



## Mostafa Kamal Tolba, Egyptian Scientist, Environmental Expert, and the Founder of Environmental Diplomacy (1922 – 2016)

Hamed Ead<sup>(1)</sup>, Tarek Y.S. Kapiel<sup>(2)#</sup>

<sup>(1)</sup>Chemistry Department, Faculty of Science, Cairo University, Giza, Egypt; <sup>(2)</sup>Botany and Microbiology Department, Faculty of Science, Cairo University, Giza, Egypt.



“PERHAPS the single most successful international agreement to date has been the Montreal Protocol,” One of its most important architects, Mostafa Tolba, an Egyptian scientist (Kofi Anan)

**T**HE YEAR 2022 marks the birth centenary of Mostafa Kamal Tolba, a United Nations official considered the father of the Montreal Protocol, an agreement intended to protect the ozone layer. The Montreal Protocol is widely known as a section of the world's most successful environmental treaty. Dr. Tolba was born on December 8, 1922 and died in Geneva on March 28, 2016. He was a professor and chief scientist. He is an outstanding Egyptian scholar whose brilliant letters in the environmental domain are remembered by the Eastern and Western world. He held senior academic and political positions in Egypt and was enumerated by all international fora as the founder of the concept of environmental diplomacy. He performed official duties in the Ministry of Youth and Telecommunications. Regionally, he was the first president of the Board of Trustees of the Arab Forum for Environment and Development. He was also designated Executive Director of the United Nations Environment Program (UNEP) for 17 years. The Egyptian-born Dr. Tolba was praised for his leadership in steering the earlier Vienna Convention in addition to his groundbreaking work on the Montreal Protocol. He belonged to a generation of international civil servants who effectively led international organizations and programs and were also able to change international policymaking. However, his strong and impressive legacy continues to be disseminated through the UNEP's work and the tasks accomplished by ministries of the environment worldwide. This paper highlights the crucial roles discharged by Dr. Tolba as a university professor and as a global administrator of a dossier of urgent interest. His work affected and continues to impact the global environment, especially climate change.

**Keywords:** Cairo University, Egypt, Environment, Environmental Diplomacy, Mostafa Kamal Tolba.

### Introduction

Mostafa Kamal Tolba was born in the town of Zifta in the Gharbia Governorate in Egypt on December 8, 1922. His father was a teacher who owned some farmland. In 1943, Tolba received a Bachelor's degree in Science with first class honors from the Faculty of Science at what was then named Fouad I University (now Cairo University). In 1949, he received a Master's degree in Plant

Physiology and subsequently earned a Ph.D. in Plant Pathology from Imperial College at the University of London in the United Kingdom. He worked as a Microbiology Professor, the General Secretary of Egypt's National Scientific Council, and the Egyptian Embassy's Cultural Attaché in the United States. He was appointed the Chairman of Egypt's Supreme Council for Science in 1961, served as the Egyptian Government's Minister of Youth in 1971, and was nominated the President

#Corresponding author email: [tkapiel@sci.cu.edu.eg](mailto:tkapiel@sci.cu.edu.eg)

ORCID ID: <https://orcid.org/0000-0002-2213-8911>

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of the Academy of Scientific Research and Technology in 1972. His international and Arab achievements include his contribution to the establishment of the United Nations Environment Program (UNEP) in 1973 and his service as Deputy Executive Director of the United Nations Environment Program from 1971 to 1973. The United Nations (UN) General Assembly elected him Principal Director in 1973, and he was re-elected in 1980 and 1984. He achieved the UNEP's most lauded success in 1987 when the historic agreement for protecting the ozone layer was adopted in Montreal, Canada. The signatory countries to this agreement committed to decreasing chlorofluorocarbon gas emissions. Dr. Tolba was ranked Deputy Secretary-General of the United Nations and remained the UNEP's Executive Director until 1992. He chaired the Board of Directors of the International Center for the Environment as well as the Arab Forum for Environment and Development from 1993 to his death in 2016. He also attended the Arab Forum for Environment and Development's first annual conference. He collaborated with Maurice Strong to establish UNEP in 1973 and served as its Executive Director until 1992. Since that time, environmental work has progressed from the slogans and wishes articulated at the 1972 Stockholm Conference on the Human Environment to international treaties and agreements. Dr. Tolba was a biologist as well as a charismatic figure with the diplomatic skills required to discover common ground between discrete countries and governments. He stated that "appropriate action is required at all levels of society, from the smallest local communities to the entire community of nations."

Dr. Tolba was renowned for his pioneering contributions to the emerging discipline of environmental diplomacy and for his efforts to balance scientific aspirations against the economic capabilities of countries at various stages of development. He was invited to participate as the United Nations Secretary-General at the Conference on Desertification (UNCOD) for his outstanding performance as UNEP's Director-General. At this forum, he spearheaded a global plan of action to combat desertification, which threatens the survival of one-fifth of the world's population. He led the environmental protection program for 14 years. In 1992, he promoted the adoption of the UNEP as the head of the Egyptian delegation to the Conference on the Environment.

Mostafa Tolba was appointed Executive Director of UNEP in 1975 after working for three years as Maurice Strong's deputy. He started his career as a scientist of some distinction, which would surpass a lifetime's work for most people. However, Mostafa Tolba was broadly interested in science policy and politics, as well as in politics in general. He was named the Secretary-General of Egypt's National Science Council as well as the President of Egypt's Academy of Science, Research, and Technology. He was also Undersecretary of State, Minister of Higher Education, and Minister of Youth when Anwar Sadat was Vice President and served as Anwar Sadat's top political aide. Given his background and experience, it was no surprise that he was appointed Executive Director of UNEP in 1982 and that he assumed the highest responsibility to preserve the global environment. He was recognized by all who knew him as someone exceptionally qualified for such a position and as a person who was committed to the protection of the environment and all people. Dr. Tolba was a philosopher, politician, and social activist in addition to serving as a UN Administrator. He embodied the performance of required actions on a global scale. He received awards from twelve different countries in recognition of his compassion and concern. In addition, he was awarded an honorary doctoral degree from Moscow University in recognition of his work to mitigate global environmental issues. Dr. Tolba contributed significantly by persuading developing countries that no irreconcilable conflict existed between environmental concerns and development. He then went on to persuade the developed world to provide necessary financial support for UNEP's work. It was construed that a person who believed that "environmental decisions are inextricably linked to economic decisions" would be successful in his political decisions. However, the concerns of current governments differ from the administrations of 1976.

In 1976, Dr. Tolba expressed "cautious optimism" about the environment's future, stating that both the developed and developing worlds are now "fully aware of the impact of their activities on the environment" and are committed to enforcing strict environmental regulations. Environmental protection is enshrined in the constitutions of many countries. New national legislation is being enacted all over the world. On a global scale, conventions and treaties are

being signed. All of this shows that governments and people are becoming more committed to protecting and improving their environment.

Dr. Tolba's statement of 1976 contradicts what he said in Brussels in late 1981:

However, in making today's call for a renewed commitment to the environment, I am mindful of the financial constraints that EEC nations are currently facing in taking action. Western Europe's economic situation is different on the eve of 1982 than it was in 1972, the year of the Stockholm Conference. At the time, it was assumed that Europeans' prosperity would increase with each passing year, but runaway inflation, market saturation, mounting unemployment, and slowing rates of economic growth have all cast doubt on that assumption.

Dr. Tolba also accomplished international treaties to protect the Mediterranean Sea, the Red Sea, the Gulf of Aden, and the Kuwait region, all of which were affected by armed conflicts over a long time. Further, he held talks with belligerent parties on environmental issues important to both Iran and Iraq during the war.

#### *Memories of a lifetime*

Dr. Mostafa Tolba became devoted to writing his memoirs two years before his death and selected a magazine titled *Environment and Development* to publish the section concerned with the environment. This segment was released in seven episodes beginning with his belief that he would never work at a university outside Egypt; it never occurred to him to work in the UN. He wrote:

Since my return from London and my first meeting with my late professor Hussein Saeed, and his insistence that I start directly supervising researchers working with me to obtain master's and doctoral degrees, all my thought has been to go in this scientific direction.

He continued to supervise students pursuing Master's and doctoral degrees for almost a quarter-century from 1949 to 1973. He maintained his academic functions even after he was seconded to the University of Baghdad, then to the Supreme Council of Science, designated to the Ministry of Higher Education, appointed Minister, and subsequently nominated the President of the

Academy of Scientific Research and Technology. Dr. Mostafa Kamal Tolba's memoir, titled *Memories of a Lifetime*, was published by Alkhabar Books. It records his long professional journey filled with effort, perseverance, and participation in fateful decision-making. His epic occupational pursuits represent an important episode in Egyptian politics. His memories of this period of his life and his stance of conveying his experience and scientific vision to the reader are inspirational: they urge us to work for our precious homeland Egypt.

Dr. Tolba's book takes the reader on a journey through his life and upbringing. This superlative Egyptian contributed to the creation of Egypt's honorable history in the 1950s, discharging a variety of roles. He began his career as an Egyptian government representative in Iraq and a cultural advisor in Washington and went on to chair the Academy of Scientific Research and Technology, serve as Executive Director of UNEP, and become the Minister of Youth. The book also recounts Egypt's foreign relations through the administrations of presidents such as Mohammed Najib, Jamal Abdel Nasser, Anwar Sadat, and Hosni Mubarak, highlighting their external movements and interactions with world leaders.

The memoir also discusses vital secret events that transpired at the UN at that time and describes relations between Third World nations and the UN, which represents a place in the lives of nations. Dr. Tolba concluded his book with his return to Egypt in 1992, after a long and arduous experiential journey of representing Egypt at several conferences. In so doing, he advanced a long account statement for the reader, delivering a clear message for young people: the rise to the summit does not occur in isolation.

#### *Education and academic experiences*

Mostafa Kamal Tolba received his Bachelor's degree from Cairo University in 1943 and earned his Ph.D. five years later from Imperial College London. Following this feat, he founded a microbiology school at Cairo University's Faculty of Science and also taught at Baghdad University in the 1950s. Within a decade, he was named Egypt's most distinguished botanist. He was designated Professor of Microbiology at the National Research Center and later conferred Professorship with a Chair in Microbiology at

Cairo University's Botany Department at the Faculty of Science. He taught at Cairo University and the National Research Center between 1949 and 1968: he was appointed as Professor of Botany at the University of Baghdad's Faculty of Science in 1954 and served as Professor Emeritus at Cairo University's Faculty of Science from 1993 until his death. He advocated the establishment of environmental education at all scholastic levels in his roles as a professor at Cairo University and as the Undersecretary of State for Higher Education. This novel idea became a global reality because of a United Nations Educational, Scientific and Cultural Organization (UNESCO) and UNEP coordinated program involving over one hundred countries and ten thousand educators. He became a member of numerous international botany organizations including the editorial committee and editorial secretary of the Botanical Journal of Egypt, the Board of Directors of the Egyptian Applied Microbiology Association, and the Society of Life Sciences. He accrued over one hundred peer-reviewed international journal publications in plant physiology and parasitology, plant diseases, and soil theories. He also contributed to the publication of a book on scientific lessons in plant physiology and represented Egypt at several local and international scientific conferences (Table 1).

**TABLE 1. Education and academic exertions of Prof. Mostafa Kamal Tolba**

Date	Achievements
1943	Bachelor of Science from erstwhile Fouad I University (now Cairo University), specializing in botany with distinction and honors
1943	Assistant Lecturer in Botany at the Faculty of Science at Cairo University
1949	Ph.D. in Microbiology and Phytopathology (philosophy of plant diseases) from the Imperial College of Science and Technology at the University of London
1949	Lecturer and Assistant Professor in Botany at the Faculty of Science at Cairo University
1954	Professor of Botany at the Faculty of Science at the University of Baghdad; appointed Head of the Botany Department in 1956
1958	Professor of Microbiology at the National Research Center in Egypt; Professor of Microbiology at the Faculty of Science at Cairo University
1971	Emeritus Professor at the Faculty of Science at Cairo University

#### Awards

Professor Mostafa Kamal Tolba was one of the most decorated scientists in Egypt. He was awarded several medals and prizes including (i) the National Science and Technology Medal of the First Order, (ii) the United States Center for Dispute and Resolution prize highlighting his performance in uniting countries sharing seas and adopting joint plans on environmental management, and (iii) the Egyptian prize in Biology. He also received several other decorations from Spain, Poland, Hungary, Jordan, and Morocco, and was conferred an honorary doctorate in Science from the University of Moscow.

Professor Tolba was awarded the Yugoslavian Order of Merit of the First Class in 1971 for his services to Yugoslavia and Egypt, the Medal of Science and Arts of the First Class from Egypt in 1985, and the Alice Taylor Prize for Environment and Energy in 1985.

On November 11, 1992, the General Council of the University of Guadalajara agreed to confer an honorary doctorate on him in recognition of his outstanding international humanitarian and research endeavors on environment-related issues. His degree acceptance speech was published in the *Journal of the University of Guadalajara* and titled "To recover our lost days" (Table 2).

#### Egyptian civil service

See Table 3.

#### Memberships and committees

- Chairman of the Executive Council for Scientific Culture at the Academy of Scientific Research and Technology
- Chairman of the Environment Committee of the Supreme Council of Universities
- Member Board of Directors of the Environmental Affairs Agency
- Member of the Board of Directors of the Desert Research Institute
- Chairman of the Agricultural Pesticides Committee at the Ministry of Agriculture
- Member of the Scientific Assembly, Member of the National Council for Education and Scientific Research

**TABLE 2. Honorary doctor of science, medals, and prizes awarded to Prof. Mostafa Kamal Tolba**

Date	Award
1959	State Encouragement Award in Biological Sciences (Egypt)
1959	Medal for Science and Arts of the First Class (Egypt)
1971	The Yugoslavian Order of Merit of the First Class for services rendered to-Yugoslavia and Egypt
1977	Medal for Peaceful Problem Solving from the University of Houston, USA
1978	Honorary Doctor of Science from Moscow University, Russia
1981	Medal of the Republic of Egypt, First Class
1983	Environmental Medal, Government of Argentina
1984	Ramdeo Medal, Government of India
1985	Medal of Science and Arts of the First Class (please compare with the same color)
1985	Tyler Prize for Environmental Achievement, University of Southern California, USA
1985	Honorary Doctor of Science from Faculty of Agriculture, University of Gimploxi, Belgium
1986	Distinguished International Work Award, University of Minnesota Council, USA
1987	Award of the One Earth Renee Dubo Center, USA
1987	Honorary Doctor of Science from Peking University, China
1987	Honorary Doctor of Science from Hanag Seoul University, Korea
1988	Memorial Medal for the Environment, Czechoslovakia
1988	International Water Resources Association Crystal Drop Award
1989	Honorary Doctor of Science from Kenyatta University, Kenya
1990	Honorary Doctor of Law from Williams University, USA
1992	Honorary Doctor of Science from University of Guadalajara, Mexico
1993	Sasakawa World Environment Prize, UNEP
1999	Water Resources Institute Award, Country
2000	Award for Outstanding Contribution to the Protection of the Ozone Layer, UNEP
2003	Global Environmental Leadership Award, Institution and/or Country

**TABLE 3. Egyptian civil service and international positions held by Prof. Mostafa Kamal Tolba**

Date	Jobs
1959	Assistant Secretary-General of the Supreme Council of Science
1961	Secretary-General of the Supreme Council of Science
1963	Cultural Counselor and Director of the Office of the Educational Mission, the Egyptian Embassy in Washington
1965	Undersecretary of the Ministry of Higher Education for Cultural Affairs.
1966 – 1973	Executive Vice President of the United Nations Educational, Scientific and Cultural Organization (UNESCO)
1971	Minister of Youth
1971–1972	President of the Egyptian Olympic Committee
1972	*President of the Egyptian Academy of Scientific Research and Technology *First Chairman of the Board of Trustees of the Arab Forum for Environment and Development (AFED) *Elected First President of the Executive Council of the Arab Educational, Cultural and Scientific Organization (ALESCO) *Head of the Egyptian delegation to the Stockholm Conference on the Human Environment 1972, which resulted in the establishment of the United Nations Environment Program in 1973
1973-1975	Elected Vice President of the Conference, then Deputy Director Executive Director of the United Nations Environment Program with the rank of Assistant Secretary-General of the United Nations
1976-1992	Executive Director of the United Nations Environment Program with the rank of Deputy Secretary-General of the United Nations
1988	Elected Fellow of the Imperial College of Science, Technology, and Medicine, University of London
1988-1992	Executive Director of the United Nations Environment Program for the fourth 4-year term
1993	*Chairman of the Environmental Research Council at the Academy of Scientific Research and Technology, Egypt *President of the International Council for Environment and Development
2006	Elected a member of the Academy of Sciences in Moscow

- Member of the National Council for Economic Affairs and Production
- Chairman of the International Committee for Monitoring the Activities of Transcontinental Cement Companies (Council International Institute for Sustainable Development)
- Vice President of the International Institute for Environmentally Peaceful Technology, Sweden
- Member of the Board of Directors of the Higher Institute of Resources in Washington, USA
- Member of the Advisory Board of the Aspen Institute for Human Studies, USA
- Member of the Board of Directors of the Law Institute of the International Maritime Organization, Malta
- Member of the United Nations High-Level Advisory Council on Development and Environment
- Member of the Advisory Board of the Global Environment Facility
- Member of the American Society of Plant Physiology
- Chairman of the Board Administration of the Central Egyptian Society for Consumer Protection
- Chairman of the International Committee

of Arbitration for the Volvo Prize in the Environment

- Chairman of the International Committee of Arbitration for the Zayed International Prize in the Environment
- Member of the Selection Committee for Nominees for the Tyler Prize for Environmental Achievement, USA
- Member of the Selection Committee for the Candidates for the Paul Getty Prize for Wildlife Conservation in the United States of America for the first time in the history of the United Nations

#### *Publications*

Dr. Tolba published over 100 major scientific papers in international journals on plant pathology, mycology, and virology during his brief academic career. He supervised numerous scientific theses and wrote and published hundreds of articles, scientific papers, and books.

According to WorldCat Identities, Dr. Tolba is credited with 6,445 library holdings and 150 articles in four languages in 393 publications. His designations include author, editor, introduction author, contributor, creator, director, compiler, and others. Dr. Tolba's publications encompass more than 95 papers on plant pathology and over 600 environmental statements and articles. He began publishing scientific papers in the academic year 1948–1949 and continued publishing up to the academic year 2014–2015. He was most productive in 1992–1993 and 2001–2002, with 35 publications in each of those academic years (Fig. 1).

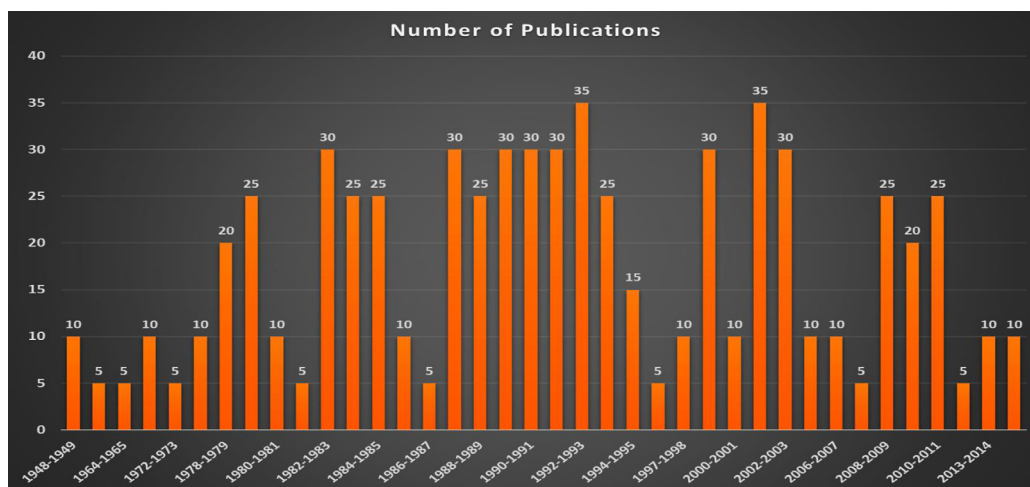


Fig. 1. Publication Timeline of Prof. Mostafa Kamal Tolba between academic years 1948–1949 and 2014–2015

Dr. Tolba wrote at least four books and 90 scientific papers. He delivered numerous speeches and lectures on plant diseases and environmental issues. He published approximately 95 articles in international scientific journals on plant diseases, antifungal substances, microorganism physiology, and other topics between 1950 and 1973. Some notable publications include "To Save the Green World," *Development without Destruction*, *Environmental Perception Evolution* (1982), and *Save the Planet*. (see Problems and Solutions, 1992).

#### *Protecting the ozone layer*

Dr. Tolba was a pivotal personality in the fight against ozone depletion during his lengthy tenure (1975–1992) with the UNEP. His efforts culminated in the Vienna Convention (1985) and the Montreal Protocol (1987). He was also a key figure in the formation and organization of the Intergovernmental Panel on Climate Change.

The 1985 Vienna meeting established a fundamental international approach to the protection of the ozone layer. The Montreal Protocol signed in 1987 outlined specific actions. The two agreements are frequently and sometimes interchangeably viewed apart from their specific requirements. They are also often regarded as exemplars of international diplomacy, particularly concerning technical issues.

Dr. Tolba is credited with pioneering the role of the international environmental diplomat because of his pivotal contributions to the institution of each of the previously mentioned agreements. The success of the Vienna meeting is often expressed in terms of the number of countries that signed the convention: 197. The Vienna and Montreal meetings were intended to respond to growing concerns in the 1970s and 1980s about atmospheric phenomena such as the depletion of the ozone layer around the Earth and the expansion of the holes in the layer over the polar regions. The mechanism for ozone destruction was described by scientists as a series of chemical reactions involving three constituents: ozone, ultraviolet radiation, and chlorofluorocarbons (CFCs). CFCs denote chemicals used as aerosol propellants as well as coolants and refrigerants. Much of the impetus for the international agreements stemmed from the recognition of the ozone layer's role as a shield against the sun's powerful ultraviolet radiation. It was feared that skin cancers would

become more common and severe without the protective molecular blanket.

Conferees at the Vienna and Montreal meetings understood that financial, scientific, and industrial organizations could assist in devising resolutions to the problem. Many individuals engaged in the formulation and adoption of the treaties, but Dr. Tolba received special recognition.

Dr. Tolba observed in the days leading up to the Montreal sessions that some countries wanted CFC production to be capped, while others wanted it to be reduced. Still others, however, desired a hybrid approach that merged the two means.

The participants ultimately agreed to a program through which CFC production would not exceed 1986 levels. The output was to be cut in half by 1999. The agreement was signed on September 16, 1987. Some scientists have noticed signs of slowing ozone depletion in recent years. According to some estimates, atmospheric ozone could be fully restored by the middle of the twenty-first century.

#### *Dr. Mostafa Kamal Tolba's fingertips*

The little fingertips move to hold a pen made of reeds, dipping it in ink to write their first lines on the path of science and knowledge. The owner of the fingertips, the late environmental scientist, Dr. Mostafa Kamal Tolba (1922 - 2016), said, "The ink was always on my hands, and my teacher Sheikh Taj Al-Din used to encourage me." No one realized then that the inked fingertips would grow as he learned and wrote the most important global environmental agreements such as the "Global Agreement on Biological Diversity," the "Global Agreement on Desertification," the "Vienna Agreement," and the "Montreal Protocol for the Protection of the Ozone Layer." In addition, the efforts of the late student informed the establishment of the "Global Ozone Fund" and the "United Nations Commission on Climate Change," and also helped the formulation of the 21st Century Environment Program in the context of the first "Earth Summit" in the Brazilian city of Rio de Janeiro (1992). These stages contributed to the shaping of the parameters of contemporary global environmental action.

#### *The "green giant"*

Dr. Tolba's passing was mourned by many who felt a deep sadness at the death of a man

who devoted his entire life to the causes of development and environmental protection. He was dubbed “the godfather of the environment.” Major British newspapers referred to him as a “Green Giant,” and the international magazine *The Economist* published a long obituary titled “The Death of the Innovator of the Successful Global Emission Reduction System” in its April 2, 2016 edition, describing him as a “Green Giant” and including a large photograph of Dr. Tolba. *The Economist* highlighted his global environmental accomplishments such as his role in one of the most successful global agreements, the Montreal Protocol to protect the ozone layer. Dr. Tolba was able to seat political and economic adversaries together for the sake of the environment and the security of the planet. He could also launch a continuous dialogue between the countries of the North and the South, inventing the art of “green diplomacy” or environmental negotiation.

In the early 1970s, Dr. Tolba pioneered the concept of accomplishing development without destroying the environment. He led the Egyptian delegation to the first international Conference on the Environment, the Stockholm Environment Conference of 1972. At that time, he was president of Egypt’s Academy of Scientific Research and Technology. His scientific and negotiating abilities were revealed in Stockholm, and he was nominated to speak on behalf of the Arab and African groups during the negotiations that involved severe differences between the countries of the North and South.

At that conference, Dr. Tolba asked General Secretary Murray Strong to form a committee of ten people, ensuring equal representation from developing and developed countries. The two sides engaged in marathon negotiations that lasted until the early hours of the morning. A resulting recommendation concerned the establishment of the UNEP, in which Dr. Tolba participated for almost the next 17 years.

Dr. Tolba stated in various personal interviews that Strong summoned him on an unofficial visit upon being appointed Director of UNEP in 1973. Strong then informed him that Kurt Waldheim, then Secretary-General of the UN, had requested Dr. Tolba’s appointment as Vice President of the UNEP. The United Nations General Assembly elected him as UNEP’s Executive Director in 1976, and he was subsequently re-elected for four

consecutive four-year terms.

The UNEP mourned Dr. Tolba’s death, noting that “the world has lost a true leader and a visionary who presented environmental diplomacy to the world.” During his tenure as Director, Dr. Tolba endowed UNEP with dynamism and strength within the UN framework. The program has since evolved and discharges a crucial role in coordinating efforts between governments, private sector players, academics, and civil society. Dr. Tolba expressed his philosophy in words of hope: “development without destruction.” Dr. Tolba was able to implement thousands of projects with a small UNEP budget and accomplished many global environmental agreements through dialogue.

The issue of energy interested students in the Arab world, who articulated the belief that Arab petroleum countries should commit a portion of their oil revenues toward scientific research in two important fields: the production of solar cells and the manufacture of seawater desalination membranes. Dr. Tolba always emphasized that the Arab world commands the highest concentration of solar energy and is in desperate need of desalination. He noted that the principal components of such desalination were imported by the Arabs; it was hence necessary for them to support researchers in projects related to the production of solar cells and the manufacture of membranes for seawater desalination. He highlighted the importance of localizing such technologies to break free from the shackles of importing essential components because international corporations monopolize such technologies and will not release them. Such control would imply remaining within the framework of assembly projects.

#### *United in life and death: Maurice Strong and Mostafa Tolba*

Maurice Strong died in November 2015 and Mostafa Tolba died in March 2016. They were both pivotal personalities in the early days of the environmental movement at the UNEP. The environmental community, in fact, the entire planet, suffered the loss of two of its most powerful advocates.

The United Nations General Assembly established UNEP in December 1972, with Maurice Strong as Executive Director. Strong led UNEP through its early years from its Nairobi



headquarters with Mostafa Tolba as his deputy. This organization was the first UN agency headquartered in a developing country.

The two men came to the nascent environmental movement in very different ways. Nevertheless, both individuals focused on mitigating the environmental impact of international development and did so with considerable diplomatic aplomb. Their potential could be viewed in their careers. They were both intimidating figures on the global stage, weaving together the threads of social development and environmental science against the backdrop of global politics. They bestowed a legacy of global political infrastructure along with a set of flawed precedents that demonstrated the capabilities of the current system. The Framework Convention on Climate Change might not have solved the problems of global warming. The Convention on Biological Diversity might not have produced entirely sustainable development. Nonetheless, the Earth Summit, like all of Strong's and Tolba's major diplomatic achievements, demonstrated that disparate nations could be brought together under the umbrella of the global environment. The Paris Agreement probably would not have been achieved without their contributions. Hence, their environmental legacy, like their diplomatic bequests, lives on after their demise. Maurice Strong became interested in environmentalism through international development. Conversely, Dr. Tolba was an environmental scientist who saw the dangers of unchecked development. He published over 600 environmental statements and articles throughout his career and was awarded numerous academic honors and government decorations. Tolba was graduating from Cairo University when Strong first dreamed of working for the UN. Dr. Tolba would return to Egypt after earning a Ph.D. from the Imperial College in London to establish his school of microbiology.

Dr. Tolba's most significant contributions concerned ozone protection. His scientific work focused on monitoring stratospheric ozone depletion and his diplomatic efforts aided the establishment of the Montreal Protocol, an international treaty that resulted in the phasing-out of CFCs and hydrochlorofluorocarbons (HCFCs). These extremely useful substances had become common in refrigerators, air conditioners, and aerosols but were discovered to yield the unintended consequence of destroying the Earth's

ozone layer, which protects living beings from ultraviolet radiation from the sun.

*Mohamed Abdelfattah Al-Kassas and Mostafa Kamal Tolba: Friendship and science*

Dr. Tolba wrote in his memoir: Mohamed Al-Kassas joined the Faculty of Science one year after I joined it. During the study period, we didn't spend much time together. But a year after my graduation (1944), he was appointed as a teaching assistant, and our friendship was strengthened. I was sent on a mission to England, and he followed me there a year later on another mission. I was in London at the time, and he was in Cambridge. We kept in touch until I returned to Cairo, and he returned a year later. We started as Lecturers in the Botany Department, later as Assistant Professors, and finally as Professors.

My connection with Al-Kassas was not severed for nearly seventy years until he died on March 21, 2012," he added. He married Mrs. Farida, and our family ties were strong until his death, and they remained strong after his death with his wife, Sharif, and Aida.

Al-Kassas was a world-renowned expert on the desert environment. He was one of Tolba's senior advisers at UNEP, and he is credited with successfully organizing, convening, and implementing the 1977 United Nations Conference on Desertification. He was also the principal adviser throughout the negotiations that resulted in the United Nations Convention to Combat Desertification. Al-Kassas was also an argumentative Arabic speaker who wrote English, Arabic, and possibly other languages with ease. He was elected to the Academy of the Arabic Language and became a prominent member of the Egyptian Scientific Academy, Egypt's oldest scientific institution founded by Napoleon Bonaparte.

Dr. Tolba added: Al-Kassas and Tolba discussed the significance of the term "conservation of nature" and agreed that the concept should be changed to "the conservation of natural resources through rational use." Al-Kassas left IUCN after serving two four-year terms, the maximum tenure for a president. He conceptually transformed the IUCN during his span, an effect that endured for decades afterward. After Al-Kassas died, Tolba stated:

For me, it was what the Arabs said in the old days: you might have a brother whom your mother did not give birth to.

I pray to God for mercy and to reward him with the best reward in the afterlife for the knowledge and effort he gave to his country and the world, and for assisting us all - his family, friends, and colleagues - in bearing this great loss.

*What others said after Dr. Tolba's demise*

- Najib Saab, Secretary-General of the Arab Forum for Environment and Development (AVD) and Editor-in-Chief of the journal *Environment and Development*

Mostafa Kamal's application could prevent two million cases of skin cancer each year. This is what *The Economist* said in its obituary for this great man, who was instrumental in establishing the Montreal Protocol to protect the ozone layer. Most people thought he was fighting a losing battle when he fought his request to prevent the use of ozone-thinning substances "chlorofluorocarbon" and harmful amounts of ultraviolet radiation from reaching the ground. These chemicals are used in thousands of dollars worth of industries, ranging from refrigerators to conditioners. However, the world and diplomacy have succeeded in the task, thanks to an international agreement that set specific time-bound targets to end the use of harmful substances, promoted scientific research to discover alternative materials, and established an international fund to assist industries in poor countries during the transition.

After decades of environmental activism, Mostafa Kamal retired at the age of 93. He is not only the founder of the United Nations Environment Program (UNEP) but also of the concept of global environmental diplomacy. He is the world's foremost architect of major international environmental treaties, as well as a politician, teacher, and friend.

Mostafa Kamal Tolba and the environment are inextricably linked. He turned environmental action from slogans and wishes launched by the Stockholm Conference on the Human Environment in 1972 into international treaties and agreements. In 1973, he collaborated with Maurice Strong to establish the United Nations Environment Program (UNEP), and he served as its Executive Director until 1992. UNEP was the first organization to

develop environmental management within the scope of international law, launching international environmental treaties governing ozone depletion, climate change, biodiversity, hazardous waste transport, and other issues. The United Nations Environment Program (UNEP) had a limited budget, so it offset its asks by creating issues of urgent interest for the world and turning them into treaties and protocols. Dr. Tolba's leadership abilities and scientific background enabled him to select a group of advisors from all over the world, transforming the UNEP into an innovative, planning, and inventive problem solving cell.

- Achim Steiner, Executive Director, UN Environment Program

Exceptional life and legacy. We lost an inspiring leader and friend in Dr. Mostafa Kamal's death. He lived an exceptional life and left an exceptional legacy. Dr. Tolba, an accomplished scientist in his early career, led the Egyptian delegation to the landmark Stockholm Conference in 1972, hosted by the United Nations to formulate a global environmental agenda.

His deep understanding of the principle of "development without destruction," as well as his commitment to its necessity exerted a significant impact on the conference's outcome, including the decision made in Stockholm to establish a new United Nations environment organization, the UNEP. He was a "man of the first hour," and his order was a lung. In 1973, Maurice Strong, Senior Executive Director of UNEP, appointed Dr. Tolba as his deputy following the decision to establish the UNEP headquarters in Nairobi, Kenya's capital. Two years later, the UNEP member states appointed him Executive Director, a position he held for 17 years.

During this time, his demands were instrumental in shaping the global environmental agenda, which remains the foundation of environmental governance and diplomacy. The Vienna Convention and the Montreal Protocol for the Protection of the Ozone Layer stand out as examples of his visionary leadership and denote shining examples of his achievements. The Convention is widely deemed the most successful multilateral environmental treaty to date. It has brought together science, technology, finance, and partnerships to enable the international community to phase out ozone-depleting substances from the Earth's atmosphere.

As a scientist and citizen, Dr. Tolba recognized the need for the world to develop a new form of global environmental diplomacy based on science while also taking into account the different realities and responsibilities of developed and developing countries. Even after its mandate has expired, the UNEP's history reflects its deep understanding of the relationship between environment and development, as well as its close association with the human condition and prospects for future generations.

Dr. Tolba's energy, analysis, and intellectual leadership have for decades served as a reference for global discourse on sustainable development. This contribution was evident to all when he returned to UNEP headquarters in Nairobi in February 2012 to commemorate the organization's fortieth anniversary.

- Ashok Khosla, President, Development Alternatives

World Leader, Change, and Great Teacher

Although we had met several times in Stockholm, Geneva, and Paris, I first came to know Mostafa Kamal in 1976 in Nairobi, Kenya, when he became Executive Director of the United Nations Environment Program (UNEP) and invited me to join his task force. That was a busy stage in our young organization's life with the establishment of the first United Nations headquarters in a developing country, the transition to a new campus, and the creation of global programs to address the growing threats to our planet's life-support systems. His appeal as a leading scientist and national politician brought to UNEP a broad objective understanding and unusually effective diplomatic skills that enabled him to establish new institutional frameworks for global environmental management over the next two decades. From marine and ocean issues to the ozone layer, climate change, biodiversity, pollution, and waste, we are now putting into practice international negotiating mechanisms conceived and created by Mostafa Kamal's applications and the colleagues who worked under his leadership.

I was a young professional working with a giant personality, one with exceptional intellectual and physical ability, a dedication to results, and a rare superiority in international civil service. He had a proverbial "photographic" memory,

an eye for detail, and language authorization, so he was pushing professional editors working in their language to new levels of competence when dealing with his elaborate remarks, which he wrote in distinctive red ink.

My personal experience was rewarding in terms of my immediate work on his requests, not merely because he fully delegated responsibilities, but because he granted me the complete freedom to make key decisions. In so doing, I managed to create a new global environmental decision-making information system. His dedication to mentoring, training, and developing his subordinates was serious and all-encompassing. I was one of the people who benefited from working with this fantastic manager.

When the time came for me to leave the UNEP and return to my home country to establish what was thought to be the world's first social institution dedicated to sustainable development, I explained why I was taking this step. I was impressed by his quick recognition of the value of the concept I had in mind of turning poverty eradication and natural resource regeneration into a profitable business.

- Essam Al-Hanawi, Professor at the National Research Center in Cairo

With God's mercy, I worked with Dr. Mostafa Tolba at the United Nations Environment Program (UNEP) in Nairobi from the mid-1970s to the mid-1980s and was a scientific advisor until his departure. I discovered his unique personality from my earliest years of working with him. He was resolute in all task-related matters and was simultaneously frail to the point of weakness in all matters relating to the humanitarian aspects of his workers. He regarded the UNEP and all its employees as his big family.

Dr. Tolba could cope with environmental issues regionally and globally because of his knowledge and political experience. He succeeded in placing such issues on the agenda of varied international organizations and most of the world's governments. *The Economist* called him "The Green Giant" on April 2, 2016.

He worked around 16 hours a day. He was much traveled and had visited most of the world's nations at their invitations. He had met most of their kings and superior functionaries and had developed close relationships with many of them.

This intimacy helped him address many local and global environmental issues. He was extremely capable of reading all notes and drafts of reports that were sent to him quickly and accurately. Such documents were returned to their authors with margins full of comments and questions that Dr. Tolba adored inscribing in red. He was a good listener, hearing all opinions patiently and quietly before making a decision. He often sent reports from abroad to his staff members to seek their views and access their opinions.

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## الأستاذ الدكتور مصطفى كمال طلبة.. عالم مصري وخبير بيئي ومؤسس الدبلوماسية البيئية (1922 - 2016)

حامد عبد الرحيم عيد<sup>(1)</sup>، طارق يحيى سليمان قابيل<sup>(2)</sup>

<sup>(1)</sup> قسم الكيمياء- كلية العلوم- جامعة القاهرة- الجيزة- مصر، <sup>(2)</sup> قسم النبات والميكروبيولوجي- كلية العلوم- جامعة القاهرة- الجيزة- مصر.

يصادف هذا العام 2022 مرور مائة عام على ميلاد الأستاذ الدكتور مصطفى كمال طلبة، الأستاذ المتفرغ بقسم النبات والميكروبيولوجي بكلية العلوم، جامعة القاهرة، والوزير السابق، ومسؤول الأمم المتحدة الذي كان يعتبر أبو بروتوكول مونتريال، وهي الاتفاقية التي تهدف إلى إنقاذ طبقة الأوزون المعروفة على نطاق واسع بأنها جزء من أنجح المعاهدات البيئية في العالم. ولد الدكتور طلبة في 8 ديسمبر 1922 وتوفي في 28 مارس 2016 في جنيف. إنه أحد العلماء المصريين الرائعين الذين كتبوا رسائل عظيمة يتذكرها القاصي والداني العالم في مجال علوم البيئة. منذ مؤتمر ستوكهولم التاريخي الذي عقدته الأمم المتحدة للبيئة منذ خمسين عاماً، عدته جميع المحافل الدولية على أنه مؤسس مفهوم «الدبلوماسية البيئية»، بعد أن عينته المجموعة العريضة والأفريقية متحدتاً باسمهما، وبعد أن انتخبته الجمعية العامة للأمم المتحدة مديراً تنفيذياً للبرنامج لأربع سنوات، ثم تم تجديد ولايته أربع مرات حتى عام 1992. تقلد الدكتور طلبة مناصب أكاديمية وسياسية رفيعة، في مصر شغل منصب الأمين العام للمجلس القومي للعلوم في مصر، وأول رئيس لأكاديمية البحث العلمي والتكنولوجيا، وشغل منصب وزير التعليم العالي، ووزير الشباب، ووكيل وزارة الخارجية، كما شغل منصب المدير التنفيذي لبرنامج الأمم المتحدة للبيئة لمدة 17 عاماً. وفي إطار عمله الرائد في مونتريال، تم الإشادة بالدكتور طلبة المصري المولد لقيادته في توجيه اتفاقية فيينا التي سبقتها، وحصل على العديد من الجوائز والدكتوراه الفخرية. إنه ينتمي إلى جيل من موظفي الخدمة المدنية الدولية الذين لم يفقدوا المنظمات والبرامج الدولية بفعالية فحسب، بل تمكنوا أيضاً من تغيير صنع السياسات الدولية. وفضلاً عن ذلك، فقد ترك إرثاً قوياً ومثيراً للإعجاب في عمل برنامج الأمم المتحدة للبيئة وعمل وزارات البيئة في جميع أنحاء العالم. في هذه الدراسة، سوف نسلط الضوء على الدور المهم الذي لعبه الدكتور طلبة كأستاذ جامعي وكباحث، ومسؤول عالمي لأحد الملفات الساخنة التي أثرت ولا تزال تؤثر على البيئة العالمية، وخاصة مجال تغير المناخ الذي يهتم به العالم، وتهتم به مصر التي ستنتظم مؤتمر «كوب27» في شرم الشيخ في شهر نوفمبر المقبل.