
CALESTOUS JUMA

Curriculum Vitae

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1. Biographical Summary

Calestous Juma FRS is Professor of the Practice of International Development and Director of the Science, Technology, and Globalization Project at Harvard Kennedy School (HKS). He also directs the School's Agricultural Innovation in Africa Project funded by the Bill and Melinda Gates Foundation. He is a member of the selection jury of the Queen Elizabeth Prize for Engineering co-chair of the African Union's High-Level Panel on Science, Technology and Innovation. Juma teaches HKS graduate courses on "Innovation, Development and Globalization" and "Technology and Sustainability" as well a Harvard College seminar on "Biotechnology, Sustainability and Public Policy". He is faculty chair of the HKS Innovation for Economic Development Executive Program. He is a former Executive Secretary of the UN Convention on Biological Diversity and founding Executive Director of the African Centre for Technology Studies in Nairobi. He was Chancellor of the University of Guyana, member of the National Social and Economic Council of the President of Kenya, and Special Advisor to the International Whaling Commission. He co-chaired the African High-Level Panel on Modern Biotechnology of the African Union (AU) and the New Partnership for Africa's Development (NEPAD) and chaired the Committee on Global Challenges and Directions for Agricultural Biotechnology of the US National Academy of Sciences. Juma has been elected to several prestigious scientific academies including the Royal Society of London, the U.S. National Academy of Sciences, the World Academy of Sciences (TWAS), the UK Royal Academy of Engineering and the African Academy of Sciences. He served on the boards of WWF International and One Laptop per Child (OLPC) Foundation and has been on the selection juries of the World Economic Forum's Technology Pioneers and the Rolex Awards for Enterprise. Juma holds a DPhil in science and technology policy studies from the University of Sussex (UK) and has received several international awards and honorary degrees for his work on sustainable development. In 2007 he was awarded the honor of the Elder of the Order of the Burning Spear by the President of Kenya for his work on "assisting governments to solve diplomatic problems". He is editor of the peer-reviewed *International Journal of Technology and Globalisation* and the *International Journal of Biotechnology*. His latest book, *The New Harvest: Agricultural Innovation in Africa*, was published in 2011 by Oxford University Press. He is currently working on two books on engineering for global development and socio-economic sources of resistance to innovation.

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2. Education

- 1983–87: Science Policy Research Unit, University of Sussex; DPhil. (Science and Technology Policy Studies).
- 1982–83: Science Policy Research Unit, University of Sussex; MSc. (Science, Technology and Industrialization).
- 1972–74: Egoji Teachers' College; Teachers' Certificate.

3. Awards and honors

- 2012: 50th Anniversary Fellow, University of Sussex, UK
- 2012: Doctor of Science (Honorary), Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya (for work on agricultural biotechnology).
- 2007: Doctor of Science (Honorary), University of Education, Winneba, Ghana (“illustrious and inspiring role as an internationally-recognized authority and leader in the application of science and technology to sustainable development in both developing and developed countries).
- 2006: Doctor of Science (Honorary), University of Sussex, UK (for his work on the applications of science and technology in developing and developed countries).
- 2006: Order of the Elder of the Burning Spear, President of the Republic of Kenya (for being a respected international diplomatic who has assisted governments to solve diplomatic problems).
- 2001: Henry Shaw Medal, Missouri Botanical Garden (for significant contribution to botanical research, horticulture, conservation or the museum community).
- 1993: Global 500 Roll of Honour for Environmental Achievement, United Nations Environment Programme (for important contributions made to Africa's quest for solutions to the complex issues of biotechnology, biodiversity and the transfer of technology).
- 1992: Justinian Rweyemamu Prize, Council for the Development of Social Science Research in Africa (CODESRIA) (for broadening Africa's knowledge base for development).
- 1991: Pew Scholars Award in Conservation and the Environment (for dedication in preserving global biodiversity).

4. Elected membership of scientific academies and societies

Fellow, Royal Society of London
Foreign Associate, US National Academy of Sciences
Fellow, The World Academy of Sciences
Honorary Fellow, Royal Academy of Engineering, London
Fellow, African Academy of Sciences, Nairobi
Fellow, World Academy of Art and Science, USA
Fellow, Royal Society for the Advancement of the Arts, Manufactures and Commerce
Fellow, New York Academy of Sciences
Member, American Association for the Advancement of Science
Member, Kenya National Academy of Sciences

5. Academic guidance

Provided academic guidance to post-graduate students at various universities in fields of science policy, energy development and diplomacy. Trained policy makers from various developed and developing countries. Guided and supervised undergraduate and post-graduate interns from local and overseas universities.

6. Research interests and current activities

Evolutionary and systems theory of technological innovation; science and technology policy studies with emphasis on the role of innovation in economic transformation; institutional change; biotechnology and biological diversity; international diplomacy. Current work focuses on two topics: application of innovation systems thinking to African agriculture; application of the theory of technological leapfrogging to green development in Africa.

7. Testimonies

- 2011. *Agricultural Biotechnology: Opportunities, Benefits and leadership*, Testimony to the Subcommittee on Rural Development, Research, Biotechnology and Rural Agriculture of the Committee on Agriculture, US House of Representatives, Washington, DC. Hearing on Biotechnology: Opportunities and Benefits, June 23.
- 2007. *Food Security, Agriculture and Economic Growth: Opportunities for Cooperation Between the United States and Sub-Saharan Africa*, Testimony to the Subcommittee on Africa and Global Health of the Committee on Foreign Affairs, US House of Representatives, Washington, DC. Hearing on Food Security in Africa: Impact of Agricultural Development, July 18.
- 2006. *Memorandum Submitted by Professor Calestous Juma, Kennedy School of Government, Harvard University*. Select Committee on International Development, House of Commons, UK Parliament, London.
- 2003. *Agricultural Biotechnology and Development: Challenges and Opportunities*, Testimony to the Committee on Agriculture, US House of Representatives, Washington, DC. Hearing on Artificial Barriers to U.S. Agricultural Trade and Foreign Food Assistance, March 26.

8. Special lectures

- 2011. *Agricultural Science, Technology, and Innovation: Feeding Eastern and Central Africa in the 21st Century*. Keynote Speech Presented to the First Annual General Assembly of the Association for Strengthening Agricultural Research in Eastern and Central Africa, Entebbe, Uganda.
- 2010. *Agricultural Innovation in Africa: Technology, Markets, and Government*. Philip Raup Lecture on Land and Environmental Policy, University of Minnesota, USA.
- 2010. *Science, Technology and Innovation for Development*. Keynote Speech Presented to Summit of the Common Market for Eastern and Southern Africa, Swaziland.
- 2010. *Fostering Agricultural Innovation in Africa: Strategies for a Changing Global Environment*. Keynote at the Africa Agriculture Week, Ouagadougou, Burkina Faso.

2009. *Rebooting Economic Growth in Developing Countries: Entrepreneurship in the Age of Technological Abundance*. Keynote at the Innovation Week, College of Engineering, University of California, Santa Barbara.

2009. *Africa in the Age of Technological Interdependence: Opportunities and Challenges for International Cooperation*. John de la Mothe Memorial Lecture, University of Ottawa, Canada.

2009. *Science and Innovation for Sustainability: Harnessing Technological Abundance*. Betty Klepper Endowed Lecture, International Annual Meeting of the Crop Science Society of America, Pittsburgh, USA.

2009. *Rebooting Development: Innovation Policy in the Age of Technological Abundance*. Marie Jahoda Memorial Lecture, University of Sussex, UK.

2009. *Security and Development in Africa: Safeguarding Prosperity in a Turbulent World Policy*. Commander's Speaker Series, United States Africa Command, Stuttgart, Germany.

2007. *The New Culture of Innovation: Africa in the Age of Technological Opportunities*. 8th Summit of the African Union, Addis Ababa.

2006. *Redesigning African Economies: The Role of Engineering in International Development*. 2006 Hinton Lecture, Royal Academy of Engineering, London.

2006. *Reinventing Growth: Technological Innovation and Economic Renewal in Africa*. African Development Bank, Tunis.

2006. *Reinventing African Economies: Technological Innovation and the Sustainability Transition*. 6th John Pesek Colloquium on Sustainable Agriculture, Iowa State University, Ames, Iowa, USA.

1999. *Science, Technology and Economic Growth: Africa's Biopolicy in the 21st Century*. United Nations University's Institute for Natural Resources Annual Lecture, Addis Ababa, Ethiopia

1991. *Africa Apart: Technology and Environment in the 1990s*. Royal Society for the Encouragement of Arts, London

9. Employment

Professor of the Practice of International Development, Harvard Kennedy School (2002-Present)

Professor of the Practice of International Development, teaching graduate courses on “Science, Technology and Development Policy” and “Biotechnology in the Global Economy”. He advises post-graduate students on issues related to science, technology and development (covering fields such as energy, information technology, pharmaceutical industry, biotechnology and sustainable development). He teaches graduate courses on “Innovation, Development and Globalization” and “Technology, Innovation and Sustainability” and an undergraduate seminar on “Biotechnology, Environment and Public Policy”.

Director, Agricultural Innovation in Africa Project, Harvard Kennedy School (2009-Present)

The project seeks to disseminate policy-relevant information on how to align science and technology missions with regional agricultural development goals. It does so in the context of the larger agenda to promote regional economic integration and development. The project is funded by the Bill and Melinda Gates Foundation.

Director, Science, Technology and Globalization Project, Harvard Kennedy School (2002-Present)

Directs the Science, Technology and Globalization Project, an interdisciplinary effort designed to undertake research, conduct training, provide policy advice and disseminate information on interactions between technological innovation and globalization, with particular emphasis on implications for developing countries.

Faculty Chair, Innovation for Economic Development, Harvard Kennedy (2002-Present)

Serves as faculty chair for an executive training course on Innovation for Economic Development (IFED). The aim of the course is to help strengthen the capacity of high-level decision-makers to integrate science and technology into economic development policies. It brings together nearly 50 ministers, chief executives and other leaders in government, industry, academia and civil society from around the world. It also serves as a forum for networking among people interested in science and innovation policy.

Director, Science, Technology and Innovation Project, Kennedy School of Government at Harvard University (1999-2002)

Directed the Science, Technology and Innovation Project, joint effort of CID and the Belfer Center for Science and International Affairs at Harvard University. The aim of the program was to integrate science and technology considerations into development studies through research, training and outreach activities. It focused on “biotechnology and globalization”, a project funded by the Rockefeller Foundation. Advised graduate students and fellows working on issues related to science, technology and environment.

Special Advisor, Center for International Development at Harvard University (1998-1999)

Served as Special Advisor to Professor Jeffrey Sachs, Director of the Center for International Development on the integration of science and technology issues into international development studies and assisted in the development of a program on science, technology and innovation. Liaised with other sections of the University on related issues.

Executive Secretary, Secretariat of the Convention on Biological Diversity (1995-98)

Served as Executive Secretary of the United Nations Convention on Biological Diversity in Geneva and Montreal. Established the Permanent Secretariat in Montreal, Canada and provided its executive direction, resource mobilization, management and intellectual leadership. Directed the implementation of the Programs of the Secretariat on behalf of the Conference of the Parties (COP) and mobilized voluntary contributions for the work of the Secretariat. Managed the activities of the subsidiary organs of the COP that include the Subsidiary Body for Scientific, Technical and Technological Advice (SBSTTA) and the Open-ended Ad Hoc Working Group on Biosafety. Served as the representative of the Conference of the Parties at the international level and negotiated collaborative agreements

between the Convention and other international institutions including the Food and Agriculture Organization (FAO), the United Nations Scientific, Educational and Scientific Organization (UNESCO), the World Intellectual Property Organization (WIPO) and the World Bank. Facilitated coordination between the Convention and other biodiversity-related treaties and institutions and oversaw the preparation of the first set of national reports on the implementation of the Convention. Serviced three meetings of the Conference of the Parties, three meetings of SBSTTA, five meetings of the Ad Hoc Working Group on Biosafety, 12 regional preparatory meetings for COP and several expert meetings on technical and regional cooperation. Guided the establishment of the Clearing-house Mechanism for scientific and technical cooperation under the Convention. Maintained an international network of scholars, diplomats and researchers on issues related to the conservation and sustainable use of biological diversity. Raised funds for the secretariat activities and oversaw rapid staffing efforts. The average annual budget of the secretariat US\$15 million and the full staff capacity was 35 professionals and 15 administrative.

Executive Director, African Centre for Technology Studies (1988–1995)

Founder and director of ACTS, the first African non-profit organization established to promote policy research, undertake training and disseminate information on the application of science and technology to sustainable development. ACTS is a non-partisan, not-for-profit institution established to conduct policy research in technological innovation and environmental management. In 1992, the Centre was awarded the Justinian Rweyemamu Prize for “expanding the knowledge base for Africa’s development” by the Council for the Development of Social Science Research in Africa. In 1993, He was added to the Global 500 Roll of Honor for Environmental Achievement. Responsibilities include policy research, Program conceptualization and development, fund-raising, human resource mobilization and management, international relations and promotion of the Centre’s activities, Program management, quality control, training of researchers, overall administration of the Centre and representing the Centre in international forums.

Course Director, Sustainable Development Policy Analysis, ACTS (1992–1995)

Formulated and directed a course for African policy makers in technology and sustainable development, under the auspices of the African Centre for Technology Studies (ACTS). The course was designed to train African policy makers in methods of policy analysis needed to integrate sustainable development into decision-making.

Director, Biopolicy Institute of ACTS, Maastricht, The Netherlands (1991–1992)

Directed ACTS’ Biopolicy Institute, located at Maastricht in the Netherlands. The Institute conducted research, training and information dissemination on issues related to biotechnology and genetic resources.

Project Leader, Economic Reform and Environment in Africa (1990–1994)

Directed the regional Economic Reform and Environment in Africa project funded by the Canadian International Development Research Centre (IDRC) through ACTS. The main aim of the project was to examine the links between economic policies and environmental conservation efforts in Africa and identify policy options that would ensure that economic adjustment does not undermine the integrity of the environment.

Programme Director, International Federation of Institutes for Advanced Study (1989–1991)

Directed the International Diffusion of Biotechnology Programme of the International Federation of Institutes for Advanced Study (IFIAS). The Program was executed by ACTS and involved research teams from Chile, Brazil, Mexico, USA, UK, Denmark, Sweden, Netherlands, India, China, Thailand, Kenya, Nigeria and Zimbabwe. The aim of the Program was to understand the diffusion of biotechnology and help the developing countries formulate policies that can enable them to apply biotechnology to sustainable development. Founded *Biopolicy International*, a series devoted to policy issues on biotechnology and the conservation of biological diversity.

Project Director, Genetic Resources and Biotechnology (1986–1989)

Initiated a project, with the financial support of various local and international organizations, to examine the potential positive and negative impacts of biotechnology on African economies. The project provided alternative policy options for Africa given the current ecological and economic crises. The study involved monitoring global trends in biotechnology, examining policy responses and initiative activities that could lead to new directions in agricultural development.

Research Associate and Project Leader, Public Law Institute, Nairobi (1984–1986)

This position involved formal and informal consultations and support for project design and development activities of the Public Law Institute, especially on policy and legal issues related to environment and the application of science and technology to development. Conducted a study on technology policy issues related to the production and use of fuel alcohol in Kenya, Zimbabwe, Malawi and Brazil. Its empirical aspects dealt with the transfer of energy technology to African countries and led to the formulation of an alternative approach to the analysis of social transition based on systems and evolutionary concepts.

Visiting Lecturer, Swiss Federal Technical Institute (ETH), Zurich (1984)

Gave a series of lectures on the role of energy in social change. The lectures were based on comparative research conducted in Kenya, Zimbabwe and Switzerland with emphasis on the impact of grassroots activities on academic work.

Editor and Researcher, Environment Liaison Centre, Nairobi (1979–1982)

Conducted research on the linkages between environment and development, especially in developing countries with specific emphasis on the role of non-governmental organizations (NGOs). The aim of the research was to identify emerging issues and alert the NGO community through ELC's trilingual journal, *Ecoforum*. The issues covered included food production, energy utilization and genetic resource management. The functions also involved editing *Ecoforum*. The journal was distributed globally to over 7,000 organizations and became a major vehicle for raising awareness on environmental issues.

Science and Environment Writer, Nation Newspaper, Nairobi (1978–1979)

Researching and writing articles and editorials on science and technology issues, with emphasis on the interactions between technology, environment and population. The central objective was to present technical issues in a language that could be understood by the general public, especially practitioners and activists at the grassroots. It also entailed making some of the global concerns more relevant to

Kenyan local conditions. This was the first time that environmental issues were regularly covered in the local media.

Science Teacher, Mombasa, Kenya (1974–1978)

10. Consultancies

Consulted for governments as well as UN and other agencies (such as UN Environment Programme, Nairobi; UN Conference on Trade and Development, Geneva; UN Educational Scientific and Cultural Organization; UN Industrial Development Organization; UN Development Programme; the World Intellectual Property Organization; the Food and Agriculture Organisation of the UN, Rome; and the World Bank) on science and technology policy, technology transfer, environment, population migration, energy development, and food production.

11. Special assignments

African Union (2012-)

Co-chair, High-Level Panel on Science, Technology and Innovation.

World Bank (2008-2009)

Served as advisor and made substantial contributions on technological innovation to the preparation of the World Bank's *2010 World Development Report, Development and Climate Change*.

Africa Schools of Kenya (2009)

Narrated *Maasai: At the Crossroads*, a documentary about enriching the lives of Maasai children through education while respecting their customs, traditions, and way of life.

International Whaling Commission (2007-2008)

Served as Special Advisor to the International Whaling Commission by helping to find solutions to the whaling controversy and inspiring the international community to solve other major global environmental challenges.

African Union and New Partnership for Africa's Development (NEPAD) (2005-2008)

Co-chair, High-Level African Panel on Modern Biotechnology, created to provide high-level strategic advice on the role of biotechnology in economic development to African presidents.

Office of the President, Kenya (2004-2006)

Member, National Economic and Social Council (NESC). The council provides high-level advice to the President of the Republic of Kenya.

United Nations Development Programme (2001-2006)

Coordinator of the Task Force on Science, Technology and Innovation of the United Nations Millennium Project commissioned by the United Nations Secretary-General.

United Nations Development Programme (2001)

Served as Principal Consultant for the United Nations Development Programme's *Human Development Report 2001* on "Making New Technologies Work for Human Development" and contributed written material for two of the chapters.

Government of Finland (1999)

Chaired an International Mid-Term Review Panel for the Finnish Biodiversity Research Programme (FIBRE) under the auspices of the Academy of Finland.

United States Agency for International Development (1995)

Assisted the United States Agency for International Development (USAID) in determining options for supporting natural resource management activities in Kenya.

United Nations Environment Programme (1994)

Served as a member of the Global Environment Facility (GEF) Transition Planning Team for UNEP. The task involved working with senior professionals in developing an implementation strategy and work Program for realizing UNEP's mandate in the Facility.

Centre for Our Common Future (1991–92)

Prepared background documents used for reconvening the World Commission on Environment and Development (WCED) chaired by Gro Harlem Brundtland. The Commission delivered a statement at the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro.

Government of Kenya (1991)

Assisted the Government of Kenya in preparing draft revisions of the Non-Governmental Organisations Coordination Act as well as draft regulations for the implementation of the Act.

Government of Kenya (1989)

Prepared policy papers and drafted the Industrial Property Bill for the Kenya Government. The Parliament of Kenya adopted the Bill in 1989 and the Kenya Industrial Property Office (KIPO) was established in early 1990.

The Economic Intelligence Unit, London (1986)

Preparation of the quarterly reports of the Economist Intelligence Unit on Kenya. The aim of the reports was to bring together up-to-date information on economic developments in Kenya for use by investors, scholars and other professionals.

12. Other professional activities

Appointments

Chair, Committee on Global Challenges and Directions for Agricultural Biotechnology, National Academy of Sciences, Washington, DC (2003-2008)

Chancellor, University of Guyana, Georgetown, Guyana (2002-2003)

Visiting Professor, Institute of Advanced Studies, United Nations University, Yokohama (2002-2008)

Visiting Professor, Graduate School of Environmental Studies, University of Strathclyde, Scotland (1999-2004)

Boards and committees

African Academy of Engineering and Technology (2011-)

Rolex Awards for Enterprise Jury (2011-2012)

London International Development Centre (2010-)

WWF International Board (2009-2012)

Committee on Grand Challenges in International Development, US National Academies (2011-)

Science, Technology and Society Forum, Japan, International Advisory Council (2008-)

Steering Committee of the Roundtable for Technology, Science, and Peacebuilding, US National Academy of Engineering and US Institute for Peace (2011-)

Strengthening America's Future Initiative, Centre for the Study of the Presidency and Congress, USA, Committee Member (2008-09)

US National Academy of Sciences, Committee on Geographical Sciences, Member (2007-09)

World Economic Forum's Technology Pioneers Selection Committee (2007-)

One Laptop per Child Foundation Board (2007-)

National Science and Technology Development Agency, Thailand, International Advisory Council (2007-09)

Encyclopedia of Life, USA, Board (2007-2010)

John Sloan Dickey Center for Human Understanding, Dartmouth College, Board (2006-2008)

EARTH University, Costa Rica, Board (2006-2008)

National Economic and Social Council, Kenya, Member (2004-2006)

US National Academy of Engineering, Committee on Grand Challenges for Engineering (2006-2008)

US National Academy of Sciences, Committee on Lost Crops of Africa: Fruits and Vegetables (2003-2008)

Public Library of Science, San Francisco, Board (2003-2006)

Belfer Center for Science and International Affairs, Harvard Kennedy School, Board (2002-)

MacArthur Foundation, Research and Writing Selection Committee (2002-2003)

US National Academy of Sciences, Roundtable on Science and Technology for Sustainability, Member (2002-2008)

Committee on African Studies, Harvard University, Member (2001-)

US National Academy of Sciences, Committee for the Survey and Analysis of Science Advice on Sustainable Development to International Organizations (2001-2002).

US National Academy of Sciences, Committee on Geographical Foundations of Agenda 21 (2001-2002)

Canadian Program on Genomics and Global Health, University of Toronto, Advisory Board, (2001-Present)

Center for Health and the Environment, Harvard Medical School, Advisory Board (2000-2002)

Board on Agriculture and Natural Resources, National Research Council (2000-2003)

US National Academy of Sciences, Standing Committee on Agricultural Biotechnology, Health and the Environment, (2000-2006)

Millennium Ecosystems Assessment, Steering Committee (1998-2001)

United Nations Environment Programme, High-Level Advisory Panel on Biodiversity to the Executive Director (1994-1995)

Manor House Agricultural Centr, Kenya, Board (1994-1995).

Gulbenkian Commission on the Restructuring of the Social Sciences, Lisbon, Member (1994-1995).

Green Globe Yearbook, Fridtjof Nansen Institute, Norway, Advisory Panel (1994-1997).

World Resources Institute, Washington, DC, Board (1993-2002).

Center for International Environmental Law, Washington, DC, Board of Advisors (1994–2000).

International Development Research Centre (IDRC) and the Swedish Agency for Research Cooperation with Developing Countries (SAREC) , International Consultative Group on Sustainable Development (1993–1995).

Global Environment Facility's Scientific and Technical Panel (STAP), Roster of Experts on Biodiversity (1993-1995).

Kenya National Academy of Sciences, Humanities and Social Sciences Committee (1994-1995).

Kenya National Council for Science and Technology, Specialist Committee on Industrial Sciences (1994-1995).

World Resources Institute, Washington, DC, Council Member (1992-1994).

United Nations Conference on Trade and Development, Geneva, Steering Group of the Technical Assistance Project on the International Trade Programmes (1992-1994).

United Nations Conference on Environment and Development Secretariat, Geneva, Working Party on Biological Diversity (1990-1992).

United Nations Conference on Environment and Development Secretariat, Geneva, Working Party on Environmentally-sound Technologies (1990-1992).

United Nations University's Institute for New Technologies, Maastricht, The Netherlands, Board (1991-1992).

Biodiversity Conservation Strategy Programme, Washington, DC, International Coordinating Group (1991-1993).

Biofuture Foundation, Stockholm, Sweden, Board (1990-1992).

Initiatives Limited, Kenya, Board (1988-1999).

Keystone Centre, Colorado, USA, International Steering Committee on the International Dialogue Series on Biological Diversity and Genetic Resources (1987-1989).

The Hubert H. Humphrey Institute of Public Affairs, University of Minnesota, USA, International Committee on Rethinking International Governance (1987-1992).

Selected conferences

Chair, Living Modified Organisms and the Environment: An International Conference, Organization for Economic Cooperation and Development, Raleigh-Durham, North Carolina, November 27-30, 2001.

Rapporteur, Living Modified Organisms and the Environment: An International Conference, Organization for Economic Cooperation and Development, Raleigh-Durham, North Carolina, November 27-30, 2001.

Chair, *Ad hoc* Expert Group Meeting on Industrial and Environmental Biotechnology: Implications for Trade and Development, United Nations Conference on Trade and Development Headquarters, Geneva, November 16-17, 2001.

Chair, International Conference on Biotechnology in the Global Economy: Ethical Considerations, Harvard University, September 24-25, 2001.

Chair, International Conference on Globalization of Research and Development, Grado, Italy, September 11-13, 2001.

Chair, International Conference on Biotechnology in the Global Economy: Science and the Precautionary Principle, Harvard University, September 22-23, 2000.

Chair, International Conference on Biotechnology in the Global Economy, Harvard University, September 2-3, 1999.

Executive Secretary, Fourth Conference of the Parties to the Convention on Biological Diversity, 1998.

Executive Secretary, Third Conference of the Parties to the Convention on Biological Diversity, 1996.

Executive Secretary, Second Conferences of the Parties to the Convention on Biological Diversity, 1995.

Executive Secretary, Third Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice of the Convention on Biological Diversity, 1997.

Executive Secretary, Second Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice of the Convention on Biological Diversity, 1996.

Executive Secretary, First Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice of the Convention on Biological Diversity, 1995.

Secretary, International Conference on the Convention on Biological Diversity: National Interests and Global Imperatives, Nairobi, January 26–29, 1993.

Secretary, International Symposium on Biotechnology and International Trade: 1992 and Beyond, Maastricht, The Netherlands, June 22–24, 1990.

Secretary, International Workshop on Technological Information and Environmental Issues for Small Industrial Enterprises, Nairobi, May 14–16, 1990.

Secretary, International Conference on Global Warming and Climatic Change, United Nations Environment Programme, Nairobi, May 2–4, 1990.

Secretary, International Symposium on Biotechnology for Sustainable Development, United Nations Environment Programme, Nairobi, February 27–March 3, 1989.

Editorial boards of refereed journals

Research Policy (2006-)

Technovation (2006-)

International Journal of Technology and Globalization (2003-)

International Journal of Biotechnology (1999-)

International Journal of Technology Transfer and Commercialisation (1999-)

International Journal of Technology Management and Sustainable Development (2002-)

International Journal of Global Environmental Issues (2000-)

International Environmental Agreements (2001-2003)

Science and Public Policy (1989-)

Africa (1987–1998)

13. Selected publications

Books and edited volumes

2011. *Feeding the Next Generation: Science, Business, and Public Policy*. Belfer Center for Science and International Affairs, Harvard Kennedy School, Cambridge, USA (co-editor).

2011. *The New Harvest: Agricultural Innovation in Africa*. Oxford University Press, New York.

2010. *Health Innovation in Sub-Saharan Africa*. Special Issue of the *BMC International Health and Human Rights*, Vol. 10, Supplement 1.

2009. *World Development Report 2010: Development and Climate Change*. World Bank, Washington, DC (substantial contributor on technological innovation).

2009. *The Future of Biofuels and National Energy Strategy: US Perspectives*. Special Issue of the *International Journal of Biotechnology*, Vol. 11, No.1/2. Inderscience Publishers, Oxford, UK.

2008. *Engineering Change: Towards a Sustainable Future in the Developing World*. Royal Academy of Engineering, London (co-editor).
2008. *Global Challenges and Directions for Agricultural Biotechnology*. National Academies Press, Washington, DC (Committee Chair)
2008. *Lost Crops of Africa: Fruits*. Volume III. National Academy Press, Washington, DC (Contributor to a Study of the National Research Council).
2007. *Freedom to Innovate: Biotechnology in Africa's Economic Development*. African Union, Addis Ababa, Ethiopia.
2006. *Lost Crops of Africa: Vegetables*. Volume II. National Academy Press, Washington, DC (Contributor to a Study of the National Research Council).
2006. *Redesigning African Economies: The Role of Engineering in International Development*. 2006 Hinton Lecture, Royal Academy of Engineering, London.
2006. *Reinventing African Economies: Technological Innovation and the Sustainability Transition*. 6th John Pesek Colloquium on Sustainable Agriculture, Iowa State University, Ames, Iowa, USA.
2006. *Science and Innovation in Africa: New Strategies for Economic Growth*. Special Issue of the *International Journal of Technology and Globalization*, Vol. 2, No.3/4. Inderscience Publishers, Oxford, UK.
2006. *The New Global Biosociety: Innovation, Security and Development*. Special Issue of the *International Journal of Biotechnology*, Vol. 8, No.1/2. Inderscience Publishers, Oxford, UK.
2005. *Going for Growth: Science, Technology and Innovation in Africa*. The Smith Institute, London.
2005. *Innovation: Applying Knowledge in Development*. United Nations Millennium Project. Earthscan Publications (lead author with Lee Yee-Cheong).
2002. *Biotechnology and the Precautionary Principle*. Special Issue of the *International Journal of Biotechnology*, Vol. 4, No.1. Inderscience Publishers, Oxford, UK.
2002. *Knowledge and Diplomacy: Science Advice in the United Nations System*. National Academy Press, Washington, DC (Contributor to a Study of the National Research Council).
2002. *Down to Earth: Geographical Information for Sustainable Development in Africa*. National Academy Press, Washington, DC (Contributor to a Study of the National Research Council).
2000. *Biotechnology in the Global Economy*. Special Issue of the *International Journal of Biotechnology*, Vol. 2, No.1/2/3. Inderscience Publishers, Oxford, UK.
2000. *Science, Technology and Economic Growth: Africa's Biopolicy Agenda in the 21st Century*. United Nations University/Institute for Natural Resources in Africa, Addis Ababa, Ethiopia (Annual Lectures on Natural Resource Conservation and Management in Africa. November, 1999).
1996. *In Land We Trust: Environment, Private Property and Constitutional Change*. Zed Books, London and Initiatives Publishers, Nairobi (co-edited with J.B. Ojwang), pp. 462.
1995. *Economic Policy Reforms and the Environment: African Experiences*. Geneva: United Nations Environment Programme (co-written with Hugh Monteith, Hartmut Krugmann, Tobias Angura, Herbert Acquay, Akino Anthony E., Philip Wandera and John Mugabe), pp. 214.
1994. *Coming to Life: Biotechnology in African Economic Recovery*. Nairobi: Acts Press and Zed Books, London (co-edited with John Mugabe and Patricia Kameri-Mbote), pp. 192.
1994. *Biodyplomacy: Genetic Resources and International Relations*. Nairobi: Acts Press (co-edited with Vicente Sánchez), pp. 370.
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Newspaper articles

Written over 500 articles on environment, science and technology in newspapers and magazines in Africa, Asia, Latin America, North America and Europe.

14. Citation

Professor Calestous Juma (Kenyan national and US permanent resident) is an internationally-recognized authority and leader in the application of science, engineering and innovation to sustainable development in developing and developed countries. His continuing original work focuses on analyzing the co-evolution of technological innovation and institutional change in socio-economic systems. He runs programs that: advance science, technology and innovation policy research, especially biotechnology; provide high-level science and technology advice; and promote the conservation of biological diversity.