, the Minister of Industry and Trade, the Minister of Finance, the Minister of Energy and Mineral Resources, the Minister of Agriculture, the President of the Royal Scientific Society, the President of Amman Chamber of Industry, the Secretary General of HCST, and three members to be selected by H.R.H. the Chairman.

Prof. Dr. Adnan Badran has been appointed as the Secretary General of HCST.

The HCST is entrusted with tasks that include:

- a) The formulation of S&T policy, plans, programmes according to priorities.
- b) The support of R&D activities in Jordan.
- c) The strengthening of S&T organization and manpower in Jordan.
- d) The representative of Jordan in matters related to S&T at bilateral, regional and international levels.

The IAS takes this opportunity to congratulate the Government of the Hashemite Kingdom of Jordan for taking such an important measure for the future development of S&T in Jordan.

IAS GENERAL ASSEMBLY MEETS IN AMMAN

The General Assembly (G.A.) of the Islamic Academy of Sciences held its first meeting in Amman under the Chairmanship of IAS President Dr. M.A.Kazi between the period 19 to 20 Rabi Al-Thani 1408 H. corresponding to 9-10 December 1987. The meeting was attended by 26 of the 38 Founding Fellows. The G.A. discussed the items on its agenda and took the appropriate decisions. Among the various actions approved where, the IAS Council report, the Secretary General report, the Treasurer's report including the 1987 budget and the projected 1988-1989 budget. The G.A. also approved amendments in IAS Statutes, By-laws, IAS Headquarters Regulations, and IAS 5 year programme. In addition, the G.A. approved the issueing of the Scientific Journal of IAS and appointed Founding Fellow Prof. Dr. Naci Bor as the Journal's Editor. Two conferences for 1988 and 1989 where decided upon by the G.A, the first of which shall be on Science and Technology Policies in the Islamic Countries to be held in Islamabad in 1988, while the second shall be on New Emerging Technologies to be held in Kuwait in 1989.

At the conclusion of the final session, the G.A. adopted a resolution of thanks for His Majesty King Hussein and H.R.H. Crown Prince Al-Hassan, for their encouragement and support of the Academy and its activities. The G.A. authorized the President to send cables of thanks to His Majesty and His Royal Highness.

In his concluding remarks, the President thanked IAS Fellows for their keen interest in the deliberations and on behalf of the G.A. recorded appreciation and thanks to the organizing committee of the Food Security Seminar, the standing



GENERAL ASSEMBLY MEETING IN AMMAN.

committees, the scrutinizing committee, the selection criteria committee and for the Headquarters staff, for their contributions and the hard work performed.

1988 IAS CONFERENCE ORGANIZING COMMITTEE MEET IN JEDDAH.

The Science and Technology Policy for Self-Reliance in the Muslim World Conference Organizing Committee met at the IFSTAD Headquarters in Jeddah in the period between 22-23 February 1988, to discuss the various issues and actions required and related to convening the above mentioned conference.

The meeting was chaired by Dr. M.K. Mahmoud-Vice President of IAS and was attended by Prof. Dr. A. Kettani, Secretary General of IAS, Member, Prof. Dr. F. Daghestani-Treasurer of IAS, Member, and Dr. H. Mulki- E.D.G. of IAS, Secretary.

The Organizing Committee discussed and finalized the following:

- 1 - **Title of Conference:** The conference to be convened in 1988 in accordance with the decision of the General Assembly of IAS shall be under the title: Science and Technology Policy for Self-Reliance in the Muslim World.
- 2 - **Convening Date and Venue:** Members of the Organizing Committee after consulting by telephone with IAS President Dr. M.A. Kazi, fixed the date on December 3-6, 1988 and Islamabad, as the venue.
- 3 - **Papers' Title, Outline, Organization, Authors... etc.** The Committee finalized the document related to this issue. Sixteen papers shall be presented in the conference under the following titles:
 - Endogenous Capacity Building in Science and Technology in Developing Countries During the Past Decade.
 - Importance of Science and Technology for Socio-Economic Development.

- The Need for Integrated S&T Policies for the Islamic Countries: The Role of COM-STECH.
 - The International Code of Conduct on the Transfer of Technology: Major Issues of Agreements and Disagreements.
 - Science and Technology Policy Formulation, Planning and Implementation.
 - Orientation of Education and Training Policies Towards Science and Technology Self-Reliance in the Islamic Countries.
 - Effective linkages Between Research and Development and the Economic Sector: Effective Means, Methods, Requirement, and Organization.
 - Science and Technology Policy Instruments, and the Andean Packed Countries Experiences.
 - Science and Technology Policy Development Strategies: The Experience of the Republic of Korea.
 - Science and Technology Policies in Spain.
 - Science and Technology Policy in Iraq.
 - Science and Technology Policy in Turkey.
 - Science and Technology Policy in Egypt.
 - Science and Technology Policy in Burkina Faso.
 - Science and Technology Policy in Malaysia.
 - Science and Technology Policy in Pakistan.
- 4 - **Sponsors of the Conference:** The Committee recommended that the conference be sponsored jointly between IAS and IFSTAD.

EDITORIAL LETTER

Most of the Islamic countries are facing numerous obstacles and challenges in their developmental efforts to secure basic needs for their people. Launching social and economic development plans, building the necessary infrastructure and exploiting natural resources, occupy the largest portion of the overall process of development in these countries. The limited achieved growth, has been offset by other factors such as population growth rate and improper distribution of benefits. Furthermore, the scientific and technological gap between these countries and the developed world is widening.

Although most of the Islamic countries have recently become aware of the important role of science and technology (S&T) in their progress, they still have a great deal to learn about S&T policy formulation and the appropriate mechanisms of implementation to accelerate social and economic development. Many activities such as conferences, seminars and meetings were held at the country level throughout the Muslim World to determine ways and means of improving the S&T capabilities of these countries. The common features of the problems facing the Islamic countries are manifested in the absence or lack of coordination between S&T institutions on one hand and planner and policy makers on the other hand. Furthermore, some Islamic countries do not have institutions directly involved in S&T. Also, many Islamic countries have not formulated explicit national S&T policy and proper S&T organizational structure. Where S&T institutions are established, they show the symptoms of overlapping functions, lack of efficiency in performance and relevance of activities to needs. Other constraints such as non-clarity of objectives and lack of financial support are also present.

This obviously calls for an urgent effort to correct the situation, forwards strengthening S&T infrastructure and developing the S&T capability of the Muslim Ummah. For this reason, the Academy's next major activity in 1988 will be a conference on science and technology policy in the Muslim World. It is hoped that this conference will lay the foundation for a joint effort in establishing and developing the S&T capability of the Ummah. It will also be the proper opportunity for Islamic countries to share experience and knowledge in the field of S&T.

- 5 - **Proceedings of the Conference:** The papers presented to the conference shall be reviewed prior to the conference and sent to authors for adjustment when needed. The proceedings of the conference shall be printed in a high quality book. The Committee and E.D.G. of IAS shall review the papers and edit the proceedings.

The Organizing Committee report was approved by IAS President, Prof. Dr. M.A. Kazi. Following the approval, the Academy's Secretariat started contacting the suggested authors.

HIGHLIGHTS ON THE SCIENTIFIC AND TECHNOLOGICAL POTENTIAL OF MALAYSIA *

- Institutional Network

In Malaysia, most of the institutions active in science and technology activities are government agencies such as the Malaysian Agricultural Research and Development Institute (MARDI), the Rubber Research Institute of Malaysia (RRIM), the Palm Oil Research Institute of Malaysia (PORIM), the Forest Research Institute (FRI), the Mines Research Institute of Malaysia, the Institute of Medical Research (IMR), the Tun Ismail Atomic Research Centre (PUSPATI), and institutions of higher learning. The private sector has also undertaken a considerable number of research activities.

IMR was established in 1901 and is primarily entrusted with the task of carrying out research on the cause, treatment, and prevention of Beri-Beri and all forms of malarial fever. In a span of eighty years this institute has become the main medical research institute in the country and is presently conducting research on

over a hundred projects per year. Its main activities involve research, training, vaccine production, and referral diagnostic laboratory services.

SIRIM was established as a Federal Statutory Body in 1975 under the SIRIM Act of 1975 which is administered by the Ministry of Science, Technology and Environment.

The main activities of SIRIM can be classified into four categories namely; Industrial Research, (having activities in research and research development, engineering research, scientific research, analysis, industrial design and fabrication) Standards and Establishment of Standards, (which involves development of Standards, uses and implementation and determination of quality and also metrology), Industrial Consultancy Services, (activity of which involves industrial consultation and guidance, industrial relations, technical clarification, and technical publications), and The fourth category is Administrative.

The annual budget for SIRIM in 1981 was M \$34.6 million of which M \$8 million was to be spent on equipment for the laboratory. New projects implemented include the setting up of a Metal Industry Technology Centre and a Metal Industry Research and Development Centre.

MARDI was established by the MARDI Act which was passed by Parliament on 14th February, 1969. This research institute, is under the Ministry of Agriculture, MARDI has established Research Stations covering 6810 hectares of land located in different parts of Peninsular, Malaysia.

The overall objective of MARDI is generally to intensify its research activities according to the identified research priorities and to develop new technologies which can be easily adapted by farmers. Included among the activities of MARDI is research in food processing and preservation, maximum utilization of agricultural products, and the reduction of wastage in food and non-food production in processing, handling and transportation. It also acts as an information centre by publishing and distributing information on research to farmers associations, and relevant agencies.

RRIM was established on 29th of June, 1925. It is primarily concerned with research into all aspects of natural rubber cultivation and latex production, the development of new forms of rubber and rubber consumption as well as technological and end-uses research in the processing and manufacture of natural rubber products. It also extends its advisory and information services to all sectors of the industry.

In anticipation of a higher demand for natural rubber in the next decade, RRIM will emphasize the implementation of the Dynamic Production Policy of Natural Rubber.

Efforts will be aimed toward increasing productivity through agronomic Practices and labour utilization, optimum use of fertilizers and effective disease control. It will intensify the use of natural rubber through development of new forms of rubber and promote the growth of the rubber-based manufacturing industry.

The Chemistry Department with its seven branches throughout the country, is directly under the administration of the Ministry of

Science, Technology and the Environment. Its functions include providing analytical, investigatory and advisory services to several government agencies. Most of the services provided are to enable due enforcement of legislation and to ensure that the supply of materials is in accordance with specifications. It also ensures that the country's public water supplies are adequately treated as to be potable and do not contain microorganisms capable of transmitting water-borne diseases such as Dysentery, Cholera, and Typhoid.

The Forest Research Institute, which is an agency of the Ministry of Primary Industry, was established to be solely responsible for planning and implementing forest conservation and utilization schemes. This institute undertakes research into the feasibility of implementing reforestation schemes in areas where natural resources are depleted. It also conducts research into the viability of large-scale agro-forestry of forestry farming in those areas, with the aim of introducing new species of trees which will ensure a continuous supply of raw materials for pulp and paper processing. This institute is also closely monitoring the effects of forest utilization on the stability and quality of the surrounding environment.

Forest research is mainly focused on the development of forest regeneration techniques and timber utilization.

The Mines Research Institute which is placed under the Ministry of Primary Industries was established with the objective of carrying out research and investigation into various aspects of mining and mineral processing, such as looking into the problems of mining capacity,

mining technology and mineral processing. This institute has the facility of a geotechnic laboratory which carries out research on problems relating to mine safety. It will also establish a Mining technology Testing Centre to undertake various tests on modern techniques of tin mining to ensure high productivity. A programme for manpower training in mineral resource industries will also be initiated by this institute.

The main activities of the Veterinary Research Institute are Diagnostic services and the production of vaccines for specific animal diseases. From 1971-80 the institute has established six regional diagnostic laboratories which provide a much improved veterinary health coverage to farmers in the prevention of disease outbreaks.

PORIM was established as a Statutory Body on 15th May 1979. The activities of PORIM are research into the expanding uses of palm oil, formulating new uses, improving agronomic practices, and minimizing the costs of operation. Priority will be accorded to biological as well as technical research aimed at increasing the proportion and performance of palm oil in edible and non-edible uses. In addition, techno-economic studies will be carried out on palm oil and other oils and fats. Research on effluent treatment and disposal will also be undertaken.

The Fisheries Research Institute under the Ministry of Agriculture is responsible for carrying out surveys on demersal and pelagic fish resources and conducting research to improve the techniques of fishing. Several studies were carried out on biological aspects of marine fishes. Further financial allocations for research were given to this institute to develop aquaculture in brackish

water, and also inland aquaculture and cage or pen culture to supplement sources of protein and create employment opportunities for the rural people.

The Tun Ismail Atomic Research Centre was established in 1975 with the main aim of providing training and research and also to produce isotopes to supply to hospitals, research institutions and industrial organizations.

The Defense Research Institute is responsible for carrying out research activities on defense requirements of the country such as the supply, storage and usage of defense equipment.

Apart from these government research institutions and departments, academic institutions also have their own research capabilities. There are seven universities in Malaysia.

Private organizations, as well as multinational companies, also make contributions to research efforts in science and technology, though they are motivated by profit. Some of the active agencies are the Harrison and Crosfields Research and Advisory Services, the Dunlop Research Centre, and ICI (Malaysia) Limited Company. These centres deal mainly in agricultural research.

- Human Resources

In response to employment creation and demand trends over the past decade, emphasis has been placed on the expansion of the supply of manpower in the scientific and technical fields in Malaysia. Such a trend is expected to intensify in the present decade with an accelerated growth of the industrial sector and a trend towards modernization of the primary sectors. The proportion of

students enrolled in arts courses at university level has declined from 63.5% in 1970 to 47.8% in 1980, while those enrolled in science and technology have increased from 36.5% in 1970 to 52.2% in 1980, causing an increase from 35% in 1970 to 39% in 1980 of science and technological qualified personnel.

- Financial Resources

Without the benefit of careful research on the subject, it is difficult to assess Malaysia's current and annual commitment on R&D. Suffice to say, however, that current R&D expenditure is mainly financed by the government by way of annual budgetary grants to the various research bodies. Added to this, of course, are the various R&D projects undertaken by the private sector institutions, especially in the plantation sector, and also product research undertaken by large industrial and commercial firms. One other important area in which the government indirectly finances research is in the form of contributions to organizations linked to primary commodity research, for example, tin. To arrive at an exact and an absolute estimate would be difficult.

- Surveying the Scientific and Technological Potential.

The National Council for Scientific Research and Development (NCSRD), in the Ministry of Science, Technology and the Environment, is responsible for the collection and dissemination of data and information on national science and technological development. The Council has presently embarked on the compilation and registration of all past and current research efforts, a manual of scientific equipment valued at M\$50,000 and above, and also a directory of scientific research

organizations established in the country. Apart from this, the Council will be undertaking a nation-wide survey with the Malaysian Administrative Modernization and Manpower Planning Unit (MAM-PU) and the Economic Planning Unit (FPU) on the current and future scientific and technological manpower needs. With such information and data, the Council will be able to determine the present and future manpower potential of this country for the development of science and technology policies and plans.

Source: UNESCO, Science and Technology in Countries of Asia and the Pacific, Vol No. 52, ISBN 92-3-0020788

RECONGNIZING INNOVATIONS OF MUSLIMS

Boats are still built in Islamic countries to a design and in a manner unchanged for over a thousand years. They are proof of the sturdiness, conservatism and limitations of the technology of the Islamic World. This subject is comprehensively surveyed by A.Y. Al-Hassan and D.R. Hill in *Islamic Technology, an Illustrated History**.

Islam's greatest contribution to science occurred between the eighth and thirteenth centuries, between the establishment of the Abbasid Caliphate at Baghdad and the Mongol invasions of the Middle East. The Arabs absorbed the learning of their subjects and neighbours-Persian, Greco-Roman, Indian, Chinese and developed it. From the hydraulic technology of the ancient world, they devised water-powered machines that were applied to purposes as diverse as driving trip-hammers, telling the time and making automatic music. Having learned

from Chinese prisoners of war how to make paper, the Arabs contributed a number of technical innovations, including "bird's paper", so called because it was thin enough to be sent by carrier pigeon, the first recorded air-mail paper.

The abundance of invention described here is astonishing. Stills and alembics, incendiary weapons, metallurgical technology, all are surveyed. There is much fascinating details, the oilfields of Baku were being exploited as early as the 9th century; Omar Khayyam was better known as mathematician than as poet. It is a pity that the authors only refer to, without quoting, the recipe for making omelettes without eggs which apparently occurs in a treatise on the adulteration of food. (The Economist September 1987).

* Cambridge University Press for UNESCO.

IAS LIBRARY

IAS Library has recently acquired the following publications:

- 1 - Treasures of Jerusalem (Arabic) by H.E.R. Najm et al., Published by the Organization of Arab Cities and The Royal Academy of Islamic Civilization (Al El-Bait Foundation), 1403 h, 1983 A.D.
- 2 - Analysis of Food problem in the Arab Countries (Arabic), by Dr. S. Qasem published by A. Shoman Foundation, 1982.
- 3 - The Agricultural Sector of Jordan Policy & Systems Studies, (English), by A.B. Zahlar, et al, published by Ithaca press, London, for Abdul Hameed Shoman Foundation, 1985.

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