

**INTERNATIONAL
ADVISORY BOARD**

for the

Nigeria/UNESCO

Project for the Reform of the
Nigerian Science & Innovation System



United Nations
Educational, Scientific and
Cultural Organization





Olusegun Obasanjo, GCFR
 President, Commander-in-Chief of the Armed Forces
 Federal Republic of Nigeria

"...We need technical assistance with capacity development. This is needed in all sectors and should include the ability to reverse the brain and brawn drain to promote internal levels of creativity, innovation, investment, research and development... Today, our focus is not on aid but on trade even if we still require substantial assistance, especially technical assistance in the areas of infrastructure, health, water, technology, agriculture, and education to open up new opportunities and possibilities for our peoples. Such investment would go a long way to unleash the energies and potentials of the continent.

I would like to reiterate my conviction that deliberate supportive measures will lead to improved Africa economic performance, as well as create the necessary environment for a thriving and prosperous partnership between the public and private sectors on the continent, and a more vibrant, mutually beneficial relationship with our development partners..."

Extract of Address delivered by the President Obasanjo,
 at UNESCO Headquarters on the occasion of the Africa Day, 25 May 2005

Table of Contents

UNESCO SPECIAL PLAN OF COOPERATION WITH NIGERIA	
I. Background information	4
II. Programme overview	5
III. The International Advisory Board	6
IV. Duration and Scope of Work	6
V. Overview of IAB recommendations report	7
LIST OF IAB MEMBERS	9
PROFILES OF THE MEMBERS OF THE IAB	10
ADDRESSES DELIVERED DURING INAUGURATION OF THE BOARD	18

UNESCO Special Plan of Cooperation with Nigeria

I. BACKGROUND INFORMATION

At the request of the President of Nigeria, UNESCO has developed a **Special Plan of Cooperation with Nigeria** to assist the country in the development process as the structures and practices of democratic government are re-introduced into the country. The Science Component of the Plan is a programme focussed on building capacities for the reform and governance of the Nigerian science and innovation system so as to increase its effectiveness in contributing to the attainment of the important macro-economic objectives, such as employment creation, diversification of the economy, promotion of non-oil exports and the protection of the environment.

In order to have a structured dialogue with the Government of Nigeria, UNESCO commissioned two papers which sought to identify those specific short term actions which could launch an ordered process of revitalization of the country's efforts in science and technology. Both are based on current global understanding of the key elements of a "national system of innovation".

The first action which is needed is a comprehensive international review of the present problems and potential of Nigeria's national system of innovation. Completion of that work is an essential "pre-investment" building block for the future. A detailed proposal for such a review is presented in a document entitled "**Science, Technology and Innovation in Nigeria: A Review of Policies and Performance**". Since a system wide review for a large country like Nigeria is a long process, the second document presents basic generic needs found, to greater or lesser extent, in all developing countries. It suggests pre-investment studies which will need to be carried out and proposes mechanisms - especially evaluation mechanisms which will be needed to enhance the management of technical change in Nigeria.

II. Programme overview

The two documents have been accepted by the Government of Nigeria as basis for the development of a preparatory programme for the reform and revitalization of the country's science, technology and innovation system. Listed below are the elements of the pilot programme.

1. A thorough review of all of the "functions" of Nigeria's National System of Innovation, coupled with a preliminary evaluation of the performance of the country's government and academic science and technology institutions, that will include external evaluation by an international team, as described in the document entitled "Science, Technology and Innovation in Nigeria: A Review of Policies and Performance";
2. Development of a proposal for a financing system for science and technology in Nigeria;
3. A human resource development programme designed to create or upgrade skills in the areas of research management and the management of technical change;
4. A programme of in-depth international reviews of science, technology and innovation programmes in government institutes and research universities, with the initial institutes or universities to be reviewed to be identified by government after examining the report of the international team involved in Element 1.;
5. A programme on information management, to encompass a review of the availability of data bases, statistical services, a system of indicators, and communication systems for science and technology;
6. A review of the needs for science, technology and innovation in Nigeria's private sector in the light of increasing globalization;
7. A programme to strengthen Nigeria's infrastructure in the area of standards and metrology, linked with a national programme to increase quality in the operations of the private sector;
8. A review of the country's system for the protection of intellectual property, considering the capacities needed to formulate policies and to implement them;
9. A review of Nigeria's participation in regional and international scientific activities, including as review of the country's record of making use of the information emerging from such activities.

Several projects will be developed and implemented in parallel tracks and each will address one or several of the elements above. The Director-General of UNESCO has approved the sum of approximately US\$500,000 from the UNESCO/Japan Funds-in-Trust for the Capacity -Building of Human Resources for the first project entitled "**Assistance for the Reform of the Nigerian Science, Technology and Innovation System**". This project will address elements (1&2) above and will lead to the development of a draft innovation policy document and the elaboration of a multi-year Plan of Action on S&T which will be used by government as a framework for investment guidance at the national level and for dialogue with donors. The Government of Nigeria has contributed approximately US\$1 million towards project implementation and UNESCO is expected to mobilise the participation of other agencies.

III. The International Advisory Board

The elements of the programme have been developed largely through interaction with the Federal Ministry of Science and Technology and some contact with the National Universities Commission and the Division of Higher Education of the Federal Ministry of Education. However, the elaboration of the preparatory programme for consideration at a donors conference will involve several science-based ministries, the Ministry of Finance, the National Planning Commission and several stakeholders. The government has already set up a ministerial-level science reform committee, which is comprised of the Secretary to the Government of the Federation (Chairperson) and Ministers of Finance, Science and Technology, Education, Industry, Health, Agriculture and the Federal Capital Territory. The government has also decided to establish a National Research and Development Coordinating Council to be chaired by the President of Nigeria.

At the international level, the Government of Nigeria has requested UNESCO to lead a consortium of agencies in the elaboration of the preparatory programme. The International Advisory Board has been established as an additional mechanism to ensure that Nigeria will benefit from the lessons and good practices from other regions of the world. An eight-person Board has been established, comprised of three members from Nigeria and five from other parts of the world (Asia, North America, Europe). Representatives of development agencies interested in participating in the project may be invited to attend the meetings of the Board and such agencies shall be responsible for covering the cost of participation.

IV. Duration and Scope of Work

The thrust of the work of the IAB, which was inaugurated in October 2004 by the Director-General of UNESCO in Paris, is to provide, drawing experience from good practices in different parts of the world, advice and opinions on (a) specific issues referred to UNESCO by the Government of Nigeria/the National Science Reform Committee OR issues identified on its own initiative, (b) the implementation of the UNESCO-coordinated programme of reform and revitalisation of the Nigerian science, technology and innovation system as delineated in II above. The Board is free to create sub-committees on specific themes, consult experts/institutions, and suggest research and studies which should be conducted with a view to enriching its reflection.

Currently, the issues which have been referred to UNESCO by the Government of Nigeria include:

1. International review of the federal policies and programmes in the areas of science, technology and innovation;
2. Review of the sector policies in ICT and biotechnologies;
3. A review of the functions, modes of operation and areas of overlap for the 70 R&D institutes and agencies in the sectors of agriculture, education, health, industry and science and technology, with a view to making recommendations for the harmonisation and rationalisation of the public research institutes' system;
4. The design of the structure, functions and operational modalities of the National Research and Development Coordination Council, and its linkages to science-based ministries and others such as the National Planning Commission and the Ministry of Finance;
5. Re-structuring and strengthening of the Federal Ministry of Science and Technology to enhance its capacities for the overall management and coordination of the science system.

Members of the Board would review the reports of the various studies and research (designed to address the issues above) with a view to making recommendations. The IAB will report periodically to the President of Nigeria through the Director-General of UNESCO.

V. Overview of IAB

recommendations report

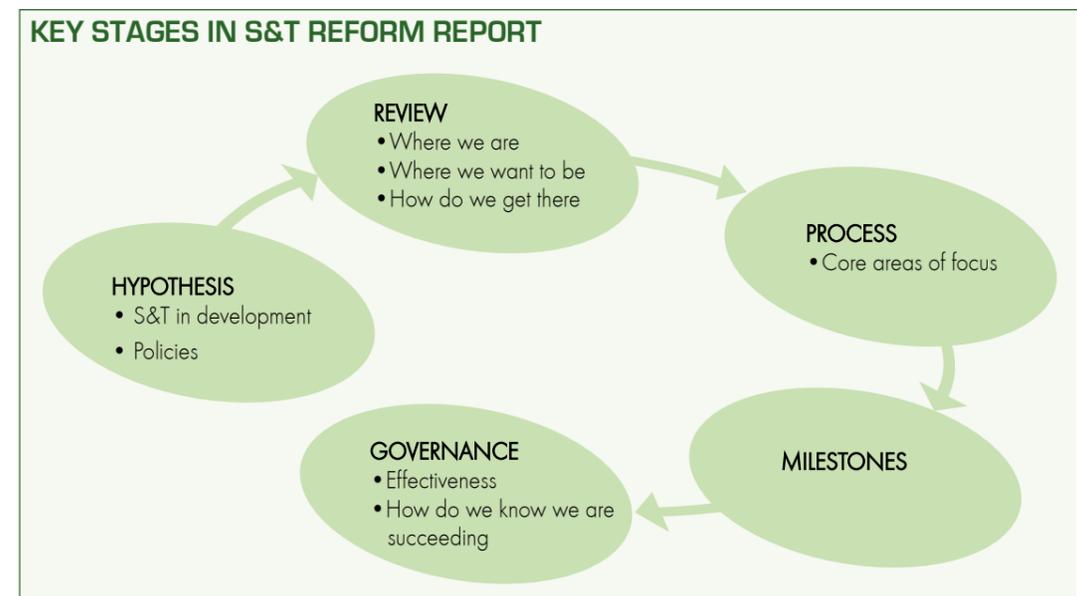
The Government of Nigeria has high ambitions for the development and welfare of its people. Access to scientific and technological innovations and application of such innovations in its economy are an important element in achieving the ambitions. The Government is searching for those steps in its science and technology policy which have the most substantial effects on implementable innovation and as such on economic growth in the medium and long run. Therefore, in addition to guiding the international review of the Nigerian science and innovation system and providing advice on specific issues, the IAB is preparing a report for the Government of Nigeria.

The IAB recommendations report will present a selection of concrete steps, which satisfy the requirements of having on the one hand their roots in the international experience on successful science and technology policies and on the other hand a close link to the Nigerian context. The two elements - international experience and Nigerian context - are reflected in the composition of the Board. The report does not aim at presenting utopian long run plan for developing a utopian science and technology policy in a utopian country. On the contrary: it is based on Nigeria

today and the prioritization of steps to make. A successful Science and Technology policy will always start from the demand side and project or map or translate that side towards the supply. In the Nigerian context, the demand side is reflected in the Nigerian National Economic Empowerment and Development Strategy, NEEDS. As a result the NEEDS-strategy are taken to be leading in the prioritization of steps on the supply side.

The report will be written by Nigerians together with international experts that have experience in making S&T drive economic growth. It will be written for Nigerians, looking at Nigerian comparative or dynamic advantages that will remain 3 years from now when the recommended policies might be implemented. Part I of this report will set up the framework by looking at the Demand side (chapter 1), the Supply side (chapter 2) and the market conditions (chapter 3) for S&T reform driven economic growth. Part II / chapter 4 compare international S&T experiences and looks at Nigeria's situation in an international perspective. The report will be concluded in Part III/chapter 5 with a set of recommendations.

The work of the International Advisory Board on S&T policy reform will be undertaken in a number of stages, which are outlined below. The final report is due in March 2007.



List of IAB Members

Jozef Ritzen

Chairperson of the IAB,
President, Maastricht University

Osita Ogbu

Chief Economic Adviser to the President of Nigeria

Maureen O'Neil

President of International Development
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Bunmi Oni

Managing Director and Chief Executive Cadbury

Syeda Tanveer Kausar Naim

Former Chairperson, Pakistan Council of Science
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Itsuo Ohnaka

Professor Emeritus, Osaka University

Gambo Laraba Abdullahi

Former Vice Chancellor, University of Abuja

Lynn K. Mytelka

Former Director, United Nations University
Institute for New Technologies

Dr Jozef Ritzen, Chairperson of the IAB



President, Maastricht University

Before assuming his current position in February 2003, Mr. Ritzen was Vice President of the World Bank's Development Economics Department. He assumed this position in August 1999. In July 2001 he assumed the position Vice President of the World Bank's Human Development Network, which advises the institution and its client countries on innovative approaches to improving health, education and social protection. Mr. Ritzen joined the Bank as Special Adviser to the Human Development Network in September 1998.

Prior to coming to the Bank, he was Minister of Education, Culture, and Science of The Netherlands, one of the longest-serving Ministers of Education in the world. During his term, he enacted a series of major reforms throughout the Dutch education system. Mr. Ritzen has also made significant contributions to agencies such as UNESCO and OECD, especially in the field of education and social cohesion. Prior to his appointment as Minister in 1989, Mr. Ritzen held academic appointments with Nijmegen University and Erasmus University in The Netherlands, and the University of California-Berkeley and the Robert M. LaFollette Institute of Public Affairs at the University of Wisconsin-Madison in the United States.

Mr. Ritzen obtained a master's degree in physical engineering in 1970 from the University of Technology in Delft, and a PhD in economics in 1977 from Erasmus University in Rotterdam. His dissertation on education, economic growth, and income distribution earned him the Winkler Prins prize.

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Dr Osita Ogbu



Chief Economic Adviser to the President of Nigeria

Dr Osita Ogbu is the Economic Adviser to the President, Federal Republic of Nigeria and Chairman/CEO, National Planning Commission.

He was born in 1957 at Onitsha. He graduated from the University of Nigeria with B.Sc. in Economics in 1979. He obtained an M.A. degree in Economics from Howard University in Washington D.C. in 1984 and Ph.D. in Economics from the same University in 1988.

He was Research Economist in the Technical Department of the African Region of the World Bank in Washington D.C. from 1987 to 1991. He joined the International Development Research Centre of Canada (IDRC) in 1991 as a Program Officer in Ottawa, Canada. He moved to the Regional Office of IDRC in Nairobi later in 1991 and rose to become a Senior Program Specialist-Economics responsible for all Economic related projects in Eastern and Southern Africa. During this period, he made grants, managed research projects and research and knowledge networks with a portfolio running into millions of dollars. He was the Executive Director of the African Technology Policy Studies Network (ATPS) based in Nairobi, Kenya. ATPS is an international African institution set up to build capacity and provide advice on science and technology policy for Africa's development. It is a Network with chapters in 23 countries. Dr. Ogbu was in this position from March 2001 until his current appointment.

Dr Ogbu has authored many books on issues pertaining to Africa's development. The most recent is a book he co-edited with Prof. Charles Soludo, Governor of the Central Bank of Nigeria and Prof. Ha-Jun Chang of Cambridge University on «The Politics of Trade and Industrial Policy in Africa». He has over 20 published articles, chapters in books and Monographs. Besides work, he is interested in poetry and creative writing. He has already published one novel The Moon Also Sets.

Dr Ogbu has travelled very widely. He has been to over 40 countries covering most parts of the world. He is considered an expert on issues related to the science and technology led development for Africa and is often invited to speak on this platform all over the world.

Dr Ogbu is married to Dr. (Mrs.) Ogugua Osi-Ogbu, a member of the American College of Physicians, and they have 3 children, Ikeme, Adaora and Oforma. He holds the traditional title of Oshimiri 1 of Ovoko.

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Dr Maureen O'Neil



President of the International Development Research Centre (since April 1997)

Previous positions include Interim President of the International Centre for Human Rights and Democratic Development, President of the North-South Institute, and Deputy Minister of Citizenship for the Government of Ontario.

Ms. O'Neil is a member of the International Board of Governors of the Centre for International Governance Innovation (CIGI), member of the Board of Trustees of the American University of Beirut, and chair of the Hemispheric Advisory Board of the Institute for Connectivity in the Americas. She is also a member of the Policy Advisory Group of the UK Department for International Development and a Fellow of the School of Policy Studies of Queen's University. She has been a member and/or Chair of numerous Boards, including: the Board of Governors, Carleton University (Chair); the Board of Directors of the International Institute for Democracy and Electoral Assistance (International IDEA); the Markle Foundation's Global Digital Opportunity Initiative; the World Economic Forum's Digital Divide Supervisory Committee (co-chair); the Advisory Board to the Minister of Foreign Affairs; the International Centre for Human Rights and Democratic Development (Chair); the Canadian Foundation for the Americas (Chair); and the Institute for Women, Law and Development. She has also represented Canada on the UN Commission on the Status of Women and on OECD committees, and has been a member of the UN Committee for Development Planning and the Board of the UN Research Institute for Social Development.

Ms. O'Neil has a BA in Sociology from Carleton University and Honorary LL.Ds from Carleton University and Wilfrid Laurier University.

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Mr Bunmi Oni



Managing Director and Chief Executive, Cadbury Nig. Plc

Had basic education at the University of Ife, Nigeria, and business education at the University of Michigan, USA, and INSEAD France.

After a brief spell as Research Assistant in a Research Institute, joined Cadbury Nigeria in August 1977 as Product Development Manager. He has since held positions in Manufacturing, Human Resources (rose to the Board in 1988), and subsequently held the portfolios of Corporate Planning Director and Sales & Marketing Director.

As part of a Cadbury Schweppes executive exchange programme, he transferred to Cadbury India as Vice President Marketing in 1992, responsible for marketing for the entire Cadbury brand offerings. He was appointed Managing Director of Cadbury Nigeria on return from India and became Chief Executive in June 1995. Since September 2000, he has held concurrent responsibility for the West Africa operations of Cadbury Schweppes.

He is a past Chairman of The Nigerian Economic Summit Group, a private sector think-tank committed to economic policy advocacy and research. He has also been President of the Chartered Institute of Personnel Management of Nigeria, Business Club Ikeja, Lagos Business School Alumni Association and the Association of Food Beverage and Tobacco Employers.

He is currently Chairman of the Board of The Nigerian Export Promotion Council, the agency responsible for driving export development in Nigeria and is a member of the UNESCO International Advisory Board for the Reform of Science, Technology and Innovation Systems in Nigeria. He is also a Director of Berger Paints Plc, and Chairman or Director in a few other bodies.

He was Chairman of the Steering Committee on Competition and Anti-Trust Reform that produced a draft Competition Legislation now in the National Assembly.

Bunmi's keen interests and passion lie in Strategy Development, Corporate Governance and Leadership. Has been mentor to many young entrepreneurs.

He is a Fellow of the Chartered Institute of Personnel Management of Nigeria, Fellow Nigerian Institute of Management, Fellow, Institute of Production Management of Nigeria, Fellow Nigerian Institute of Food Science & Technology, and Fellow Institute of Directors, Nigeria.

Bunmi Oni was awarded the National Honour of Member of the Order of the Niger (MON) in 2001, and was recently named Nigeria's second most respected business leader for 2005 in a survey facilitated by PriceWaterhouseCoopers. Cadbury was named Nigeria's Most Respected Company.

He is married to Bola and they have four children.

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Dr Syeda Tanveer Kausar Naim



Former Chairperson, Pakistan Council of Science & Technology

Dr. Syeda Tanveer Kausar Naim was awarded a PhD in Organic Chemistry by the University of Sussex, UK, in 1971 and was thereafter involved in post-doctoral research and teaching at various universities in the United Kingdom, Germany, Pakistan and Australia.

She was appointed Chairperson of Pakistan Council for Science and Technology (the advisory Council of Government of Pakistan on S&T) in 2001 and in this capacity also served as Member/Secretary to the National Commission for Science and Technology (NCST), the country's apex decision making body on Science & Technology.

Dr. Naim was responsible for the conduct of the three meetings of the National Commission for Science and Technology chaired by the President of Pakistan. At these meetings she presented the Agenda comprising several important projects and programmes related to the development of S&T capabilities in general and promotion of ICT, bio-technology and engineering in particular as well as proposals on reforms in the Higher Education sector. This resulted unprecedented increases in annual budgetary allocations for S&T and Information & Communications Technology. A Higher Education Commission was established with the mandate of bringing about reforms in the governance, management and quality of the higher education sector.

In order to promote the culture of scientific research and innovation in the country, Dr. Naim introduced performance based financial awards for scientists. This initiative resulted in a 50 percent increase in scientific research articles from Pakistan in internationally cited scientific journals. Dr Naim also promoted the indigenous PhD programme under which national institutions are equipped with the wherewithal to enroll students for PhD in science and technology subjects. The Ph.D enrollments increased from 70 per year to over 2000 enrolled in year 2005.

She coordinated the preparation of Technology Based National Development Vision and Action Plan for Pakistan. The Vision focuses on achievement of a steady growth in GDP through increased inputs of S&T and promotion of an innovation culture in the national research establishments and firms.

Dr. Naim played a crucial role in the negotiations and signing of the Agreements on Pak-USA, Pak-China and Pak-Korea Scientific Collaboration and in the selection of collaborative programmes. She is member of UN Committee on Gender Advisory Board and Member of Advisory Board of the Dossier on Science, Technology and Innovation of Sci.Dev.net devoted to the promotion of S&T in the developing countries.

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Itsuo Ohnaka, who holds a Dr. Eng., in mechanical engineering from The University of Tokyo, is a Prof. Emeritus Osaka University and Visiting Prof., Department of Entrepreneur Engineering, Graduate School of Engineering, Osaka Sangyo University. He is also the CEO and President of ie-Solution Corporation dealing with computer simulation software development and consultancy.

Besides activities as an educators and an entrepreneur-engineer, he is actively serving accreditation of engineering education as the Vice-President and Chair of Accreditation Commission of JABEE (Japan Accreditation Board for Engineering Education). He has been one of key persons for its establishment from scratch.

He also served as President of the World Foundry Organization and currently is a vice-president of the international Union of Technical Associations and Organizations. He is also serving as UNESCO consultant for University-Industry Collaboration. He has organized many international conferences related to engineering education and his academic field, including the International Symposium on Engineering Education Reform and Evaluation (Osaka 1995), the USA-Japan Workshop on Evaluation of Engineering Education (Semi-ah-moo, 1994), the World Congress of Engineering Educators and Industry Leaders (Paris, 1996), the International Symposium on Research and Education in University (Tokyo 1996), International Workshop on Education of Creativity and International Working Abilities in Engineering(Osaka,1998) and Modeling of Casting, Welding and Advanced Solidification Processes(almost every three years from 1988 to 2006 in various countries).

He has been serving the Government as a member or chair of various committees of the Ministry of Education, Culture, Sports, Science and Technology, and the Ministry of Economy, Trade and Industry, including related organizations.

His academic field is materials engineering and computer simulation including prevention of vibration and noise, and is a member of many academic societies including Japanese Society of Foundry Engineering, Japanese Society of Heat Transfer, Verein Deutscher Giessereifachleute, American Foundry Society, Japan Institute of Metals, Iron and Steel Institute of Japan, etc. He is also a board member of Japanese Society of Engineering Education and a member of American Society of Engineering Education. He received many awards from these societies.

He worked at Technical University of Berlin from 1975 to 1976 as an exchange researcher supported by Alexander von Humboldt Foundation.

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Professor Gambo Laraba Abdullahi



Former Vice Chancellor University of Abuja

Gambo Laraba Abdullahi was born on March 21, 1951 at Azare town in Bauchi State, Nigeria. She is married and has one (1) child.

G. L. Abdullahi obtained her B.Sc. in Biochemistry from Ahmadu Bello University Zaria, Nigeria in 1974. She obtained M.Sc. in Analytical Chemistry and Instrumentation and Ph.D in Analytical Chemistry from University of Technology Loughborough, U.K. in 1979 and 1984 respectively. She has attained the position of a Professor with University of Abuja, Nigeria in 2001.

G. L. Abdullahi has published so many Articles in both local and international Journals. She has equally attended and presented papers at various conferences both locally and internationally.

G. L. Abdullahi served Bauchi State Government of Nigeria as a Civil Commissioner in four (4) different Ministries from 1985 - 1990. She served the Federal Government of Nigeria as Honourable Minister of Women Affairs and Social Development between 1998 - 1999. She also served as Vice Chancellor University of Abuja, Nigeria between 1999 - 2004. She is presently the Director General, National Board for Technology Incubation Abuja, Nigeria.

G. L. Abdullahi served and is still serving on several Boards and Committees at the State and National levels. She is also a Member of International Advisory Board for the FMST/UNESCO project on the Reform of Science, Technology and Innovation System of Nigeria.

G. L. Abdullahi is a member of some Professional Associations amongst which are:-

- Fellow of the Chemical Society of Nigeria (FCSN)
- Member Royal Society of Chemistry (MRSC C Chem.)
- Women's Right Advancement and Protection Alternative (WRAPA)

G. L. Abdullahi has visited several countries in Africa, Asia, America and Europe. She is a recipient of National Merit Award of The Officer of the Order of the Niger (OON).

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Professor Lynn K. Mytelka



Former Director, United Nations University Institute for New Technologies

Professor Lynn Krieger Mytelka is a Professorial Fellow and Director of the Fuel Cell Project at UNU-MERIT (Maastricht, NL). From July 2000 to December 2004 she was Director of the United Nations University Institute for New Technologies (UNU-INTECH), predecessor of UNU-MERIT. Between 1996 and 1999, she was Director of the Division on Investment, Technology and Enterprise Development (DITE) at UNCTAD (Geneva). Prior to this she taught at Carleton University, Ottawa, Canada, where she was Professor, Faculty of Management and Public Policy from 1982 and subsequently a Distinguished Research Professor. She holds an Honorary Professorship and Chair in Development Economics at the University of Maastricht, The Netherlands. Professor Mytelka's research covers a broad range of issues in science, technology and innovation processes, policies and systems in both developed and developing countries. Professor Mytelka has published extensively on issues related to technological upgrading in traditional industries such as textiles and more recently, wine and flowers as well as on 'new wave technologies' such as (bio)pharmaceuticals and hydrogen fuel cells and their application in the transport and energy sectors. She has undertaken numerous research and capacity building projects and consultancies for various governments and international agencies, including the EU, OECD, UNDP, UNCTAD, UNIDO, IDRC and the World Bank. She serves on a number of Advisory Boards, including: the African Technology Policy Studies Network (ATPS); CGIAR-ILRI, IDRC's Research on Knowledge Systems (ROKs) programme and the International Confederation of Science Union (ICSU) Committee on Strategic Planning and Review.

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ADDRESSES

on the occasion of the first meeting of the International Advisory Board for the Reform of the Science System of Nigeria, UNESCO, 27 October 2004

ADDRESS BY**MR KOICHIRO MATSUURA,**

THE DIRECTOR-GENERAL OF THE UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION (UNESCO)

Professor Isoun, Honourable Minister of Science and Technology of Nigeria, Ambassador Omolewa, President of the General Conference of UNESCO, Your Excellencies, Permanent Delegates to UNESCO, Representatives of the African Union and NEPAD, Representatives of international organizations, Distinguished Guests, Ladies and Gentlemen,

My first task this morning, which I undertake with great pleasure, is to welcome the distinguished members of the International Advisory Board and to thank them for agreeing to participate in this important international effort to provide advisory support for the reform and revitalization of the Nigerian science, technology and innovation system.

My second pleasant task is to welcome the representatives of the various agencies which are important stakeholders in this major exercise. Our shared goal is the development of a draft innovation policy document and the elaboration of a Plan of Action on Science and Technology. These will be used by the Nigerian Government as a framework for investment guidance at the national level and for the convening of a donors conference.

UNESCO, as the designated lead agency in the NEPAD Science and Technology Cluster, collaborated with the NEPAD Secretariat and South Africa's Department of Science and Technology in organizing the First NEPAD Ministerial Conference on Science and Technology, which was held in November 2003 in Johannesburg, South Africa. As clearly stated in the Outline Plan of Action adopted by the Ministers at that conference, "the attainment of sustainable development goals of NEPAD and of related initiatives such as the United Nations Millennium Development Goals (MDGs) and the Plan of Implementation of the World Summit on Sustainable Development (WSSD) requires renewed political and financial commitments to the development and application of Science and Technology at national, regional and continental levels." In UNESCO's current Medium-Term Strategy (2002-2007), emphasis is given to this new commitment to science for the twenty-first century. We recognize that the

contribution of science cannot be based only upon the value of research and knowledge in their own terms but must also be justified by its relevance to and effectiveness in addressing the needs of society and in meeting the macro-economic objectives of government. This is a challenge at national and international levels. In Africa, one response to this challenge is the reform and revitalization of the national systems of science, engineering and innovation.

Indeed, the United Nations Joint Inspection Unit, after an evaluation of the United Nations system's support for science and technology in Africa, recommended that our role should concentrate on selected strategic areas such as policy reform initiatives and building linkages to the production system. UNESCO has responded by developing a programme for the reform of science systems in developing countries and in economies in transition. Meanwhile, the General Conference of UNESCO has stressed the importance of analyzing national systems of innovation in order to compare experiences from different economic and cultural settings, to propose good practices, and to reinforce and reform such systems.

Mr Minister,

In commending the efforts of the Nigerian Government to reform its science system, we would like to emphasize that linkages to the productive and economic systems should be paramount. I would like to assure you that UNESCO will organize an international partnership in support of your efforts. This meeting, in fact, is an opportunity for the delegation from Nigeria to meet with many agencies within and outside the UN system. Inter-agency cooperation is vital in science as in other areas. As the United Nations General Assembly has emphasized, we need to promote a country-driven, collaborative and coherent response by the international community to achieve a greater impact at the country level and to provide effective support for national priorities.

UNESCO is prepared to play a lead role in fostering inter-agency cooperation in science, technology and innovation policy. As a step in this direction, on 25 April 2003 UNESCO organized a Consultative Meeting on International Partnerships to Promote Science Policies for Development. The meeting was preceded by a Workshop on "Future Directions for National Reviews of Science, Technology and Innovation in Developing Countries", which was co-organized by UNESCO and IDRC. Here, I would like to thank Ms Maureen O'Neil, the President of IDRC, for this cooperation and I look forward to seeing her here in UNESCO as our cooperation advances. Both events recommended that donor agencies and other organizations should mount joint activities at national or regional levels. In addition to other benefits, such an inter-agency cooperation will facilitate the harmonization of science and technology, industrial, educational and investment policies.

Today, you are meeting to explore the opportunities to design and implement a joint programme for Nigeria within the context of the NEPAD Plan of Action, which has emphasized that support should be given to countries at the national level. I hope that, in the not too distant future, you shall be convening to deliberate on joint actions at the sub-regional level and regional levels too. UNESCO has been approached by Regional Economic Communities, such as ECOWAS, to assist in the design of the necessary structure, policy and strategic plan of action for the development of science and technology in the sub-regions. We invite science agencies to join us as part of our support to NEPAD.

Mr Minister,

My final task is to thank the Nigerian Government for its financial commitment for the deployment of science and technology for economic, industrial and social development and for its readiness to play a lead role in fostering science and technology cooperation and integration in Africa. The latter has been demonstrated by your country's allocation of a grant of US\$5 million to the African Academy of Sciences. I am delighted at this development since the Science Component of the UNESCO Special Plan of Cooperation with Nigeria, which was approved by President Obasanjo, included components at the sub-regional and regional level. We hope that you will maintain your concern for the development of science at the regional level as you develop your proposals for the establishment of a Nigerian Special Fund for Science. I wish you success in this laudable initiative, and hope you will return to Paris even before the organization of the donors conference.

I thank you all for your attention and I wish you every success in your deliberations.

ADDRESS BY

PROFESSOR TURNER ISOUN,
THE HONOURABLE MINISTER OF SCIENCE AND TECHNOLOGY OF NIGERIA

Ambassador Omolewa, the President of the General Conference and the Nigerian Permanent Delegate to UNESCO,
Mr Matsuura, the Director-General of UNESCO,
His Excellency, Mr Preware, the Ambassador of Nigeria to France,
His Excellencies, Permanent Delegates to UNESCO,
Distinguished Board Members,
Representatives of International and Science Organisations,
Distinguished Guests,
Ladies and gentlemen,

1. It is a great pleasure for me to have the opportunity to lead a delegation to the inauguration of the International Advisory Board for the FMST/UNESCO Project for the reform of the Science, Technology and Innovation System of Nigeria. This is indeed an epoch-making event in the history of the relationship between Nigeria and UNESCO. Considering the contemporary issues dominating the public policy landscape in Nigeria, this meeting is clearly of historical significance. Also in the annals of Nigeria's science and technology development domain, this marks a significant milestone.

2. As you may be aware, Nigeria's present political leadership of President Olusegun Obasanjo has initiated bold and pragmatic public policy reform programmes. The on-going Government Reform Agenda is pervasive and sweeps across many administrative boundaries including:

(I) Reform of the Public Service;

(II) Reform of the national economy through the National Economic Empowerment Development Strategy (NEEDS) and related privatization activities aimed at making our national economy become a private sector-led economy;

(III) Reform of the banking sector to strengthen and consolidate its role in driving an emerging modern national economy that can be globally competitive;

(IV) Reform of the National Pension Scheme;

(V) Promotion of transparency in public financial administration through the adoption and enforcement of the due process procedure; and

(VI) Reform of the labour laws to reflect the need for choice in line with the tenets of democracy, among others.

The implementation of this Reform Agenda in sufficient scope and depth, is expected to engender socio-economic revival in Nigeria. It is also anticipated that the reform of the Science, Technology and Innovation (S,T&I) system now being initiated through the UNESCO-Nigeria partnership would lay a solid foundation for an emerging knowledge-based, science and technology-driven and globally competitive modern Nigerian economy.

3. I wish to recall that after the election of President Olusegun Obasanjo into office in 1999, he requested UNESCO to put in place a Special Cooperation Programme between Nigeria and UNESCO. It was in response to this request that the Director General of UNESCO graciously put in motion an instrument for the establishment of the Special Plan of Cooperation with Nigeria with major components in Education, Science and Technology. The reform and revitalization of the science, technology and innovation system is the major element of the Science Component of this Plan.

4. Following my appointment as the Honorable Minister of Science and Technology of Nigeria and given the President's emphasis on revitalizing the science system, I set up 11 Committees to prepare draft National Science and Technology Sectoral Policies for a phased implementation. In the first phase, we have elaborated National Policies for three cutting-edge technologies of;

- Information Technology
- Biotechnology and
- Space Technology.

The Agencies to implement these policies have been set up and are functioning.

5. Currently, we are in the final stages of developing an overall policy for the use of SMEs as an effective strategy for the infusion of modern technologies into the national economic system. This policy will not only help diversify our national economy, but also promote job creation and wealth generation and thus drastically reduce poverty and emerging high graduate unemployment. This is in line with government's commitment to eradicate poverty, one of the key tenets of NEPAD. The reports of the Committees have been published. Electronic copies have been provided as background information for this project.

6. We recognize that we need to take bold and positive actions to achieve our national economic goals in a globally competitive environment. In the modern knowledge-based global economy, we also recognize that the talents and skills of our citizenry are far more important economic resources than our material resource. At the moment there are varied actors and activities in the national research, development and innovation system. My Ministry has initiated actions to increase efficiency of the system, drastically reduce waste and duplication. Consequently, Parastatals/ Organizations are to be placed in functional technical groups to encourage individual and institutional cooperation and collaboration. Also a new paradigm for achieving technical change predicated on the Tripple Helix (Government, Researchers and Industry) is vigorously being pursued. It is my expectation that these efforts will lead to the flow of a higher number of R&D products into our national economy as well as entrepreneurial growth enterprise.

7. My Ministry has recognized the need for Science and Technology Information Systems to disseminate commercializable research and development results. In this regard a website has been established detailing commercializable R&D results, on-going R&D projects, strategic plans and programs of the various Research Institutions. This is complemented by the establishment of a Science and Technology databank.

8. This address will not be complete, if I do not mention one or two modest achievements which our efforts have yielded. In this regard, I am very happy to state that;

- We have launched a low earth orbit satellite on Sept 27, 2003, for remote sensing activities with multi-sectoral benefits.
- We are presently working to launch a communication satellite in 2006.

9. As you are aware, sustainability of achievements both in scope and content depend largely, on the quality of the infrastructure available to researchers. One area that requires urgent attention is the availability of steady power supply. In our quest to diversify and improve our power resource base, a 12KVA research nuclear reactor was commissioned about a month ago. Though a small step, yet significant for us, because this reactor can be effectively utilized to conduct research and training activities with multi-sectoral applications.

10. Your Excellencies, distinguished board members and participant, let me now return to the Nigeria/UNESCO Science, Technology and Innovation System Reform Project to which we are strongly committed. It will be recalled that we had put our counterpart funding of US\$500,000 in trust with UNESCO for this project. I am also delighted to inform you that we have approval from the Presidency for the establishment, within UNESCO of a US\$1 million Nigeria Special Fund-in-Trust for Science. This Special Fund would not only benefit Nigeria, but also assist other African Countries in designing project proposals for the reform of their national science systems and develop managerial capacities.

11. We hope and believe that this project and similar ones to be developed in other African countries would lay a solid foundation for a more productive role for Science, Technology and Innovation Systems in the African region. I have great hopes from the execution of this project given the quality and experience of the members of the International Advisory Board, International and Nigerian Consultants, the project teams in UNESCO and Nigeria.

12. Ladies and gentlemen, it now remains for me to thank all those who have contributed to the development of this project and would like to show my appreciation to Your Excellencies, the Nigeria's Permanent Delegate to UNESCO, Prof. Omolewa and Nigeria's Ambassador to France, Amb. Preware for joining me this morning and for your support and encouragement. On behalf of the Government of Nigeria I wish to convey our gratitude to the Government of Japan. We are also grateful for the technical support of IDRC Canada since the commencement of the design of this project and we look forward to welcoming them on board as one of the key funding partners in this historic scientific enterprise.

Mr Director-General, our greatest thanks go to you for re-establishing the science policy programme in UNESCO, without which we would not be here today. President Olusegun Obasanjo, who has very high regard for you, Mr. Director-General places very high importance not only on this Nigerian project but also on the role of UNESCO in assisting, within the framework of NEPAD, African countries in the development of capacities for policy, planning and mainstreaming science and technology into our national development programmes.

13. I thank you all for being partners in progress in our mutual efforts and collective challenge and responsibility in moving Nigeria to a higher level of global socio-economic inclusion and relevance.

14. I thank you for your attention.

ADDRESS BY

PROFESSOR MICHAEL OMOLEWA,
AMBASSADOR AND PERMANENT DELEGATE OF NIGERIA TO UNESCO

Mr. Director-General, I must say I find it an honour that in my watch as the Permanent Delegate of Nigeria to UNESCO the programme of the Special Cooperation in Science has finally started. I congratulate UNESCO for this laudable programme which when concluded will align Nigeria's plans for economic development in the right direction in a world that is knowledge driven and technologically more complex.

I congratulate the Federal Government of Nigeria who through the Federal Ministry of Science and Technology has ensured partnership with UNESCO for this engaging programme. You must not slack in this partnership as all Nigerians are watching to see what you make of this collaboration.

Science, technology and innovation can and should be used together with other mechanisms of development and governance to break the burden of poverty and unemployment among the people especially the youth and women of Nigeria. Nigerians are expecting this, and I am glad that UNESCO and the Federal Ministry of Science and Technology of Nigeria are engaging a wide range of expertise for this purpose.

I congratulate all members of the International Advisory Board for agreeing to serve in the board giving up time for other probably more financially rewarding engagements to assist Nigeria, a developing country so that the lives of its people can become better. You have become by this act friends of Nigeria 'extraordinary' if it were possible here I would have conferred Chieftaincy titles on each of you.

Finally, I once more congratulate you Mr Matsuura, the Director-General of UNESCO, for offering Nigeria this assistance and look forward to a successful collaboration for the Reform and Revitalisation of the Science, Technology and Innovation system of Nigeria.

Thank you.

ADDRESS BY

Mr WALTER ERDELEN,
THE ASSISTANT DIRECTOR-GENERAL FOR NATURAL SCIENCES (UNESCO)

Ambassador Omolewa, the President of the General Conference and the Nigerian Permanent Delegate to UNESCO,
Mr Matsuura, the Director-General of UNESCO,
His Excellency, Mr Preware, the Ambassador of Nigeria to France,
His Excellencies, Permanent Delegates to UNESCO,
Distinguished Board Members,
Representatives of International and Science Organisations,
Distinguished Guests, Ladies and gentlemen,

I have great pleasure in directing this inaugural ceremony of the International Board for the Reform of the Science, Technology and Innovation System of Nigeria.

Honourable Minister, I had the privilege to represent our Director-General at the NEPAD Ministerial Conference on Science and Technology which was held in Johannesburg, South Africa in November last year and we know the importance attached by Conference to the economic functions of science and technology which can be achieved largely through innovation.

This programme, that we have the honour to coordinate, could be a model for a large developing country and certainly the results of the analyses that will be undertaken can provide lessons for several African countries which have not undertaken a system wide review of their science systems since independence. It is also a concrete example

of the Organization' actions within the framework of NEPAD where we have been called upon to play a lead role in within the UN agencies working in Africa.

Let me now perform my first duty this morning which is to invite Ambassador Omolewa, the Permanent Delegate of Nigeria and the President of the General Conference of UNESCO to give a welcome address.

ADDRESS BY

Mr NOURÉINI TIDJANI-SERPOS,
THE ASSISTANT DIRECTOR-GENERAL FOR AFRICA (UNESCO)

Ladies and Gentlemen:

I am pleased to be associated with this activity which in a very real sense way demonstrates the commitment of the Organisation to establish partnerships with member states and in particular the Africa region in its areas of competence.

It will be recalled that this project is part of the Special Cooperation with Nigeria mandated by the 29th General Conference following the visit by the newly inaugurated President Olusegun Obasanjo who is currently the Chairman of the African Union and NEPAD Heads of States and Government implementation Committee (HSGIC). I am pleased that the project has been brought to this point at which we are today inaugurating the International Advisory Board for the Reform of the Science and Technology and Innovation System of Nigeria.

More importantly, I am pleased to note that the aims of the project are fully consistent with those which the African Union and NEPAD have agreed to for the region. I therefore wish to congratulate the Hon. Minister Isohoun for his leadership and for his vision which involves nothing less than a transformation of the Science and Technology profile of Nigeria to the point where science and technology contributes to the industrialisation and economic growth of the country and ultimately to the wellbeing of the Nigerian people.

Ever since its establishment, UNESCO has given primary attention to capacity building in the area of Science and Technology. Over the last ten years, however, we have paid renewed focus on this area, particularly given the primacy of science and technology in the process of globalisation. Thus, beginning with the World Conference on Science held in Budapest in 1999, the Organisation has sought to raise awareness of the need to build science and technology capacity and to cement the link between science and development. More recently, under the leadership of the Director-General, Mr Koïchiro Matsuura, UNESCO, contributed to the Ministerial Conference on Science and Technology in Africa. UNESCO has also been designated as the lead agency to coordinate the NEPAD Science and Technology Cluster within the United Nations System thanks to the involvement of the Science sector guided by the ADG, Mr Walter Erdelen.

This Nigerian initiative, which will re-examine the role and structure of the Federal Ministry of Science and Technology and seek to rationalise science and technology research institutions in the country as well as to make recommendations on structures and programmes for the organisation of research and development, is of keen interest to the Africa Department.

We look forward to working with the Science Sector and with the Nigerian authorities on this important initiative which we are certain will have lessons for the Organisation's work, not only in the ECOWAS region, but in the context of the newly established family of the Forum of African regional and sub-regional organizations to support cooperation between UNESCO and NEPAD (FOSRASUN).

Ladies and Gentlemen,

I recall that during the Ouagadougou meeting "UNESCO and NEPAD: from Vision to Action", President John Kufuor indicated the importance of Science and Technology for the region and called for UNESCO to redouble its effort in this area. I am sure that the Director-General will be pleased to report to President Kufuor that we have indeed through this innovative programme with Nigeria embarked on this course of action.

ADDRESS BY

Dr JOZEF RITZEN,

CHAIRPERSON OF THE INTERNATIONAL ADVISORY BOARD

Permanent Delegates, Excellencies, ADGs, Ladies & Gentlemen,

I feel privileged to say a few words as co-chair of the International Advisory Board for the Reform of the Science, Technology and Innovation System of Nigeria. I cannot implicate other members of the Board as we have not been able to meet and discuss. In other words: I speak for myself.

Two years ago I would not have accepted a request to advise Nigeria on S&T. But today, it is difficult not to accept even if there are so many other pressing elements for our agenda.

Today Nigeria has a dreamteam as political leadership. The President has shown tremendous commitment and courage and appointed ministers with ample experience and guts. I happen to know the Minister of Finance well. She would be in any country just an outstanding finance minister.

Also, NEPAD and the President's involvement in NEPAD create a context in which, work on S&T for Nigeria has a good chance to be effective. In other words: I welcome the opportunity to be part of this action of the Government of Nigeria, reflecting its efforts to provide its citizens a stable society and a level of income which contains the promise of rich opportunities in life. Because in the end that is what science and innovation is about: the betterment of the position of citizens through value creation, through employment and yes, through satisfying human curiosity, through giving individuals chances for personal development.

I welcome the opportunity to share knowledge with colleagues in the Board on the predominant issues in the organization of the science production and dissemination. My own insights have been most recently shaped by participating in the OECD reviews on higher education and science of Ireland and Denmark, as well as in my work with the World Bank.

Having read the concept-note, I would suggest the Advisory Board group to start to help by clarifying final and intermediate goals, where final goals in my view are to be defined in terms of generating value added through SMEs, through existing businesses and through FDI, while other goals may be more intermediate. An important question is, to what extent insight and knowledge gained in the developed world is relevant to developing countries? There are three levels for a provisional answer - as I elaborate in my book: "A Chance for the World Bank" (to appear in January with Anthem Press).

On the more abstract level the distinction between developing countries and the developed world has become spurious in our globalized world. Rostow's theory of "stages of economic growth" has become obsolete as many stages occur at the same time in most countries.

On a more detailed level the differences between the rich world and the poorer countries are huge, mainly expressing themselves in the maturity and stability of science systems, but also in brain gain versus brain drain.

The third level is in my view equally important to note: the cultural level, as is so beautifully illustrated by the 1986 Winner of the Nobel Prize for Literature, Wole Soyinka in his play "Death and the King's Horsemen". On the cultural level it is important to note huge differences between countries - which are relevant in shaping science policy. I am sure that Nigerian Board Members will provide this context.

DG - Excellencies,

We thank you for your trust in us. We take our tasks with enthusiasm and commitment. We look forward to extensive work of the working group.

Let me conclude with a wish for Nigeria's science system. I hope that by the end of this exercise we can speak with the words of Yoruba chief Elison in Soyinka's Play:

My rein is loosened
I am master of my fate.