

Mahendra Shah: Witness Journey of Sustainable Development 1970-2020

Mahendra Shah
President Director, Zen Resort Bali
Co-founder EarthOdyssey.org
Advisor United Nations, World Bank and some Governments

***Contents:** 53 Pages of Text covering some 33 Intrinsic Sustainable Development Issues, with 120 References: 27 Sustainable Development Publications, 38 IIASA Publications and 65 LinkedIn Outreach Articles and Posts and 18 YouTube Links*

This report presents my 50 Year Journey of Sustainable Development, Holistic Human Wellness & Earthodyssey.org, encompassing a Professional, Scientific & Policy Research Career in the United Nations & the World Bank, International Institute for Applied Systems Analysis, University Nairobi & University of Cambridge, Humanitarian and Philanthropic Organizations as well the Public and Private Sectors

I have greatly benefited from the field experiences of development challenges from a number of Director, Senior Advisor and Consultant appointments at United Nations Organizations including UNOEOA, UNOCA, UNICEF, UNDP, UNFAO, UNWFP and UNIDO. In the Government Sector, as Advisor in Human Security- Austria; Foods Security and Sustainable Agriculture- Ethiopia, Kenya, Mozambique, Pakistan, Saudi Arabia and Qatar; Holistic Wellness and Sustainable Tourism- India, Norway and Turkey. In the Philanthropic Sector- Earth Odyssey as co-founder.

My Witness Journey of Sustainable Development 1970-2020

Mahendra Shah
President Director, Zen Resort Bali
Co-founder EarthOdyssey.org



Zen Resort Bali and Dr Shah

<https://marktleiderschap.files.wordpress.com/2017/09/zenresortdrshah-unsubscribemagazine-com-berlin-dec2016.pdf>

Mahendra Shah: The Quest for Sustainability

https://www.youtube.com/watch?v=urjTlaolvC4&feature=emb_logo

This report presents my 50 Year Journey of Sustainable Development, Holistic Human Wellness & Earthodyssey.org, encompassing a Professional, Scientific & Policy Research Career in the United Nations & the World Bank, International Institute for Applied Systems Analysis, University Nairobi & University of Cambridge, Humanitarian and Philanthropic Organizations as well the Public and Private Sectors

I have greatly benefited from the field experiences of development challenges from a number of Director, Senior Advisor and Consultant appointments at United Nations Organizations including UNOEOA, UNOCA, UNICEF, UNDP, UNFAO, UNWFP and UNIDO. In the Government Sector, as Advisor in Human Security- Austria; Foods Security and Sustainable Agriculture- Ethiopia, Kenya, Mozambique, Pakistan, Saudi Arabia and Qatar; Holistic Wellness and Sustainable Tourism- India, Norway and Turkey. In the Philanthropic Sector- Earth Odyssey as co-founder and in the Private Sector- Urban Horticulture as founder and CEO of Greenspan Designs Ltd UK and Greenspan Designs USA LLC and President-Director at Zen Holistic Resort Bali.

At the personal level, I have four children born during 1975 to 1984, a period when we lived together in Austria, but thereafter my professional work in the United Nations meant I saw the family over long weekends and vacation time. Looking back, I missed the time to see the children growing up and achieving academic and professional success as well as parenting the six grandchildren, who are destined to inherit Zen Holistic Wellness Resorts and a passion for Sustainable Development. Our world is in crisis socially, environmentally and economically and it is sad to see the Children and Youth around the world missing out on the joy and happiness of life and living. We adults must ensure the education relevant to empowering them to prevail and be the change makers for a secure future.

Sustainable Development and Human Sustainable Lifestyles are Imperatives in the 21st Century and I plan to continue working in these areas. In 1992 I started writing a Book, "Humanity & Nature - A Nexus of Survival" and look forward to finalizing the Book this Year. And I have discovered a passion to write in Social Media and Academia to reach Professionals and the Public Sectors.

Table of Contents

1.	Contents	1
2.	Preface	2 – 3
3.	Acknowledgement	4
4.	Introduction	5 – 6
5.	My Witness Journey of Sustainable Development, 1970 to 2020	6
6.	1966-1976, Cambridge and Nairobi	6 – 7
7.	1972 Stockholm Conference	7
8.	1976-1983 IIASA Senior Scientist, Laxenburg, Austria	8
9.	1984-1986 UNOEOA Director of Planning and Information, New York	9
10.	1988-1989 UNOCA Director of Information and Planning, Geneva	10
11.	1991-1992 Senior Advisor to Secretary-General, UNCED, Geneva	11
12.	1988-96 Founder and CEO, Greenspan Designs Ltd UK and Greenspan Designs LLC USA	12
13.	1997-2000 Executive Secretary, CGIAR 3 rd Systems Review, World Bank, Washington DC	12 – 13
14.	1998-1999 Advisor, Earth Council and University Of Peace, San Jose, Costa Rica	13 – 14
15.	2001 Global Change Open Science Conference, Amsterdam	14 – 15
16.	2002 Johannesburg World Summit on Sustainable Development (WSSD)	15 – 16
17.	2001-2005 Advisor, Millennium Ecosystem Assessment (MEA)	16 – 17
18.	2006 Joy and Sorrow: A Book of Poems for Children	17 – 18
19.	2006: Pontifical Academy: Interactions between Global Change and Human Health	18
20.	2005-2015 Millennium Development Goals	19
21.	2015-2030 Sustainable Development Goals	19 – 20
22.	2015-2030 Climate Change and Climate Goals 2030	20 – 21
23.	1945-2021 World Food Security Summits: 75 Years of Promises	21 – 22
24.	2001-2009 IIASA Senior Scientist, Ecology-Economy-Policy Development	22 – 23
25.	2001-2002 Global Agro-Ecological Zone: Food in the 21st Century	23
26.	2001-2008 IIASA World Food Systems Model	23
27.	2002 Johannesburg WSSD "Climate Change & Agriculture Vulnerability"	24
28.	2005 Philosophical Transactions of The Royal Society	24
29.	2008-2009 Dean of IIASA Young Scientists Summer Program	25
30.	2008-2009 IIASA/OPEC Fund – Biofuels and Food Security,	25 – 26
31.	2009-2011 Qatar National Food Security Program and Global Dryland Alliance	27 – 28
32.	2009-2011 World Bank Rising Global Interest in Farmland Investments	28
33.	2011 Aquies RAINAID Weather Intervention	28 – 30
34.	2012 UN Conference in Rio de Janeiro RIO+20 Years	30
35.	2012 Visions of the Living Earth: A Joint Book Project	31
36.	2020-2022 Earth Odyssey Sustainable Development is not an Option, it is Imperative	31 – 32
37.	2005-2020 Zen Resort Bali: Health, Wellbeing, Immunity and Sustainable Lifestyles,	33 – 36
38.	2016 Integrative Medicine in a Resort Setting Resort	36
39.	1992 Annex 1: Agenda 21 Interlinkages	37 – 44
40.	1975-2020 References:	
	Selected Sustainable Development Publications	45 – 46
	IIASA Publications	
	- Articles	46
	- Book Section	46
	- Monographs	46 – 47
	- Other	47 – 48
	LinkedIn Articles and Posts	
	- Featured Articles	48
	- Featured Posts	48 – 53

Preface

My Journey of Sustainable Development and Sustainable Human Lifestyles

Over time, I have realized that my unique background of Indian Heritage, African Upbringing, European Education and an International Professional Career, with much travel was a period of admiration, joy and fun whilst discovering the Wealth of Human and Nature Diversity in a number of places around the World.

When one reaches 75, one is considered to be ready to retire and sit in a rocking chair to ponder the years gone by, sadly more than the years ahead. I did not plan it, but my 30 year International Journey of Sustainable Development was followed by a 20 Year Journey of Holistic Wellness and Sustainable Human Lifestyles in Bali. I felt the need to write a record of my 1970 to 2020 Journey with the hope that it will inspire the Youth of today to make our World their Oyster.

I look forward to more Years Journey of Discovery to share more experiences of a beautiful and gratifying life and sustainable living. We, Yuri Sanada from Brazil co-founded Earth Odyssey to reach out to Empower the Youth and Inspire the Women as equal partners with Men to deliver the Imperative of Sustainability Actions for a sustainable World of Humanity and Nature.

The Systems Thinking, Systems Analysis and Systemic Actions as a phased integrated approach is essential to understand that every problem comprises of a series of interdependent systems of problems. We need to think creatively and holistically about the complexity of the whole system and account for the interlinkages, in for example delivering the SDGs 2030 and the Paris Climate Goals 2030, recognizing that for both Multilateral Partnerships and International and Regional Coordination will be essential.

I have no words of wisdom, only concerns that all parents promise children at birth a better life, but sadly the sustainability pathway we are NOT walking, will steal the future of the next generation. The longer we wait to implement Universal Sustainable Development, the risk is that we will run out of time.

The Imperative of Sustainable Human Lifestyles for Sustainable Development

The Sustainability challenges of Climate Change, Extinction of Species, Air and Water Pollution, Pandemics, Disrespect of Nature and Disenfranchisement of People are all well understood but we continue to fail to deliver the means and actions for a Sustainable World. We admire Nature and its Wealth of interdependent Diversity, functioning and thriving with all species, plants and animals living in harmony in space and time. And yet, Humanity and its disconnected Wealth of Diversity lives in discord, exploiting Nature for Human "development" without consideration of all other species that inhabit Planet Earth. And sadly more and more people in the world are aspiring to be on the trains of modern lifestyles, driven by Materialism, Greed and Power which often results in poor health and dissatisfaction with life and living.

We must change our mindsets and be humane with principles, humility, conscience and morality and embrace living in harmony in every aspect of our lives as well as in Nature. Human Population growth in combination with the over-consumption makes us the most destructive species on Planet Earth. We need to heed the imperative of responsible consumption and sustainable lifestyles if our generations to come are to secure the future.

The Education Reform Imperative for Sustainable Human Lifestyles

Educational systems around the world have evolved similarly with every phase competitively pushing children and students to excel, from Nursery to Primary to Secondary to Colleges and Universities, learning facts and figures and ending with professional certifications to pursue careers that deliver the incomes for a "modern lifestyle of materialism, greed and power, which fundamentally is the cause of the Human and Nature sustainability challenges we face today.

Education in the home and in institutions need to enhance practical knowledge and skills, values and morals, empathy and compassion, creativity and innovations, respect and appreciation to enable and empower the

means to survive and thrive with environmental awareness, economic responsibility and social commitments for a healthy, prosperous and a sustainable future.

The Youth of today are the first generation in the history of humankind on whose shoulders, we have put the responsibility to secure a sustainable world. We must empower the youth to become the conscious and committed sustainability actions-oriented leaders in Governments, Business, Science and Technology and Civil Society. They will need the negotiation skills to act with fairness in resolving our divisive and destructive world.

Women, accounting for half the world's adult population, have yet to break free from the societal, environmental and economic conditions that keep them discriminated, suppressed and often excluded as equal partners in decision-making. We preach empowerment of women, but we forget that women are naturally endowed with characteristics of patience, compassion, empathy and altruism, without which we cannot heal either Humanity or the World of Nature.

The education priority ahead is to educate the educators, Parents, Teachers, Professors and Professionals in the "School of Life" Education such that they can impart the knowledge to inspire creativity to live responsibly, humanely and sustainably in harmony with Nature.

Annual Vacationing to Rejuvenate and Recharge at Sustainable Human Lifestyle Resorts

The future of tourism worldwide will be driven by demand for health and wellbeing and recreation and culture in serene and pristine Nature environments as well as safe and secure locations. The majority of tourists in their work and home life in urban settings are constantly exposed to and at the mercy of stresses and strains as well as pollution. Holistic wellness programs, comprising Ayurveda, Yoga, Pranayama, Meditation, Nutritious Cuisine, Detox of Body, Mind and Soul as well as Recreation in Immunity-enhancing Nature are relevant to experiencing sustainable healthy lifestyles in resort settings and importantly to be inspired and empowered to incorporate these ideas in their daily life at home.

Holistic Wellness Resorts provide an ideal setting for guests from around the world to share knowledge, cultures and experiences with the local community, thus contributing to inclusive and sustainable development. We need to think well beyond traditional tourism development that was based on foreign exchange earnings, bars and entertainment, shopping and so on and mobilize a new era of Tourism development that contributes to a better World of Prosperity, Harmony and Peace.

The Imperative Sustainable for Development

**"Our biggest challenge in this new century
is to take an idea that sounds abstract
– sustainable development –
and turn it into reality for all the world's people"**

Kofi Annan, 2001



The collage consists of four distinct images. On the left, Kofi Annan is shown from the chest up, speaking into a microphone at a podium. The background of this image has the word 'SUSTAINABLE' in large letters, with 'ICA • 2 AUGUS' visible below it. In the center, there is a group of five children of various ethnicities and ages, looking towards the camera. To the right of the children is a woman wearing a blue headscarf and a red jacket, also looking forward. On the far right, there is a wide-angle shot of a large, tiered audience seated in a hall, facing a stage area.

Acknowledgements

My deepest gratitude to Maurice Strong, Secretary-General 1972 Stockholm Conference and 1992 Rio UNCED and Earth Summit, Nitin Desai, Secretary-General 2002 Johannesburg Summit, Vikram Shah, FAO Director of Budget, Bradford Morse, UNDP Administrator, Janus Hrabosky, FAO Director, Ferenc Rabar, IIASA Program Director, Graham Higgins FAO Director, Suleiman J Al-Herbish OFID Director General, Walter Lichem Austria Ministry of Foreign Affairs, M S Swaminathan First World Food Prize Laureate, Emil Salim Indonesia Ministry of Environment, Mahmoud Sohl Director General ICARDA, Whitney MacMillan CEO of Cargill, David Kinley CGIAR World Bank, Francesco Strippoli World Food Program, Francis Masakhalia Kenya Ministry of Economic Planning, all of whom and many more colleagues supported and contributed to my journey of Sustainable Development.

Guenther Fischer IIASA Program Leader, Harrij Van Velthuisen IIASA Senior Scientist, Wolfgang Lutz IIASA Program Director, Roger Levien IIASA Director, Buzz Holling IIASA Director, Leen Hordijk IIASA Director

Since 2009, Ni Luh Budiani as General Manager of Zen Resort Bali set me free from administrative responsibilities to pursue my interest in sustainable Development and Holistic Wellness. My deep appreciation to some 65 staff members at Zen who have worked with the best of Balinese Hospitality and humanity, with not a single resignation during the last 10 Years. Remarkably there has not been a single COVID19 infection among the Zen staff and their families during the pandemic. We suspect this is a result of the Balinese lifestyle culture of living in harmony in the community and with the respect and daily worship of Nature as well as healthy traditional cuisine that contributes to strengthening personal immunity.

On behalf of the staff of Zen Resort, I want to stress that Zen Resort guests, many whom come regularly every year, have been exemplary in sharing their humanity and expert knowledge for a sustainable World during bi-monthly evening discussion sessions, bonding with each other from different parts of the World as well with Zen staff. More often than not, we see Zen guests on departure with tears embracing our staff in tears as well. Thank you for being our friends and Ambassadors of Zen Wellness.

Mahendra Shah
15th January 2021
Zen Resort Bali
Indonesia

My Witness Journey of Sustainable Development (1970 to 2020)
Systems Thinking, Systems Analysis, Systemic Actions
Mahendra Shah

Introduction

In spite of fifty years of global dialogues and deliberations at countless sustainable development conferences and summits, the world community has been constrained to mobilize Governments, Business and Civil Society to provide the resources and means to transform the many endorsed agendas and goals into policies and implementation actions requisite to achieving the imperative for sustainable development.

The Year 2020 has seen unprecedented COVID19 human tragedy and economic meltdowns with an 82 million infections and some 1.8 million deaths and hundreds of millions left destitute. Sadly intuitive estimates highlight as many as 700 million are estimated to be infected. A number of vaccines have just come on the market and an expedited worldwide distribution is essential since any pockets of COVID19 anywhere in the world will come to haunt us with new mutations of this intelligent corona virus that attacks the most vulnerable part of the human body, the lungs.

During the Pandemic, the world has also been awakened by the crisis of human divisiveness and destruction of Nature, for example the Black Lives Matter movement and millions of refugees and migrants fleeing conflicts and economic destitution as well as intensifying climate crisis, extinction of species, escalating air pollution and oceanic waste dumping. At the same time there is a rise in unilateralism when the world desperately needs multilateralism to confront global human and environmental crisis which will not recognize any geographic or political or wealth boundaries.

The Global Risks Report 2020 warning that an unsettled geopolitical landscape and a retreat from multilateralism will hinder our ability to take timely actions on the most pressing risks. The challenges are how Governments, Businesses and Civil Society will build sustainable social, environmental and economic partnerships including international coordination mechanisms, as exemplified by the lack of it during the current COVID19 Pandemic.

Human emotions and ambitions are intertwined with a universal truth: we have inherited this planet from our ancestors while concomitantly borrowing it from our children, and we must sustainably safeguard it. We have the pressing responsibility to ensure a Planet that is healthy, habitable and sustainable for all.

In the last twenty years, our hopes and aspirations on the eve of this 3rd Millennium for a sustainable world continues to be shattered by an increasingly inequitable, fragmented and disenfranchised human world. We are also facing escalating and multiplying consequences of the emerging environmental crisis which will in turn undermine the life supporting capacity of our Planet Earth.

By the 2050s there may be an estimated more than 1 Billion people with no choice but to leave their homes due to increasing destruction of Nature as well as societal conflicts and wars. People facing famines, water scarcity, clean air to breathe and livelihoods crisis have little choice but uproot and migrate. No walls or risk of being imprisoned or being shot at borders can halt destitute from seeking refuge when they have nothing more to lose than their lives.

We cannot continue with business as usual, often with denial and the assumption that we have plenty of the time to act, when the impacts are rapidly intensifying and multiplying in front of our very eyes, increasingly being highlighted by the scientific community and reported by the news and social media around the world.

Sustainable development problems transcend the sovereign powers of the nation states. Thus equitable international sustainable development partnerships are essential to meet the mutual needs of humanity for peace, security, prosperity and stability. We must begin to act as one world with one single goal of sustainable development whilst protecting the life supporting capacity of our one Earth.

We need genuine international development partnerships between developed and developing countries. Historically developed countries developed and prospered with polluting technologies, such as coal-based

energy. Sharing these safe and green technologies in a concessional and affordable manner with the developing countries is paramount for International peace, prosperity and harmony

The grid lock against change in our society is that those in power and positions of policy making, funding and implementing actions in Governments, Business and Civil Society have often been preoccupied with maintaining their own self-interests as well as the status quo.

The short term perspectives and priority for many political leaders is to get re-elected, for business leaders increasing short-term shareholder profits, for scientists reliant on public and private sector research funding to highlight precautionary implications of their research in spite of being labelled "speculative" and not scientific. For the working adults around the world, the first necessity is to earn a livelihood for their families and thus they too are restricted from taking a stand on unsustainable social, environmental and economic policies in their places of work.

Business is the driving force of economic growth and prosperity as well as generating Government revenues. Thus, awakening the consciousness of the world of Business to contribute to socially, environmentally and economically sustainable policies and actions is an imperative. We must not forget the power of the public's wallet to support Business and the power of the public vote to elect Governments as real means that can force changes for responsible and sustainable development.

The coming decades must be different and we need to decisively adopt an Earth Odyssey to build genuine development partnerships with compassion, sharing, perseverance, peace and harmony in order to build a sustainable future for all.

It is high time the International Community adopt an Universal Declaration of the Rights of Nature and also revisit the 70 years old 1948 Universal Declaration of Human Rights to align it with Human challenges in the 21st Century, The protection of both these rights needs legal mechanisms to persecute, especially with regard to violations by Governments, Business and Civil Society.

My Witness Journey of Sustainable Development, 1970 to 2020

The main strides in the Evolution of Sustainable Development comprised three UN World Summits, namely 1972 Stockholm UN Conference on the Human Environment, 1992 Rio UN Conference on Environment and Development and the Earth Summit and 2002 Johannesburg World Summit on Sustainable Development as well as Earth Charter 2000, Millennium Ecosystem Assessment 2001-2005, the Millennium Development Goals 2000-2015, Sustainable Development Goals 2015-2030 and Climate Goals 2030. Whilst there has been substantial progress in scientific understanding and recognition of the urgency of Sustainable Development, Governments, Businesses, Civil Society and the International Partnerships, essential policy actions, funding and the means requisite to achieving Sustainable Development remains a priority.

1967-1976, University of Cambridge and University of Nairobi

I was born in 1945 of Indian parents in Kenya and did most of my school until 1966. My college and university education was in the UK (1966 to 1971), completing my PhD Research on Methodology and Application to Control of Large Systems, for example the MZFR Nuclear Power Plant in Karlsruhe in Germany, Industrial Distillation Plants and Rural Development and National Development Planning.

In 1971, I left my alma mater Cambridge to return to Kenya. I joined the University of Nairobi as a Senior Lecturer, Reader at the Institute of Development and Advisor to the Kenyan Ministry of Economic Planning. I participated in designing the first "automatic traffic light signals" system for the City of Nairobi, designing strategic planning for Kenya's Special Rural Development Program, conceptualizing the tourism development potential of Kenya's Wildlife areas as well as developing KENSIM, a systems simulation model of the Kenyan Economy that contributed to a social, environmental and economic analysis of Kenya's Fourth Development Plan 1974-78.

During 1967-1971: My Misplaced Memory of Cambridge: Meetings with Stephen Hawking
Where on Earth Humanity is going? Why choose the Pathway that risks the Life supporting capacity of Planet Earth?

On Earth Day 2021 triggered me to revisit the 2018 Stephen Hawking's seven predictions of the future of our world: Genetically Modified Vaccines, Aliens will invade the Earth, Universe will come to an End, Robots will replace Humans, Nuclear Weapons will destroy Humanity, we will need to find another Planet to live and Earth will combust into a Ball of fire. Five of these Predictions are on the horizon of reality. This triggered my misplaced memory of meetings with Stephen Hawking. Literally for the first time, since leaving Cambridge University, I remembered SH words at a DAMPT Seminar, "Look at Stochastic Filtering Theory" that contributed significantly to the essence of my PhD research, viewing a complex large system as comprising of subsystems, interlinked through stochastic interactions, optimized by incorporating the Pontryagin Principle. This aspect has been of relevance to my 50 Year quest of Sustainable Development and Holistic Wellbeing and Sustainable Lifestyles as the Pathway to Living in Harmony with Nature.



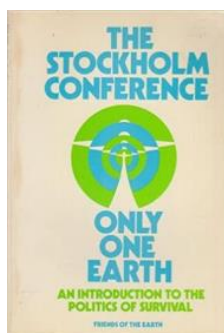
Stephen Hawking: Master of the Universe

<https://www.youtube.com/watch?v=ekHhCoDIaA0>

https://www.linkedin.com/posts/mahendra-shah-89483b2a_misplaced-memory-of-meetings-with-stephen-activity-6794178467035521024-bdWQ

1972 Stockholm Conference

This Environment and Development Conference presented a framework for integrating the challenges of environmental protection and development. The developed countries had called for the Stockholm conference as they were concerned that, if the developing world adopted the same polluting technologies that had enabled development and economic prosperity in the developed countries, there would be worldwide environmental consequences that would threaten future prosperity and human wellbeing in our interdependent world. In the corridors of the Stockholm conference, delegates highlighted the development divide between the rich and poor countries. The "developing countries emphasized that their priority was development" and the "developed countries stressed the priority was protecting the environment globally". I had attended the Stockholm Conference as an invitee by Maurice Strong.



United Nations Conference on the Environment, 5-16 June 1972, Stockholm
<https://www.un.org/en/conferences/environment/stockholm1972>

1976-1983 Senior Scientist, International Institute for Applied Systems Analysis, Austria

In 1976, I was invited by Ferenc Rabar, Food and Agriculture Program (FAP) Leader at the Institute for Applied Systems Analysis. IIASA had been established in 1972 in response to the President Lyndon Johnson of the USA call, "it is time that scientists of the United States and the Soviet Union worked together on problems other than military and space matters, on problems that plagued all advanced societies, like energy, oceans, environment, health".

At FAP, I worked closely with Guenther Fischer and Harrij Van Veltuijzen at IIASA and collaborated on a project with the United Nations Food and Agriculture Organization to develop the Agro-Ecological Zone Methodology (AEZ) and a Global spatial digitized resources data base that provided a systems framework for the characterization of climatic, topography, soil and current cover based on digitized data base comprising some 2.2 million grid cells covering the world's land surface. This in combination with crop-specific models to estimate the feasible agricultural land-use options and quantification of all food, feed and fibre crops production potentials, under three levels of Agricultural Inputs and technology, namely Low, Intermediate and High.

This information formed the basis for a number of AEZ applications, such as quantification of productivity, extents of with rain-fed or irrigated cultivation potential, and multi-criteria optimization of the use and development of arable resources. The AEZ Methodology and spatial resources data base formed the basis of the 1983 well as the FAO/UNFPA/IIASA Potential Population Supporting Capacities of the Lands in the Developing World.

I also participated in the development of the World Food System Model comprising a series of linked national and regional agricultural economic models. The ecology-economy integrated modelling framework enables analysis of the world food system, viewing national food and agricultural components as embedded in national economies, which in turn interact with each other at the international trade level. The Global AEZ/WFS systems model—in annual steps—how much food will be produced and consumed, where it will be produced and consumed, and the related trade and financial flows related.

I specifically worked on developing the model for Kenya and contributed the models for Nigeria and South Africa as well as AEZ/WFS national and international food security and trade policies. The results at selected National and Regional levels, for example identified potential gaps and gluts in the food system, their causes, how to address them through a better use of resources, as well as analysing spatial environmental impacts relevant to designing sustainability policies and measures.



Food Production Potential and Assessment of Population Supporting Capacity - Methodology and Application

<http://pure.iiasa.ac.at/id/eprint/1797/>

People, Food Production Potentials in the Developing World

<https://iiasa.ac.at/web/home/resources/publications/IIASAMagazineOptions/opt84-2.pdf>

All the Nations Can't Feed Themselves, but All the People Can Be Fed, Donella Meadows, April 1987

<https://www.printfriendly.com/p/g/h4y7Jr>

1984-86 Director of Planning and Information, UNOEOA, New York

Background: In August 1984, Maurice Strong interviewed me at the Hotel Forum about joining the United Nations Office of Emergency Operations in Africa in New York. I informed Maurice that the timing difficult as I had just committed to a new FAO-IIASA project. About two weeks later I received an invitation at a Donors meeting at the Hotel Intercontinental in Geneva. There at a Donors meeting, I met Bradford Morse, UNDP Administrator and Coordinator of UNOEOA. He congratulated me for joining emergency office and I emphasized that that was not true. He said to me, "come I want you to meet someone". We marched to a corner in the reception to a group of men in grey suits. He tapped one of them on the shoulder who turned around and Brad introduced me to Vice President Bush who had just returned from a fact finding mission to the emergency in the Sudan. That was the moment I decided to join the UNOEOA.

In October 1984, I was appointed as Director of Information and Planning, United Nations Office of Emergency Operations in Africa UNOEOA, at the UN Headquarters in New York, to develop an information system to monitor the evolution of the famine emergency, affecting some 35 sub-Saharan countries including Ethiopia. It was the BBC the documentary on 23rd October 1984, reporting the "Biblical" famine from Korem, that awakened the world community to the severity of famine emergency.

At UNOEOA we developed a monthly information system that documented for each of the affected countries the specific needs for food and water, shelter and clothing, medical supplies and healthcare personal, seeds and farm implements, logistics and access by road and air, displaced population movements etc. This quantitative and qualitative information was compiled in partnership with UN Resident Offices in the famine affected countries set up Emergency Response Coordination Task Forces in collaboration with the NGOs in the field as well as the National Government authorities in the country. We also incorporated data and information on the evolving situation as reported in National and International news media.

The UNOEOA coordinated comprehensive information enabled us to prepare a detailed monthly report quantifying the Needs, Donor Pledges and Gaps for specific famine emergency needs as well as qualitative information on evolving emergency situation, for example migration and population displacement. This monthly report became the basis of special donor appeals in partnership with Donor Governments and International NGOs.

Over a period of some 2 years we issued some 20 monthly reports and mobilized and delivered emergency relief aid of some USD 4.3 billion that saved the lives of a million and the relieved the suffering of some 8 million displaced people . We also partnered with Live Aid and Bank Aid that triggered the worldwide Public, Governments, NGOS and the Private Sector to respond in a timely and effective manner to the evolving famine emergency.

This period of two years in New York, often with field visits across Africa, was one of the most emotionally enlightening and at the same time humbling experiences of my professional work. The international media reported the work of this UNOEOA as one of the most successful emergency relief aid operations carried out by the United Nations.



BBC News Reporting from Korem, Ethiopia, October 1984
https://www.youtube.com/watch?v=XYOj_6OYuJc&t=7s

Live Aid Awakened Humanity to end the "Biblical Famine" in Ethiopia
<https://www.youtube.com/watch?v=4M7c-JOnPdw>

United Nations Office for Emergency Operations in Africa
https://www.sourcewatch.org/index.php/United_Nations_Office_for_Emergency_Operations_in_Africa

1988 -1989 Director of Information and Planning, UNOCA, Geneva

In July 1988, I was appointed as Director of Planning for the UN Office of the Coordinator (Prince Sadruddin Aga Khan) for Afghanistan to develop a recovery, rehabilitation and development plan for Afghanistan in the anticipated aftermath of the departure of the Soviet troops.

Whilst I was based in Geneva, I went twice to Afghanistan on field assessment missions visiting refugee settlements hosting over 6 million Afghans in Iran and Pakistan. This displaced population was over 50% of the total Afghanistan population.

Most of the economy, especially agriculture was degraded and destroyed during the ten year occupation. We set a priority goal to rehabilitate agriculture, rebuild schools, establish healthcare centres such that this would incite the displaced refugees to return to their home provinces. All the provinces in Afghanistan had suffered from massive destruction and challenge we faced was which provinces should be prioritized for reconstruction and development aid.

The solution we came up with to use the ratio of displaced population from a specific province in Afghanistan in the refugee settlements in Iran and Pakistan to the population still resident in that specific province in Afghanistan. We carried out this assessment for all provinces in Afghanistan and these ratios together with additional social, environmental and economic factors enabled us to target the displaced population from specific provinces to return to Afghanistan. This idea was feasible as the culture of Afghanistan meant displaced from a particular province stayed together in the refugee settlements in Iran and Pakistan.

We developed a comprehensive plan for recovery and rehabilitation and development aid plan in the aftermath of the departure of the Soviet troops. However the fighting between various Afghan Mujahideen groups meant that most donor countries that had promised aid simply walked away from Afghanistan, leaving more than half of the Afghan population to live for in refugee camps in Pakistan and Iran for decades ahead.

The Soviet Union had promised USD one Billion in aid and literally none of this was delivered. Many of Afghan refugees have refugees in Pakistan and Iran till this day and they are the forgotten people with a generation of young adults born and brought up in camps. It is no wonder that so many today risk their lives to reach safe haven across the Mediterranean Sea and elsewhere. The tragedy of human suffering in Afghanistan is a result of the uncontrolled sale of arms and armaments by USA, Russia (and the Soviet Union before it), the UK, France, India, Egypt and Pakistan, all with a specific interest in a particular outcomes in Afghanistan. This is an example of the lack of humanitarian concerns Peace and Development and sadly this still continues in conflict area around the world.



End of Soviet Occupation of Afghanistan, 15th February 1989
<https://www.youtube.com/watch?v=Xzsjys0bUsM>

Food Aid Afghanistan, Mahendra Shah BBC Interview, 1988
https://youtu.be/oxk_V75HpBI

1991-1992 Senior Advisor to the Secretary-General, UNCED, Geneva

In 1991, I was called on by the Secretary General of the UN Conference on Environment and Development to join the secretariat as a Special Advisor in Geneva, to prepare and coordinate a summary report of "The Global Partnership for Environment and Development- A Guide to Agenda 21". This report presented a 100 page assessment and a road map of sustainability actions of the social, environmental and economic challenges facing the world Community. The Rio 1992 Agenda21, unanimously adopted by 163 countries, put the World on notice that Sustainable Development was not an option but an imperative.



The Global Partnership for Environment and Sustainability – A Guide to Agenda 21, Rio 1992 Earth Summit
United Nations Publications, Geneva, May 1992

[Earthodyssey.org](https://earthodyssey.org)

<https://sustainocracy.blog/2020/10/21/earth-odyssey-2020-2022-mobilising-the-world-community-for-sustainability-actions/>

The UNCED put forward a road map for the Agenda 21 Implementation actions in developing countries, with an estimated funding request of USD 600 Billion annually for the period 1993 to 2000, including about \$125 billion on grant or concessional terms from the international community. This substantial estimated funding request, compared the 1992 total ODA, Other official flows, Net grants by PVOs and Private capital flows of about USD 225 Billion annually. The Agenda 21 implementation literally did not receive donor response, except for the conference concluding that the United Nations to post-Rio continue discussions on financing options of Agenda 21.

In an informal donor meeting, there were suggestions to prioritize viable and manageable funding according to, for example themes presented in the Agenda 21 summary report, namely Revitalizing Growth with Sustainability, Sustainable Living, Human Settlements, Efficient Resource Use, Global and Regional Resources, Managing Chemical and Waste and People Participation and Responsibility. The UNCED Agenda 21 summary reports had conceptualized these broad themes and identified the relevant interlinkages with the 37 Chapters of Agenda 21, See attached Annex 1

The products coming out of UNCED-Earth Summit also included a Rio Declaration enunciating 27 Principles of environment and development, a 700-page Agenda 21 action program as well as set of principles for sustainable forest management, and specific conventions on climate change and biodiversity, being products of independent, but concurrent, negotiating processes that were opened for signatures at UNCED. The institutional innovations resulting from the UNCED conference included an agreement on the operating rules for the Global Environmental Facility (GEF) and the establishment of a Commission on Sustainable Development (CSD).

A very welcome outcome from 1992 Earth Summit was that it triggered many cities and towns around the world to adopt and implement "Green Development Agendas". This has enhanced societal, environmental and economic quality of urban life, important in view of growing rural-urban migration all over the world. The populations in urban areas are politically, environmentally and economically empowered and they need to be mobilised catalytic forces for change to deliver funding and technological knowledge and means for Local, National, Regional and Global Climate Actions.

At the Rio Earth Summit in 1992, the dominating voice of the World's leading Economic and Democratic Nation emphasized "Our way of life is not negotiable" whilst a developing country pleaded, "the industrial countries of the World have an ecological debt to pay to Mother Nature".

1988-96 Founder and CEO, Greenspan Designs Ltd UK and Greenspan Designs LLC USA

Although people have been growing plants in containers ever since ancient Egyptian times, the basic concept has not changed significantly except for the cosmetic changes in shape and size and the use, of terra-cotta, ceramics, marble, wood, plastics, etc in the design and construction of plant containers, which remain basically bowl-shaped vessels. It is paradox that over time a situation has been reached such that many people will buy a plant container on the basis of "How nice does the container look?", with relatively little attention to the plants in it. In reality, the container is incidental in that it is only a means to growing and displaying plants to enhance and beautify the environment. In the ideal situation, an "invisible container" would ensure that there is little distraction from the beauty of living flora and also we would be relieved from the dilemma of whether the container will blend into a particular setting, be it modern or traditional.

GreenSpan Designs has taken a scientific and a practical approach to perfect a new concept – GardenCube in container gardening for 3-Dimensional floral and foliage displays with low maintenance requirements, particularly, eliminating the need for regular feeding for an entire season and with considerably reduces watering requirements. The system literally guarantees the easiest route to successful and creative container gardening. At the heart of this complete growing system are patented cubic containers which are stackable and inter-connecting, and are pre-filled with a complete growing medium GroRock.

The combination of GardenCube with GroRock enables gardeners to add innovation to easy gardening and create 3-D hanging gardens, floral columns, trees, arches, gazebos, walls etc – all unique and creative displays of stunning brilliance for commercial large scale displays in Business Districts and City Streets, Shopping Malls, Leisure Parks, Golf Clubs, Sports Stadiums, Hospitals, Restaurants, Hotels, etc – as well as apartments balconies, patios, decks and home gardens. The systems is also ideal for balcony and roof top vegetables and herbs production

Gardening enthusiasts have long admired and been intrigued by Gardencube foliage and floral displays by City Municipalities in the United Kingdom, France, Germany, Denmark, Sweden, Norway, Austria, Switzerland, Canada, Japan, Turkey, and the USA



GreenSpan Designs Innovative Container Gardening Systems

<https://containergardening.wordpress.com/2008/05/21/greenspan-tm-designs-ltd-garden-cube-tm-container-gardening/>

1997-2000: Executive Secretary, CGIAR Systems Review, World Bank, Washington DC

In 1997, I was appointed as Executive secretary of the Consultative Group on International Agricultural Research (CGIAR) Third Systems Review. The CGIAR based at the Word Bank in Washington DC, comprises of 16 agricultural research centres round the world.

Since the establishment of the CGIAR in 1971 as part of the worldwide response to rampant hunger, the CGIAR has made substantial contribution to advancing science and technology to reduce poverty, increase food security, improve health and nutrition, and ensure the sustainable management of natural resources. As the only international agricultural research body dedicated to meeting the needs of poor smallholders, producing global public goods, including improved crop varieties, livestock vaccines, sustainable agroforestry and farming practices, and incisive policy analysis.

At the CGIAR I had the honour to author with Maurice Strong, the World Bank Book entitled, "Food in the 21st century – from Science to Sustainable Agriculture". During my three 3 years with the CGIAR, I also had the privilege to work closely with Dr Emil Salim of Indonesia in preparing the recommendation for positioning the CGIAR in the emerging challenges posed by the private sector focus on intellectual property rights on, the most fundamental of human rights, that of food. The world community needs to revisit the legal and the humanitarian considerations of IPR, especially as related to fundamental human rights such as that of food as well as patenting of life forms.

A World Bank Book published in 2000 entitled, "Food in the 21st Century: from Science to Sustainable Agriculture, builds on the third system review of the CGIAR, highlights the emerging challenges posed by the private sector being granted intellectual property rights on the most fundamental of human right of food.

The world community needs to revisit the legal and the humanitarian considerations of patenting crop varieties often originating from developing countries as well as patenting of life forms. The Book also examines the scientific breakthroughs that have the potential to radically reshape the world's agricultural, and food production. i.e., the gene revolution, bio-technology, natural resource management and the information revolution.



Food in the 21st Century: from Science to Sustainable Agriculture

<https://cgspace.cgiar.org/bitstream/handle/10947/5811/shahbook.pdf?sequence=1&isAllowed=>

The Biotechnology Revolution

<https://www.yumpu.com/en/document/read/15785986/the-bio-technology-revolution-library-cgiar>

1998-1999: Advisor, Earth Council and University Of Peace, San Jose, Costa Rica

The background to the origin of the 1994-2000 Earth Charter originated in 1987, by Maurice Strong and Mikhail Gorbachev as members of The Club of Rome in response to the United Nations World Commission on Environment and Development call for a charter to guide the transition to sustainable development. Subsequently in 1992, the UN -Secretary General Boutros Boutros-Ghali at the Rio de Janeiro Earth Summit called for an Earth Charter, but this did not receive support. In 1994 the Earth Council and Green Cross International respectively, restarted the Earth Charter as a civil society initiative and a series of drafting committee meetings were held over the next 6 years to 2000.

I participated in Earth Charter consultative and drafting meetings in March 1997 at Rio+5 and in June 1999 in San Jose, Costa Rica



Earth Charter in Action Explained by Miriam Vilela

<https://www.youtube.com/watch?v=8mntNdNBp04>

The Preamble to the Earth Charter states, "We stand at a critical moment in Planet Earth's history, a time when humanity must choose the future. As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise.

The World Community must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generation".

I participated in a number of drafting meetings in during 1998 - 1999 at the Earth Council in Costa Rica.

The Rights of Nature was adopted at the IUCN World Conservation Congress in 2016. Whilst the Rights of Nature continue to be reflected in treaties, constitutions, court decisions, and statutory and administrative law at all levels of government, a Universal Declaration of the Rights of Nature still remains to be formally adopted by the World Community. It is important to undertake a Global Public awareness and commitment campaign in this regard as the public will be at forefront of the imperative to protect of Nature

2001: Plenary Presenter, Global Change Open Science Conference, Amsterdam

I had the honour to present, "Food in the 21st Century: Global Climate of Disparities" at the opening Plenary Session on 10th July 2001. Over 1600 persons from about 100 countries met in Amsterdam for the first international Conference organized by all four international research programs on Global Change, the International Geosphere Biosphere Program, the World Climate Research Program, the International Human Dimensions of Global Environmental Change Program and the Biodiversity Program.

The conference led to the Amsterdam Declaration which stated that, "In addition to the threat significant climate change, there is growing concern over the ever-increasing human modification of other aspects of the global environment and the consequent implications for human well-being.

Basic goods and services supplied by the planetary life support system, such as food, water, clean air and an environment conducive to human health, are being affected increasingly by global change. The international global change programmes urge governments, public and private institutions and people of the world to agree that an ethical framework for global stewardship and strategies for Earth System management are urgently needed".

We are living in a unique and defining moment in history. It is unique with respect to the progress in science and technology that has been achieved in the past half century. Beginning with men on the moon in the 1960s and continuing with the green revolution of the 1970s, the information revolution of the 1980s, and the genetic revolution of the 1990s, the 20th century ended with the mapping of the human genome.

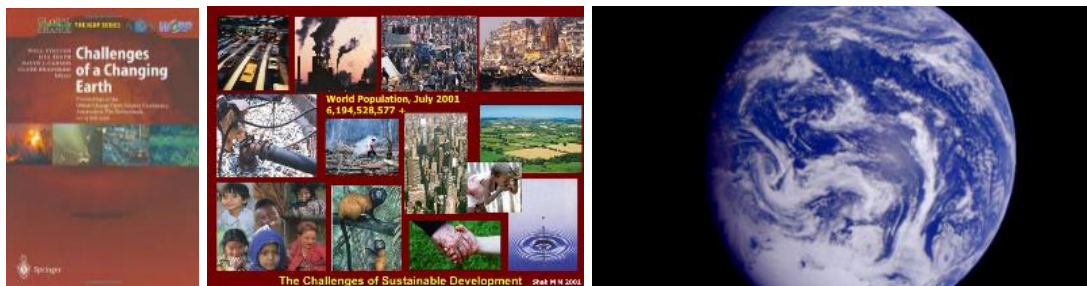
The scientific and technological achievements are formidable accomplishments with significant potential for the future. But today we live in a world of disparities where a fifth of the global population exists in poverty and hunger.

The poor are poor because they lack tangible assets, lack formal education and technical skills and have little access to such basic needs as health care and safe shelter and the poor often face political and social discrimination.

It is knowledge that is available, accessible, and affordable that will drive progress in the 21st century, and perhaps become more relevant than capital. Living at a time of rapid changes and challenges, timely action based on credible and comprehensive information is critical. Information becomes knowledge when it has utility. It needs to be policy relevant, scientifically credible, and available at the right place at the right time.

Knowledge empowers and enables. In an open forum, it promotes synergy, transparency, and accountability. Diverse and disparate as they are, humans are a single species on Earth. They bear responsibility for most of the global changes currently under way.

It seems only right that humanity should give a moment of thought for the many other countless living species that also inhabit the Earth and bear the brunt of the impact of human activities. Threatened with extinction, for example, members of the animal world have no voice and they are not often seen. But their plight must not be forgotten as humankind efforts to secure its own future”.



Climate Widens Gulf: Global Warming could make the Rich Richer and the Poor Poorer
<https://www.nature.com/news/2001/010712/full/news010712-7.html>

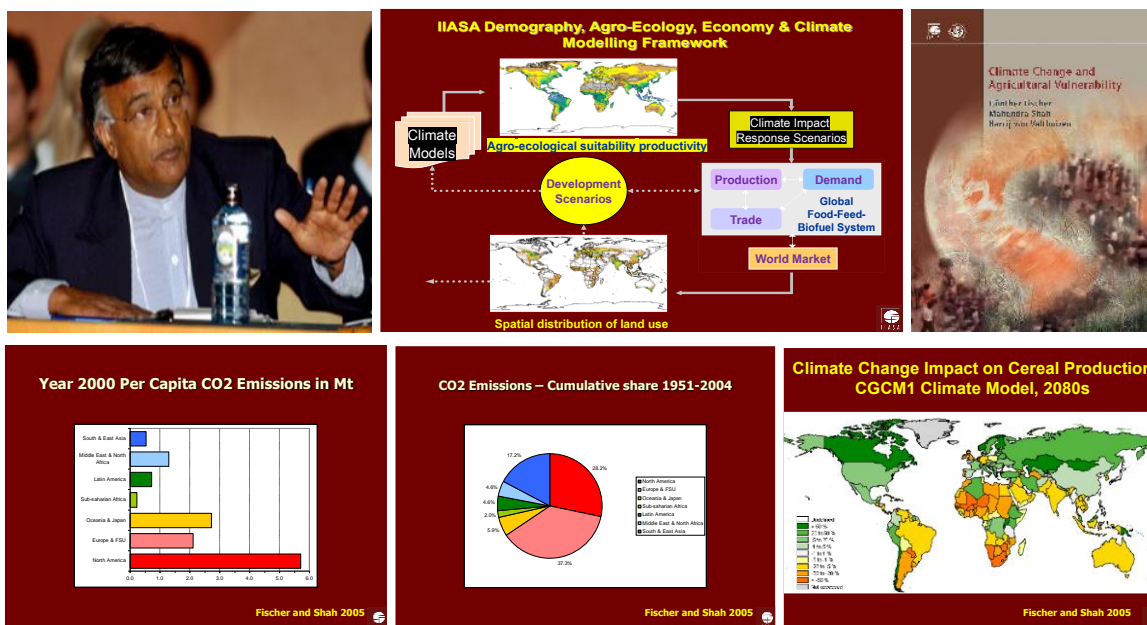
Food production losses predicted by scientists
<https://www.theguardian.com/education/2001/jul/11/internationaleducationnews.highereducation>

Global Warming Local Crop Impacts Forecast
<https://www.nature.com/news/2003/030512/full/news030512-6.html>

2002 Johannesburg World Summit on Sustainable Development (WSSD)

The mantra at WSSD was that the Private Sector generated the economic wealth and livelihoods and the taxes that accounted for the bulk of direct and indirect Government revenues. Whilst Business has the financial and technological capacity to invest in sustainability actions, this requires long-term foresight for corporate and social responsibility.

The Johannesburg Summit concluded with endorsement of some 550 private-public sector sustainable development partnerships but alas three years later in 2005, few agreements were still functioning. I had the honour at WSSD Johannesburg to present the IIASA-UN Report entitled "Climate Change and Agriculture Vulnerability"



2002 WSSD Johannesburg: Climate Change and Agricultural Vulnerability
https://www.researchgate.net/publication/265190876_Climate_Change_and_Agricultural_Vulnerability

Climate Change and Food Security: A TAAS Lecture, 7 May 2010, New Delhi
<https://www.taas.in/documents/pub-sp-03a.pdf>

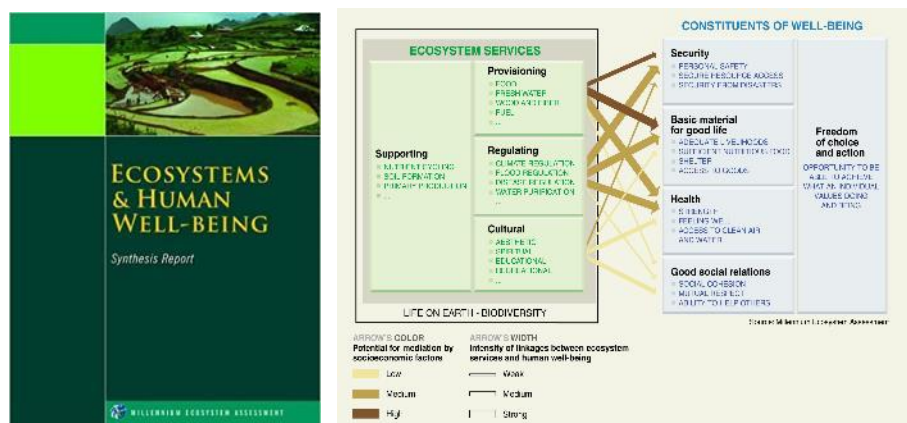
Food Production Losses Predicted by Scientists
<https://www.theguardian.com/education/2001/jul/11/internationaleducationnews.highereducation>

2001-2005 Contributing Lead Author, Millennium Ecosystem Assessment (MEA)

The MEA was called for by the United Nations Secretary-General Kofi Annan in 2000. Initiated in 2001, the objective of the MA was to assess the consequences of ecosystem change for human well-being and to establish the scientific basis for action needed to enhance the conservation and sustainable use of eco-system resources to enhance human well-being.

The MA involved the work of more than 1,360 experts worldwide. Their findings, contained in five technical volumes and six synthesis reports, provide a state-of-the-art scientific appraisal of the conditions and trends in the world's ecosystems and the services they provide, as well as the scientific basis for action to conserve and use them sustainably.

The MEA findings highlighted that human actions are depleting Earth's natural capital, putting such strain on the environment that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted. The MA assessment showed that with appropriate actions it was possible to reverse the degradation of many ecosystem services over the next 50 years, but the changes in policy and practice required were substantial and not currently underway. I had the honour as Lead Co-ordinating Author to prepare the MEA Chapter 6, Food and Ecosystems.



Millennium Ecosystems Assessment, Chapter 5: Food and Ecosystem, Lead Coordinating Author Mahendra Shah
https://www.researchgate.net/publication/265435624_Millennium_Ecosystem_Assessment_Chapter_6_Food_and_Ecosystems

2006 Joy and Sorrow: A Book of Poems for Children in the Rich and in Poor Countries

Background: In early April 2003, I was in London watching the BBC 10 O'clock evening news reporting the plight of an 11-year-old boy, Ali Abbas, laying a bed in a Baghdad hospital, with arms amputated and a blackened burnt body. This brought back memories of my own field visits to Ethiopia and Sudan during the 1984 famine emergency across Sub-Saharan Africa. Ali was the living victim of collateral damage of a missile attack during the US invasion of Iraq in early 2003. In the middle of the night, I sat down and drafted a letter to editor of the Guardian, "The Plight of Ali....Where is the US Air Force, Where is the Royal Air Force, Where is the India Air Force?....Is there no Air Force General that can commandeer a military bomber, and take Ali safely to Washington or London or New Delhi where there is morphine?!" I sent this letter and it was published two days later; and a day later Prime Minister Tony Blair announced in parliament that the Royal Air Force would take Ali to Kuwaiti hospital."

A few weeks later a Anna Ashton, from the United Kingdom wrote to me and asked about who I was and about my work...she had seen the BBC news about the plight of Ali Abbas and read my letter to the Editor in the Guardian Newspaper....I sent Anna some of my written work.

Three years later in 2006, I received a book of poems, entitled "Joy and Sorrow". This book comprising children's' everyday living experiences in the developed and developing world, was dedicated to me and comprised 19 Poems based my presentation at the UN Vienna International Centre, 3rd December 2002.

Over group dinner to celebrate this book of poetry, a friend in Vienna said that it is not often that the words of a scientist are turned into poetry, emphasizing that art and literature are the everlasting heritage of humankind and not material creations.

Poets in our disenchanted world are not hermits, shut away in ivory towers, but creators of a universe where they transmit the human values and worldly knowledge that are essential to forge strong links between humans – transcending beyond Nation States, languages and cultures.

These book of Poems often rings in my head, recalling the humanitarian brilliance of the author in turning words from science, humanity and policy into poems that highlight the joy of life and living of children, be they in the developing or developed world.

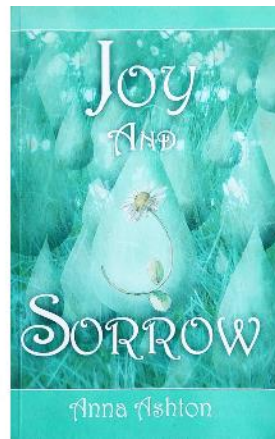
One of these quotes from my presentation, "Can we not share a little more? Achieving Human Security in the 21st Century is not an option, but an imperative. If we fail, it is our great grandchildren, who if alive, will ask why we did not feel the warmth of our hearts and listen to the rational analysis in our heads to share and care for a sustainable One Earth and One World. We will not be there to answer, but it is our responsibility nevertheless"

Dedicated to Dr Mahendra Shah

As we go about our daily lives
We have no time;
Please stop and think.
Reach out a hand to help
Someone; bring joy to those in sorrow

We are one people, the human race.
When we gaze up at the
star-studded sky or feel the
Warmth of the sun, remember –
We share the stars and the sun
With everyone
Can we not share a little more

19 Poems based on quotes from Dr Mahendra Shah,
taken from his speech at the Vienna International
Center Copyright, Dr Mahendra Shah, 3 Dec 2002.



Joy and Sorrow, Anna Ashton, Athena Press, London, May 200

<https://www.amazon.com/Joy-Sorrow-Anna>

Ashton/dp/1844011895/ref=sr_1_3?dchild=1&qid=1609648117&refinements=p_27%3AAnna+Ashton&s=books&sr=1-3

2006 Pontifical Academy: Interactions between Global Change and Human Health

In spite of numerous international commitments made over the last three decades to improve food, water, and health security in the developing world, some 840 million people remain undernourished, over 1.2 billion lack access to safe water, and more than 2.5 billion are at risk of infectious diseases, of which just six account for over 90% of the 13 million deaths a year. The world population is projected to increase by some 50% to reach 9 billion over the next five decades. This growth, combined with economic growth and increasing consumption and pollution, will result in substantial ecological pressures on land, water, the atmosphere, and biological resources. Global environmental change, especially climate change, will lead to ecological changes that will likely cause higher levels of disease-causing pathogens and parasites.

There is a critical need for integrated climate, ecology, economy, and demographic (CEED) assessments to identify those ecosystems and populations that will be most at risk under conditions of global environmental change. These assessments require spatial analyses by differential vulnerability of ecosystems and population etc. to target policies to and the threats of food, water, and health insecurity.

We developed an integrated CEED methodology and a policy modelling framework for the assessment of the evolution of the World Food System in the 21st century, under various future scenarios of population growth, economic growth, environmental change and Infectious Diseases. A global ecological database, comprising spatial data on land, water, forests, population etc. is combination with national and regional general equilibrium economy models that are embedded in the global agricultural economy. This CEED systems analytic approach, particularly the spatial global ecological database and methodology, is suited to the assessment of alternative futures and policy options. I had the honour to present this study at the Pontifical Academy, The Vatican in Rome



The Interactions between Global Change and Human Health
Pontifical Academy of Sciences, Scripta Varia 106, Vatican City, ISBN 88-7761-085-9, 2006
<http://www.pas.va/content/dam/accademia/pdf/sv106/sv106-shah.pdf>

The 2005-2015 Millennium Development Goals (MDGs)

The eight MDGs comprised Eradication of Extreme Poverty and Hunger, Universal Primary Education, Promote Gender Equality and Empower Women, Reduce Child Mortality, Improve Maternal Health, Combat HIV-AIDS, Malaria and other Diseases, Ensure Environmental Sustainability and establish Global Partnerships for Development.



Millennium Development Goals Report 2015, Summary

https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20Summary%20web_english.pdf

The MDGs, being precise, quantifiable and monitorable were a strategically welcome and timely beginning at the dawn of the 3rd Millennium, reshaping decision-making in developed and developing countries alike. The MDGs were the dominating development paradigm at the beginning of the 3rd Millennium. They contributed to lifting more than one billion people out of extreme poverty, to make inroads against hunger, to enable more girls to attend schools. The MDGs also resulted in new and innovative partnerships, galvanized public opinion and showed the immense value of setting ambitious goals. By putting people and their immediate needs at the forefront, the MDGs reshaped decision-making in developed and developing countries alike.

2015-2030 Sustainable Development Goals (SDGs)

The 2015-2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries, developed and developing, in a global partnership. The SDGs recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – whilst tackling climate change and working to preserve our life under water and on land



The Nexus of Sustainable Development Goals: Human Rights and Nature Rights

https://www.researchgate.net/publication/347306830_Diversity_and_Sustainability_The_Nexus_of_Sustainable_Development_Goals_Human_Rights_Nature_Rights_Partnerships_Governance_and_Financing_SDGs

The SDGs explicitly recognises meeting basic human needs, Re Human Rights, and the protection of Nature, Re: Rights of Nature as well as economic growth, equitable development and Governance enhancing Progress, Prosperity, Peace and Justice. Thus universal and broadly defined SDGs are relevant to practical policy formulation as well as mobilising the implementation means and actions for worldwide sustainable Development challenges of sustainable development in Harmony with Nature. The seventeen SDGs are interconnected and interdependent and it is important to explicitly consider and incorporate the interlinkages such that outcomes of the SDGs can form the basis for policy analysis and formulation towards mobilizing practical implementation means and actions

The 136 interlinkages between seventeen SDGs presents a formidable methodological and data challenges. We propose a partitioning approach to combine the "strongly" interlinked SDGs in specific subsystems and subsequently link the subsystems. A logical framework to identify the subsystems results grouping SDGs in four subsystems, namely Human Rights with seven Basic Human Needs SDGs, Nature Rights with three main natural resources and additional SDGs relating to sustainable utility of these resources, Economy with growth, inequality, innovation and sustainable cities SDGs and finally Governance with Peace and Partnerships SDGs.

The above four subsystem formulation results into some 40 interlinkages, a reduction of 75% from the total for the seventeen SDGs as separate entities. We are further analysing the number of the above four subsystems grouping from the view point of being "actionable" in the context of data availability, measurability, monitoring and evaluation. The partitioning approach to divide a large and complex system into sub-systems present an opportunity to comprehend and thus enhances the possibility of optimal sustainability policy actions and strengthening the means of implementation

It is forty eight years since the Stockholm Conference, twenty eight years since the Rio Earth Summit and twenty years since the Millennium Development Goals and we must ponder if we are really moving towards global sustainability in our interdependent and interconnected World. At present we are a third of way to deliver the SDGs, an imperative of Sustainable Development in harmony with Nature for a world of Progress, Peace and Prosperity for all. Whilst the developed countries is on their social and environmental policies, the developing countries focus is on economic and social policies as well environmental policies towards achieving Sustainable Development.

Climate Change and Climate Goals 2030

In 1987 the UN General Assembly gave real impetus to environmental issues adopted the Environmental Perspective to the Year 2000 and Beyond -- a framework to guide national action and international cooperation on policies and programmes aimed at achieving environmentally sound development. This Perspective underlined the relationship between environment and development and for the first time introduced the notion of sustainable development.

During 1988, global warming and the depletion of the ozone layer became increasingly prominent in the international public debate and political agenda. The Intergovernmental Panel on Climate Change (IPCC), a forum for the examination of greenhouse warming and global climate change, was established and met for the first time in November 1988. In 1990 the World Climate Conference highlighted that climate change was a global problem requiring a global response. It called for negotiations to begin on a framework convention. The UN General Assembly decided to convene the United Nations Conference on Environment and Development In 1992, referred to as the Earth Summit.

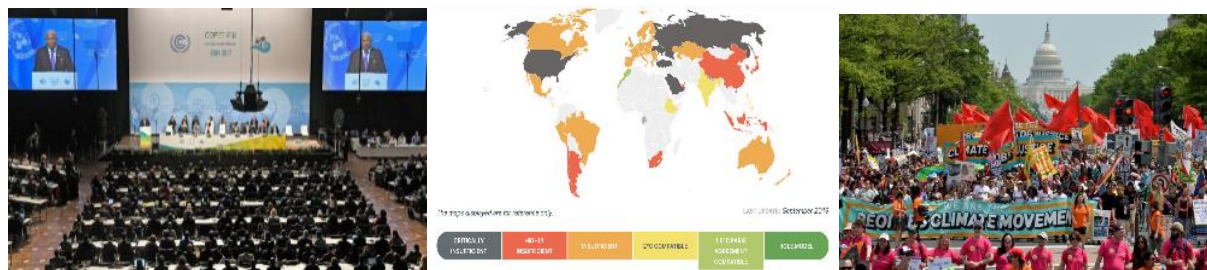
The United Nations Climate Change Conferences in 1995 and 1996 negotiate the Kyoto Protocol and this was established in 1997 to establish legally binding obligations for developed countries to reduce their Carbon Dioxide emissions and other Greenhouse Gases by at least 5 per cent below the 1990 levels in the commitment period of 2008 to 2012.

The Kyoto Protocol, which opened for signature in March 1998, came into force in February 2005. During the period 1995 to 2020, annually the "Conference of the Parties Serving as the Meeting of Parties to the Kyoto Protocol" (COP) were convened. In 1999 I was staff member of the World Bank and had the opportunity to attend the COP5 meeting in Bonn. I further attended the COP6 in Nairobi in 2006 and COP7 in Bali in 2007.



Philosophical Transactions of The Royal Society: Socio-economic and Climate Change
https://www.researchgate.net/publication/7340593_Socio-economic_and_climate_change_impacts_on_agriculture_An_integrated_assessment_1990-2080

To achieve the 2016 Paris Agreement's most ambitious goal of keeping global warming below 1.5°C (2.7°F) above pre-industrial levels requires reducing global greenhouse gas (GHG) emissions by 50 percent by 2030. An analysis of current commitments to reduce emissions between 2020 and 2030 shows that almost 75 percent of the climate pledges are partially or totally insufficient to contribute to reducing GHG emissions by 50 percent by 2030. Of the 184 climate pledges, 36 were deemed sufficient (20 percent), 12 partially sufficient (6 percent), 8 partially insufficient (4 percent) and 128 insufficient (70 percent).



The Paris Climate Agreement, legally binding international treaty on climate change, December 2015
<https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

All countries need to reduce emissions to meet the Paris Agreement targets, although not all countries have equal responsibility because of the principle of differentiated responsibility, historical emissions, current per person emissions and the need to develop. Emissions from the top four emitters combined account for 56 percent of global GHG emissions – China (27 percent), the United States (13 percent), the European Union and its 28 Member States (9 percent) and India (7 percent). The climate pledges are voluntary, technicalities, loopholes and conditions continue to postpone decisive global action to reduce emissions and address climate change.

1945-2021 World Food Security Summits: 75 Years of Promises to End World Hunger

1948 Everyone has the right to a standard of living adequate for the health and well-being, including food
 1974 End the age-old scourge of hunger, World Food Conference
 1996 Halve the world's 800 million hungry by 2015, World Food Summit for Food Security
 2000 Combat Hunger, no timeline, Millennium Declaration
 2002 Guidelines on the right to food, World Food Summit
 2005 MDG, Halve the proportion of people who suffer from hunger by 2015
 2009 Eradicate hunger at the earliest possible date, World Food Summit on Food Security
 2015 End hunger, achieve food security and improved nutrition, SDGs 2030
 2021 Raise global awareness, actions transforming food systems to resolve hunger & reduce diet-related disease

Some 75 Years of promises of ending world hunger with shifting goals from first World Food Conference in 1974 to “eradicate hunger”, to second World Food Summit in 1996 to “Halve the world’s 800 million hungry by 2015”, to the third World Food Summit in 2002 “Guidelines on the right to food” to the fourth World Food Summit on Food Security in 2009 to “Eradicate hunger at the earliest possible date”.

It is more than seven decades since Mahatma Gandhi stressed, “The world has enough for everyone’s needs, but not everyone’s greed”. Today about 820 million people today go hungry every day, and some 2 billion live on less than two dollars a day. Every minute of every day, 15 children and 15 adults die of hunger in the developing world. Without social, economic, and scientific progress, by the middle of the 21st century more than a third of the world’s expected population of some 9 billion could be living in poverty.

The poor are poor because they lack tangible assets, formal education, technical skills and inadequate access to health care. Moreover, the poor are often discriminated against, both politically and socially. Whilst I have had the honour to attend all four World Food Summits, sadly I cannot recall ever seeing the faces of hunger or hearing the voices of hunger at food as a human right deliberations and dialogue by the world’s political leaders at the these four food security summits.



Poverty and Food Insecurity: A threat to billions

<https://iiasa.ac.at/web/home/resources/publications/IIASAMagazineOptions/opt09sum.pdf>

Africa: Food Security, Agriculture and Climate Change

<https://allafrica.com/stories/200301230608.html>

2001 to 2009, Senior Scientist, Integrated Ecology-Economy Modelling and Policy

I returned to IIASA in 2001 and for the next 8 Years my work focussed on,

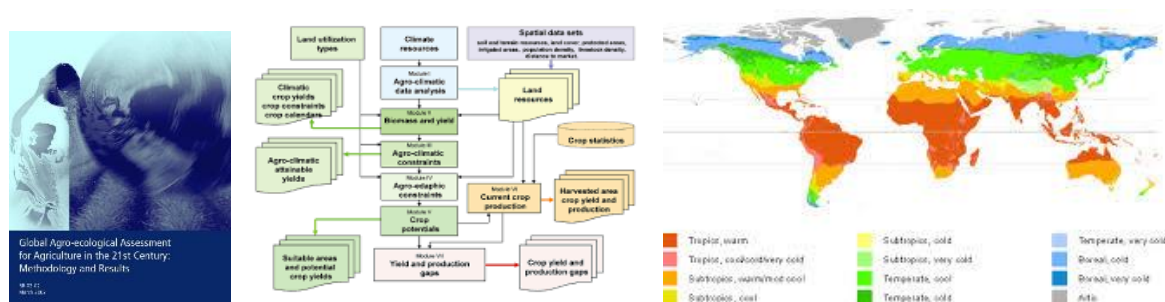
- During 2001-2002, we completed and published the FAO /IIASA Global Agro-Ecological Zones Assessment for Food in the 21st Century – Methodology and Results
- During 2001-2002, we also Integrated Global AEZ methodology, model and spatial data base with IIASA’s World Food System Model, providing a state-of-the-art ecological-economic modelling and policy analysis framework, incorporating of various Climate Change Models and IPCC Future Development Scenarios. In 2001, the United Nations commissioned us to prepare a report, Climate Change and Agricultural Vulnerability, which I had the honour to present at the July 2002 Johannesburg World Summit on Sustainable Development.
- In 2004, we were invited to submit a Scientific and Policy paper, “Socio-economic and climate change impacts on agriculture: An integrated assessment, 1990-2080” was published in the 2005 Philosophical Transactions of the Royal Society
- In 2008, OPEC Fund for International Development commissioned us to prepare a global assessment report, “Biofuels and Food Security”, which I had the honour to present at the Fourth OPEC seminar in July 2009
- During 2008-2009 I was appointed as Dean of the IIASA Young Scientists Summer Program
- During 2008-2010, the World Bank commissioned us to prepare a report comprising tabulated data, maps and analytical information on the issues of World Arable Land Resources, Food and Agricultural Production Potentials in “surplus” land, social, environmental, economic and logistic consideration towards identifying target countries for sustainable and equitable International Agricultural Investments. I had the honour to present these results at a World Bank seminar in 2010. In 2011 the World Bank published a report, “Rising Interest in International Farmland and Investments - Can

it Yield Sustainable and Equitable Benefits?'. This report included most of the tabulated data and information that we had prepared in 2008-2010.

The highlights of the above work are presented in the following sections

Food and Agriculture Organization of the United Nations (FAO) and the International Institute for Applied Systems Analysis (IIASA) have developed the Global Agro-Ecological Zones (GAEZ) methodology over the past 30 years for assessing agricultural resources and potential. Rapid developments in information technology have produced increasingly detailed and manifold global databases, which made the first global AEZ assessment possible in 2000. Since then global GAEZ assessments have been performed every few years. With each update of the system, the issues addressed, the size of the database, and the number of results have multiplied. This is the most ambitious assessment yet and the goal is to make publicly available the entire database and all results of this assessment. This amounts to many terabytes of data covering five thematic areas:

- Land and water resources, including soil resources, terrain resources, land cover, protected areas and selected socio economic and demographic data
- Agro-climatic resources, including a variety of climatic indicators
- Suitability and potential yields for up to 280 crops/land utilization types under alternative input and management levels for historical, current and future climate conditions
- Downscaled actual yields and production of main crop commodities, and Yield and production gaps in terms of ratios and differences between actual yield and production and potentials for main crops

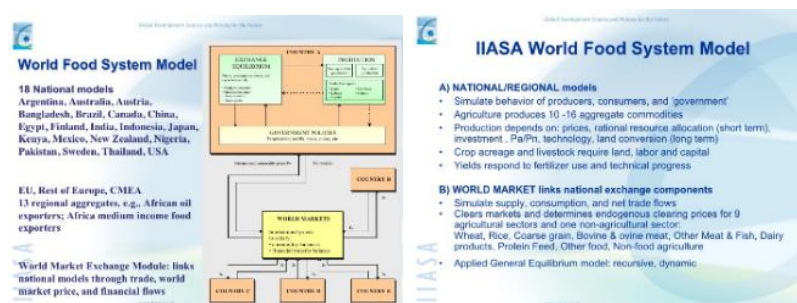


Global Agro-Ecological Zone Assessment in the 21st Century

<https://www.yumpu.com/en/document/read/6355401/gaez-2002-iiasa>

2001-2009 IIASA World Food Systems Model

The world food system model comprises a series of national and regional agricultural economic models. It provides a framework for analysing the world food system, viewing national food and agricultural components as embedded in national economies, which in turn interact with each other at the international trade level. The WFS analyses—in annual steps—how much food will be produced and consumed in the world, where it will be produced and consumed, and the trade and financial flows related to such activities. For the purpose of international linkages, the production, consumption, and trade of goods and services of a country are aggregated into nine main agricultural sectors and one non-agricultural sector.



IIASA World Food System Model

<http://pure.iiasa.ac.at/id/eprint/1589/1/SR-81-002.pdf>

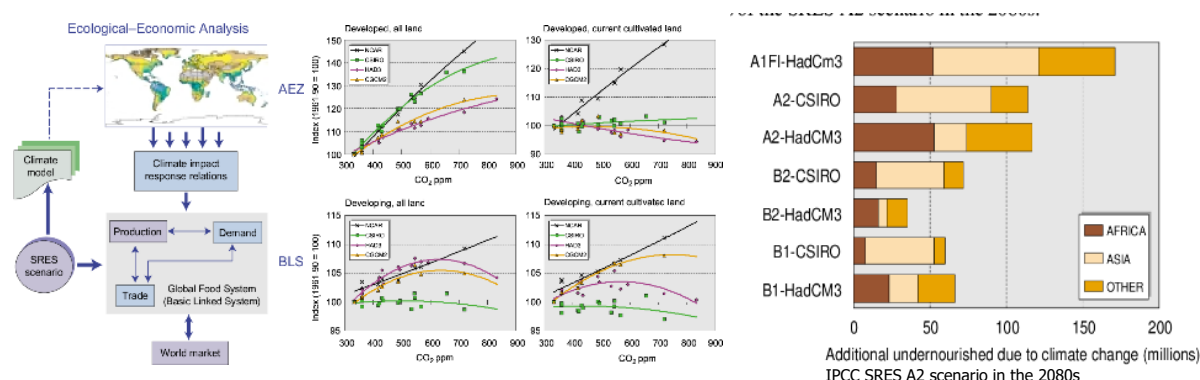
The Integration of GAEZ and IIASA World Food and Agriculture Systems Modelling, covering most developed and developing countries and regions, became a state of the art ecological-economic-demographic-climate-futures scenarios assessments and policy analysis.

2002 Presenter, Johannesburg WSSD “Climate Change & Agriculture Vulnerability”

This study, commissioned by the United Nations and prepared by the International Institute for Applied Systems Analysis for the 2002 WSSD, makes an important contribution to sustainable agricultural development by spatially quantifying the agro-ecological impacts of climate change, assessed within the economic context of the world food system.

This study, with global coverage of all countries, developed and developing integrates spatial agro-ecological potentials into a world economic and trade policy framework and evaluates the impact of climate-change projections by the major General Circulation Models, as well as all the scenarios of the Third Assessment of the Intergovernmental Panel on Climate Change. The policy implications and resource information provide an ecological–economic systems framework for sustainable agricultural development in the medium and long term. Detailed results are available for all countries.

I had the honour to present IIASA/FAO Climate Change and Agricultural Vulnerability Report at WSSD Johannesburg, July 2002



IIASA/UN WSSD 2000 Climate Change and Agricultural Vulnerability

https://www.researchgate.net/publication/265190876_Climate_Change_and_Agricultural_Vulnerability

2005: Philosophical Transactions of The Royal Society

“Socio-economic and climate change impacts on agriculture: An integrated assessment, 1990-2080”

A comprehensive assessment of the impacts of climate change on agro-ecosystems over this century is developed, up to 2080 and at a global level, albeit with significant regional detail. To this end an integrated ecological-economic modelling framework is employed, encompassing climate scenarios, agro-ecological zoning information, socio-economic drivers, as well as world food trade dynamics. Specifically, global simulations are performed using the FAO/IIASA agro-ecological zone model, in conjunction with IIASA's global food system model, using climate variables from five different general circulation models, under four different socio-economic scenarios from the intergovernmental panel on climate change.

The impacts of different scenarios of climate change on bio-physical soil and crop growth determinants of yield are evaluated on a 5' X 5' latitude/longitude global grid; second, the extent of potential agricultural related potential crop production is computed. The detailed bio-physical results are then fed into an economic analysis, to assess how climate impacts may interact with alternative development pathways, and key trends expected over this century for food demand and production, and trade, as well as key composite indices such as risk of hunger and malnutrition, are computed.

This modelling approach connects the relevant bio-physical and socio-economic variables within a unified and coherent framework to produce a global assessment of food production and security under climate change. The results from the study suggest that critical impact asymmetries due to both climate and socio-economic structures may deepen current production and consumption gaps between developed and developing world; it is suggested that adaptation of agricultural techniques will be central to limit potential damages under climate change.

Socio-economic and climate change impacts on agriculture: An integrated assessment, 1990-2080

<https://royalsocietypublishing.org/doi/full/10.1098/rstb.2005.1744>

2002 WSSD Johannesburg: Climate Change and Agricultural Vulnerability

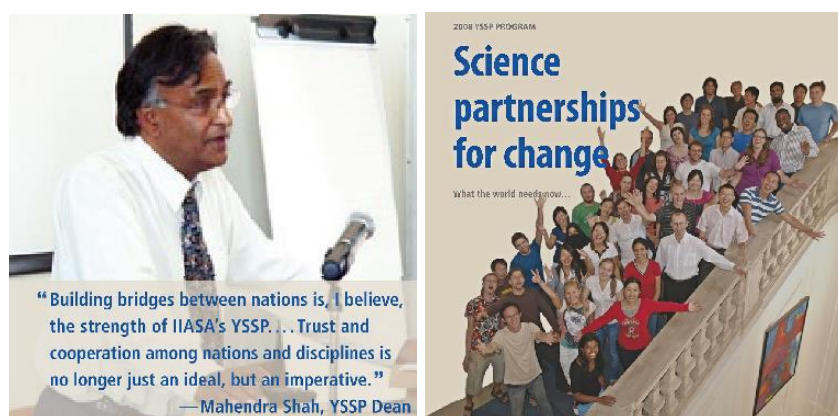
https://www.researchgate.net/publication/265190876_Climate_Change_and_Agricultural_Vulnerability

2008-2009 Dean of IIASA Young Scientists Summer Program

This unique annual 3 months Young Scientists Summer Program (YSSP) brings together some 50 multinational and multidisciplinary PhD students from around the world to work at IIASA on their own thesis research project or a related topic of interest as well as attending seminars, participating in debates social “fun” activities.

The participants find the international and interdisciplinary atmosphere simulating, and they quickly accept systems thinking, systems analysis and systemic actions to tackle “real” world problems as well as interacting with their IIASA supervisor scientist. Over the years an extensive international network of YSSP alumni has evolved with many continue to stay connected in their professional as well as in friendship.

The IIASA YSSP has over the last decade contributed to “Building Trust, Science, Research and Policy Networks” that collaborate and contribute knowledge and policy analysis with regard to National, Regional and Global social, environmental and economic issues and challenges and the best benefit for me as Dean is being surrounded by eager young graduate multidisciplinary researcher from around the world. Everyday a new issue to discuss and it hits me in that is what I need to stay forever young.



Young Scientists Partnership for Change

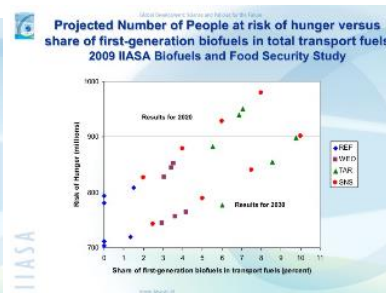
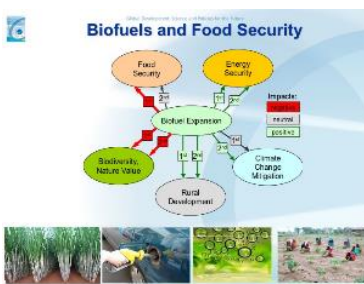
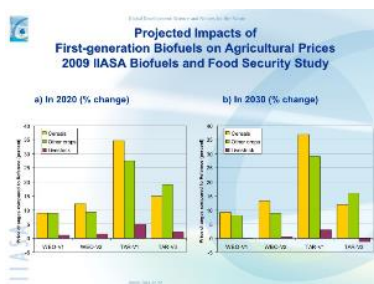
<https://iiasa.ac.at/web/home/resources/publications/IIASAMagazineOptions/opt-0809wint.pdf>

2008-2009 Lead Co-Author, IIASA/OFID Biofuels and Food Security Study

During the first decade of the 21st century, there had been a growing public concern around the world for policy actions to confront climate change. In 2008, Germany was the first country to announce specific policy actions to grow biofuels towards “reducing” carbon emissions and thus climate change. Soon after, another 20 countries joined the stampede and adopted time-bound policy targets to produce biofuels.

The OPEC Fund for International Development (OFID) commissioned the Food and Agricultural group at IIASA to produce an independent scientific and policy relevant report on the impacts of growing biofuels on food prices, food security, deforestation and degradation, carbon emissions and climate change. The report highlighted that first generation biofuel crops, for example corn in the USA, rapeseed in Europe, Jatropha in Mozambique and cassava in Thailand and would not result in any carbon savings and in fact would lead to deforestation, degradation, higher food prices and increased world food insecurity.





Biofuels and Food Security Book

<https://www.globalpolicy.org/world-hunger/trade-and-food-production-system/50804-biofuels-may-push-120-million-into-hunger-qatars-shah-says.html?itemid=id#1081>

4th OPEC International Seminar 2009, Hofburg Palace, Vienna

<https://opecfund.org/var/site/storage/original/application/970bbce882ec6f7129419164fb8017f1.pdf>

IIASA/OFID Biofuel and Food Security

<http://pure.iiasa.ac.at/id/eprint/8969/1/XO-09-102.pdf>

Our Biofuels and Food Security report was highly commended by the international scientific and policy community for its global, regional and national coverage and systemic analytical assessments, that captured the reality of escalating food prices and consequential food riots, as in many food insecure countries, for example Mexico, Haiti, Mauritania, Egypt and Bangladesh. Estimates indicated that high food prices increased the number of food insecure people worldwide by about 100 million in 2008-2009. I had the honour to present the results and policy implications of this study at the OPEC Seminar, 15th March 2009.

The OFID-IIASA report became a subject of the Wikileaks as a IIASA national council member, representing the country's agricultural lobby, pressurised the IIASA Directorate to stop the publication of the report. In fact the IIASA Director had previously written a "glowing" Forward to the report, Guenther Fischer and I, the principal authors of the report, were suspended and forbidden to enter the Institute for some 10 days. An independent mediator was brought in and after a number of sessions, I informed the mediator after 17 years with the Institute, I could not ethically and moral continue at IIASA founded on the principles of academic freedom and independent research. The mediator negotiated a severance package including an apology by the Directorate in the Austrian Newspaper Der Standard, which had previously published an article on the report controversy and crisis.

To this day we are not aware of what the controversy was. We guess it was the main conclusion of the report that the first generation biofuels would result in increased food insecurity and higher food prices as there would be land transformation from growing food to growing biofuels. We were also accused of reaching this conclusion under pressure of OPEC and we categorically confirm that OFID did not ask us to change a single word in the over 300 page report. In fact [World Bank](#) policy research working paper released in July 2008 had reported "...large increases in biofuels production in the United States and Europe are the main reason behind the steep rise in global food prices". The period 2008 to 2012 saw increased volatility of the food prices and a food crisis around the world in line with our simulation results.

Thus came an end to my 17-years of very productive and gratifying science and policy carrier at IIASA. As it happened, within a matter of weeks of leaving, I was appointed as Director of Qatar National Food Security Program in Doha.

2009-2011 Qatar National Food Security Program and Global Dryland and Alliance

In 2008, Qatar imported some 90% of its food, 40% of which entered through its border with Saudi Arabia. The vulnerability to rising international food commodity prices highlighted the need to reduce the heavy dependence on imported grains and food items.

The urgency to develop a comprehensive food security policy led to the establishment of the Qatar National Food Security Program (QNFSP) in 2009 and with a goal to reduce Qatar's reliance on food imports through viable self-sufficiency for specific food commodities. QNFSP developed a master plan framework in conjunction with international consultants and experts as well as NGOs to develop practices to utilize domestic resources efficiently within the agricultural sector as well as strengthening the reliability of food imports from abroad.

I was appointed as Director of the Qatar National Food Security Program in 2009. The challenge we faced was to address the situation by aiming to efficiently utilize advanced agricultural technologies, especially efficient irrigation and hydroponic systems, to establish a sustainable approach to food security in a dry land environment with scarce water resources and a total area of arable land of some 2700 ha comprising some 1200 ha of vegetable crops and 1500 ha of field crops.

The QNFSP established a Task Force comprised of 17 departments and institutions from across the government and private sector. Regular monthly meetings were held to review a number of contracted international companies proposals on planning Qatar's food security strategy and from these the goals was to select components that best fitted with QNFSP's framework and strategy

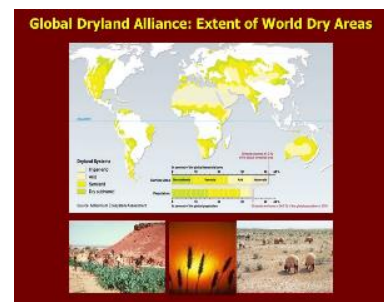
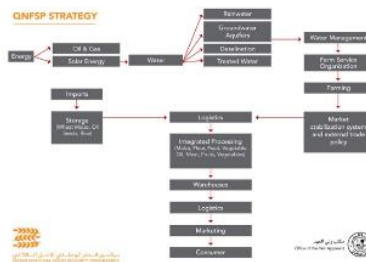
There was recognition and commitment by the Task Force to include local Qatari farmers, who own a total of 1,400 farms, of which some 200 farms utilized modern technologies to produce vegetables in open irrigated land during cool seasons while others produce eggs and dairy products for the local market. The highest priority related to desalination to secure water for agriculture and to recharge the depleted ground-water aquifers as emergency reservoirs

The Government, recognizing the need for secure food imports in 2008 established Hassad Food Company (HFC), a subsidiary of Qatar Investment Authority, to invest in large-scale farms leased and/or bought overseas to supplement domestic supply. HFC made good progress, operating farms in Qatar, Australia and Oman with ambitious strategic investment partnerships in South America, Africa and Asia.

The food security sector in Qatar includes hundreds of small and medium enterprises (SMEs) involved in food import and distribution. Whilst the SMEs in Qatar are either foreign-owned, private entities, or publicly listed companies, reforms for the SME sector was needed to enhance competition and innovation in the food import sector to reduce the risks of political, climatic and/or disease-related supply disruptions. There was recognition that Qatar had no choice but to introduce "best practices" and a farming business model that stressed economic efficiency, optimal use of scarce resources, minimum impact on the environment and profitable and sustainable agriculture.

Qatar also took a global initiative at the United Nations to establish an international Global Dryland Alliance bringing together dryland countries to share information and form partnerships to develop innovative solution for dryland agriculture, which affected a third of the world's arable land and comprised some 40% of the world's farmers. GDLA was announced by the Emir of Qatar, at the 68th UN General Assembly and many countries commended Qatar for this timely and urgent initiative in view of the consequences of climate change

My two year assignment at QNFSP until 2011 was eye-opening for me as it made me realize that my work on World Food Security and Sustainable Development issues at the international level since 1970 needed grassroot adaptation as in the challenging agricultural environment in Qatar. This on the ground experiences and innovations are essential to make progress towards food security for all.



Qatar to Lead the World in Sustainable Food Security Solutions in Dry Lands
<http://www.qatarisbooming.com/article/qatar-lead-world-sustainable-food-security-solutions-drylands>

Food: The Big Fight
<https://www.farmlandgrab.org/post/view/18203-food-the-big-fright>

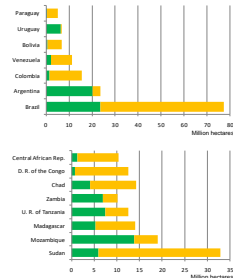
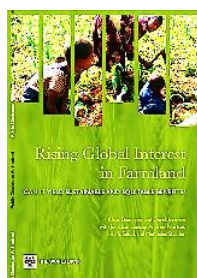
INTERVIEW-Qatar in talks to buy Argentina, Ukraine farmland
<https://www.reuters.com/article/land-qatar-idAFLDE69C1P420101013>

Nature Middle East: Gulf Cooperation Council food security: balancing the equation
<https://www.natureasia.com/en/nmiddleeast/article/10.1038/nmiddleeast.2010.141>

2009-2011 World Bank Rising Global Interest in Farmland Investments

This study provides key pieces of information needed for informed debate about large-scale acquisition by drawing on the experience from past expansions, discussing predictions for potential future demand, and providing empirical evidence of what is happening on the ground in the countries most affected by the recent increase in demand for land. It complements demand side considerations with a detailed assessment of the amount of land, whether currently cultivated or not, that might potentially be available for agricultural cultivation at the global and country levels. It then describes in some detail the policies in place to manage acquisition processes and analyses how these policies may affect outcomes.

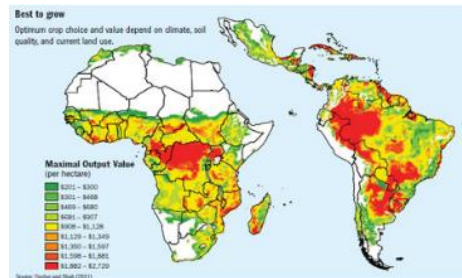
This information can help governments in abundant countries to assess how best to integrate increased demand for and into their rural development strategies and provide opportunities and benefits to all involved, including existing smallholders. This is particularly important as many of these countries also have high yield gaps. It also highlights how, in cases where acquisition by large investors makes sense from a social, economic, and environmental perspective, governments can create an environment that can help to attract outside investment that contributes to broad-based growth and poverty reduction”.



Countries with large extents of potential highly productive land

Note: The diagrams show extents of land currently classified as grass/woodland outside 'No-Go' areas and with an estimated NVP exceeding 1000 US\$/ha, based on assessment of nine major agricultural crops (maize, sorghum, wheat, soybean, groundnut, oil palm, sugar cane, cassava, cotton).

Fischer and Shah 2011



<https://openknowledge.worldbank.org/bitstream/handle/10986/2263/594630PUB0ID1810Box358282B01PUBLIC1.pdf?sequence=1&isAllowed=y>

Note : Tabulated Information provided Guenther Fischer and Mahendra Shah

2011: Aqiess RAINAID Weather Intervention

Severe weather events have increased in frequency and destructive force over the last decades and trends indicate increased threat of hurricanes, tornadoes, drought, flooding, and temperature extremes over the years to come. Disaster survival depends on pre-disaster preparedness as well as post-disaster response,

including for example protective infrastructure, well-equipped emergency services and population-evacuation



Aquiess RAIN MAKERS Citizen TV Kenya
<http://www.youtube.com/watch?v=T03aSy6ndXA>

Aquiess Kenya Television Network Interview
<http://www.youtube.com/watch?v=zUShbNSj5sQ>

Pre-disaster preparedness requires accurate forecasting and early information dissemination. Advanced toolsets are now emerging utilizing supercomputing and threat analysis, combined with advanced-automated telecommunications, provide disaster intelligence ahead of real-time for decision support. In recent years there has been considerable improvement in the forecasters' ability to predict severe weather conditions, both in accuracy, scope, location, pathways and intensity.

Recent advances in weather sensing systems, supercomputing and modelling provide for an improved assimilation of vast data-sets, resulting in advanced real-time decision support systems, for Governments, emergency services and humanitarian operations. For example instead of providing meteorological warnings on weather world-wide, we need to provide warnings based on likely damage-threat and human vulnerability.

Some systems have been developed such as chemically based cloud-seeding delivered via aircraft or rockets, through to electromagnetic, broadcast signals. At Aquiess, we have developed a system which uses non-linear algorithms to determine electromagnetic pulses which can create atmospheric perturbations. Aquiess technology can deploy such 'perturbations' across 3D-atmospheric-airmass-targets, within a timeframe of hours-days-months, to generate incremental changes.

Applications of this technology range from the adjustment of single or multiple rainfall delivery across broad geographic targets. The goal of the Aquiess system is to direct oceanic rain into target areas or alter the course/behaviour of existing threatening weather systems such as hurricanes or other extreme weather events. The key attributes of Aquiess Weather Modification Technology comprised

- Does not require atmospheric heating.
- Requires very low levels of power
- Projects power into precise geospatial locations to induce a series of small controlled atmospheric disturbances [capable of steering chaotic events].
- Gently induces weather fronts to alter their course or rotate to induce the desired effect.
- Provides a subtle level of control over developing severe weather systems.
- Does not rely on cloud seeding with silver iodide, polymers, or other chemicals, carbon black, metallic chaff, dry ice, fires, ionization of the atmosphere, or explosives
- Provides a highly cost---effective weather mitigation capability.
- Produces a low energy technology that is virtually undetectable.

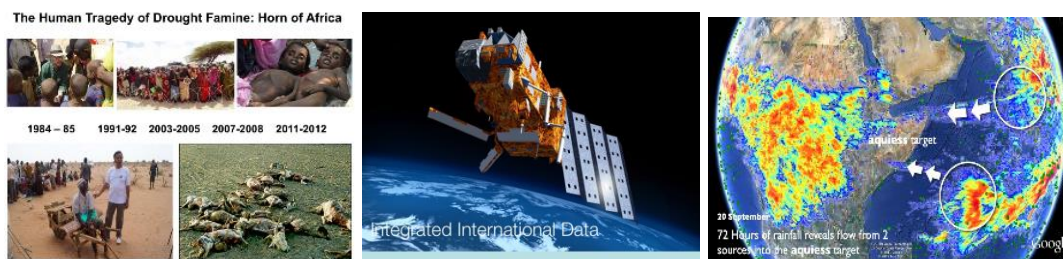
Several governments, including the Soviet Union with their woodpecker system and the United States with their HAARP system, have been using ultra---high---power radio wave systems to selectively heat portions of the ionosphere. Although much of this research is highly classified, several unclassified reports claim that one of the intended uses for this technology is weather modification.



AquieSS Statement by Dr Mahendra Shah FAO Rome 18 August 2011

<http://www.youtube.com/watch?v=8fA5aNki0EU>

At the UNFAO Emergency in the Horn of Africa meeting on 18th August 2011 in Rome, AquieSS made a commitment to mobilize its RAINAID technology: "we today undertake to deliver gentle rain within the next 45 days to break and end the drought and in particular extend the coming short rainy season". We have cultivated two oceanic sources of gentle soaking rain and drawn the oceanic rains across the Arabian Sea to the Horn of Africa, notably in Somalia, Northern Kenya, Sudan and Ethiopia. AquieSS's RAINAID technology was seen as critical to break the persistent drought conditions and bring much needed rain in the Horn of Africa, as shown in the above illustration. The rain is the key to recovery in the area, which has been seriously affected by repeated failed harvests and cycles of drought which have destroyed livestock and crops and left its populations facing famine.



<https://www.theguardian.com/global-development/2013/may/02/somalia-famine-worst-25-years>
<https://qatartoday.tumblr.com/post/11056553348/the-rainmakers>

AquieSS David Miles and Mahendra Shah visit Dadaab and Wajir, Somalia, 3rd August 2011

<https://www.youtube.com/watch?v=MBA5ofDCBos&t=3s>

AquieSS Joint Speech segment.mov : Global Rain Project

<http://www.youtube.com/watch?v=B6-a2eUW3-k>

2012 : UN 1992 RIO+20 Conference in Rio de Janeiro

Background: Whilst attending the RIO 1992 Earth Summit, one evening I had a dream about the animals of the World meeting in the Amazon and discussing, What was going on in Nature?, Who was doing it all and why? What did mean it all mean for the animal species of the World? Next evening I was in a UNCED car with Ted Turner and Jane Fonda going to a dinner reception. I described my dream to both of them and the response was that I should write up a summary of the idea and register it at US Library of Congress. Needless to say I did that a few weeks later.

At the Rio+20 in 2012, a Book, entitled "Visions of the Living Earth", sponsored by the Shumei Corporation of Japan and Navdanya of India was launched to celebrate the 20th Anniversary of Rio1992. This Book comprised 30 Chapters by invited individual authors.

I had the honour to write Chapter 30 entitled "Sustainable Development and Survival of Nature: To be or Not to be", a summary of a Book manuscript, "Nature and Humanity: A nexus of Survival" that I am currently finalizing.

Visions of the Living Earth: A Joint Book Project of Shumie Corporation and Navadanya



Mahendra Shah, Rio+20 years World Sustainable Development Imperative
<https://www.youtube.com/watch?v=Dbslv4Z0fn0>

An excerpt from the Book, "Dugu, the closest relative of humans, was given the honour to open and chair the Confluence. Dugu strides to the centre of the natural clearing, swells his mighty chest, and speaks. "This, if ever, is a defining moment in time for us." His low guttural travels up the slopes of the crater and the listeners crowded at its upper edge hold their collective breath and strain to hear every word. Let me welcome the representatives of species from all corners of the Earth. Ours is a life lived in and with nature. But humans have taken control of nature. Our own destiny is not in our hands...

Today I speak with great sadness. We gorillas, chimpanzees, orangutans and bonobos, number less than 300,000 in the world, and this compares to some 350,000 human babies born every day. My family of primates will be extinct in half a century unless humans stop the violence against us and halt the destruction of our natural habitat and this same fate is faced by many of the species present here...For the first time in the history of the Earth, we have put aside our individual concerns and come together to work for our common future. We can no longer be complacent. Humans have made repeated promises but all their talk and pledges have been simply lip service paid to Nature and to the rights of millions of the other species -our rights- in the circle of life on Earth."

Earth Odyssey 2020-2022: Sustainable Development is not an Option, it is an Imperative.

We have inherited Planet Earth from our ancestors while concomitantly borrowing it from our children, and we must sustainably safeguard it and ensure that our One Earth is healthy and habitable for future generations of all species.

Sustainable development challenges transcend nation-states and international partnerships are essential to confront the environmental crisis of climate change, extinction of species, atmospheric and oceanic pollution and pests and pandemics. As all of these issues do not recognize political or geographic borders, and genuine international development partnerships and coordination are essential.

The worldwide adoption of unhealthy and polluting modern lifestyles, driven by materialism, greed and a "throwaway" culture, is resulting in a human health crisis of endemic diabetes, depression and heart disease, for which there is no medical cure thus far. These lifestyles generate escalating waste that invariably ends up in the oceans which regulate climate and weather and are home to millions of species. We need to give the highest priority for a worldwide Sustainable Human Lifestyles campaign

The men, women and youth together have the potential to be the changemakers in our gridlocked world of Political Leaders focussed on the short term perspectives of their re-election, Businesses driven by short-term shareholder profits, Scientists dependant on public and private sector funding constrained from discussing the implications and impacts of their research, people prioritizing the livelihood earnings for their families and restricted from taking a stand on unsustainable policies in their places of work.

Women, accounting for half the world's population, in many countries have yet to break free from the societal, environmental, economic and religious conditions that keep them discriminated, suppressed and unable to participate as equals in making our world sustainable. Women naturally endowed with compassion, caring, patience, empathy and altruism have the power and the means heal the Human divisiveness and Nature destruction so widespread around the World. Also mothers need to educate the youth and impart

humane values to their daughters and sons, empowering them to be the change makers with their votes and wallets for responsible Governance and Business.

The year 2022 will be the 30th anniversary of Rio 1992. What has improved and what has worsened in the past 30 years? What was neglected from Agenda 21? What happened to the principles in the Rio Declaration? What are the challenges we face today? What will be the consequences of inactions? We have the knowledge and we understand what needs to be done? We must mark the 30th anniversary of Agenda 21 in 2022 with policy commitments, means and actions for genuine progress towards sustainable development.

The Earth Odyssey 2020-2022 vision and mission is to inspire and mobilize the youth, women and men to participate in all spheres of sustainable development and trigger policy actions and implementation by Governments, Business and Civil Society. At Earthodyssey.org our vision and goal is to celebrate Rio1992+30 Years as a New Beginning for a World of Sustainable Humanity and Nature.

The Earth Odyssey project comprises of seven steps as follows,

- **Act 1:** During May-December 2020 we organized Earth Odyssey awareness bi-monthly debates: Save Oceans-Save Ourselves; Women in Lockdown - An Opportunity to Save our World; People-Harmony-Peace; Nature-Harmony-Peace; People-Harmony-Nature; Inspiring Women Participation; The Imperative for Youth etc. We are now in the Process of creating Advisory Boards comprising Youth, Women, Nature, and People and an Executive Board of Directors to begin the implementation of the Acts 2 to
- **Act 2:** A Worldwide Social Media Campaign – Awareness of the Major and Priority Sustainability Challenges.
- **Act 3:** Compilation of existing Films and Documentaries that present social, environmental and economic issues and challenges.
- **Act 4:** Selection of Priority Topics and Issues for Debate - Production of related Panel Videos.
- **Act 5:** Specific Debates in selected countries between Youth, Governments, Business, Scientists, Technologists and Civil Society representatives including Religious and Indigenous Community leaders with moderated discussions highlighting actions. The debates Video and Audio Recorded
- **Act 6:** Integration of Video Debates & Compilation of Major Outcomes to Produce a Global Sustainable Development Actions Documentary for Worldwide Distribution
- **Act 7:** Music World and Events Producers around the world to organize concerts and musical events targeting the youth, women and men to embrace the challenges and become the action leaders of change for a sustainable and progressive world.

The success of the Earth Odyssey Project will need concerted partnerships efforts with the active participation of Governments, Business, Scientists, Technologists and Civil Society including Indigenous and Religious Communities in support of achieving the Imperatives of Sustainable Human and Nature Development, for a Progressive World in Harmony with Nature and at Peace.

Please join us at Earth Odyssey 2020-2022 and let us with consciousness and commitment make our one Earth and one World sustainable. We are all in this together. This is our story. It will be told for generations to come. So let us secure the sustainable future for all and that of Mother Earth and realise what has been a mere possibility into a reality.



Earth Odyssey 2020-2022: www.earthodyssey.org
<https://youtu.be/SrAWZlEX91I>

2005 to 2020 and Beyond: Zen Resort Bali – Holistic Wellness and Sustainable Lifestyles



 **Seven Dimensions of Holistic Wellbeing**



www.zenresortbali.com

Briefing Future owners of Zen Resort Bali: Take care of Your Zen Inheritance to spread the Knowledge and Practices of Holistic Wellbeing and Happiness, Nature Immunity and Zen Harmony Diving: Enhancing Healthy and Sustainable Living in Harmony with Nature

2020 The Soul Of Zen Resort

https://www.youtube.com/watch?v=GjIebWNGZuU&feature=emb_logo

2020 Zen Forest Immunity

https://www.youtube.com/watch?v=nblNYX0p-lw&feature=emb_logo

2016 Zen Resort Bali and Dr Shah

<https://zenresortbali.com/wp-content/uploads/2020/04/ZenVision.pdf>

The development of the Holistic Wellness Vision, Concept and Practices of Zen Resort Bali is an outcome of my background and experiences, an Indian Heritage, an African Upbringing, a European Education and an International Profession Carrier. After 3 decades of working on Sustainable Development, in 2002, whilst attending a Preparatory World Summit on Sustainable Development meeting, relaxing on a Beach in Bali, I came to the realization that there can be no Sustainable Development unless Human Beings live Sustainably in Harmony with Nature.

The future of tourism worldwide will be driven by demand of health, wellbeing, recreation culture, serene and pristine Nature as well as being safe and peaceful. Bali truly is an Island of Humanity, especially the North where Zen Resort is located.



Zen Resort Bali

<https://zenresortbali.com/wp-content/uploads/2020/04/ZenAyurvedaSpa.pdf>

Travelshift: In Depth with Zen Resort Bali

<https://travelshift.com/blog/zen-resort-bali/>



Zenchi: Sunrise Integrated Yoga, Pranayama and Meditation
<https://zenresortbali.com/wp-content/uploads/2020/04/ZenChi.pdf>

At Zen Resort, during the COVID19 lockdown, we developed a Shirin Yuko Forest Immunity facility that is relevant to reducing hormone cortisol production, better concentration and improved feelings of happiness, mental wellbeing, enhanced creativity, lower anxiety, lower heart rate & blood pressure and breathing 'phytoncides' emitted by trees and plants, all strengthening the immune system. The sounds of the forest, the scent and touch of the trees, the sunlight playing through the leaves and the fresh clean air that empowers genuine wellbeing and happiness. We present below a few examples of the wellness delivery innovations that over the last decade has contributed to Zen Resort's genuine reputation of a wellness resort where all senses are touched and healed, physically, emotionally and spiritually



ZENMANTRA: Ayurveda Massage begins with Quantum Theta Mantra Surround Sound Chanting that inspires balanced physical, mental and spiritual deep relaxation, enabling our Balinese Ayurveda therapists to deliver with compassion and empathy the altruistic care that enhances genuine health and wellbeing



ZENCHI: Daily Sunrise Yoga, Pranayama as well as Meditation, respectively enhancing blood circulation, efficient oxygen inhalation and toxins exhalation as well as meditative detox of the Body, mind and soul with gratitude to family, colleagues and friends, mindfully making positive resolutions for the day ahead



ZENHOMAGE: This comprises is a two-step ritual, firstly an emotional but spiritually uplifting flower ceremony, dedicating a flower and paying homage to each person and pet, dead or alive. Secondly, a Fire Ceremony burning a list of all the transient and challenging issues that you wish to destress from & let go.



ZENHEALING: At Zen we offer a two-step process towards letting-go, de-stressing and healing. Firstly, guests recall and list the beautiful moments as well separately the sad moments of their life. Zen Resorts serene Nirvanum Sanctuary and the Pandan Healing Tree provides the sacred environment to self-heal and offer gratitude. Over the last decade some 70% of the guests' report sustaining and liberating benefits of healing and gratitude.



ZENDIVING: Integrated Ayurveda, Yoga, Pranayama, Meditation with Diving, empowers effective breathing, meditative focus and discovery of the amazing marine species as well as plastic waste, thus mobilizing divers to be public voice of the oceanic world, our most precious natural resource



ZENTSU: Floating on surface of our Infinity pool, supported by and rocked side to side with the frequency as in the womb, this treatment is aimed at facilitating total relaxation as in the womb. About a quarter of our guests experience re-birthing that is healing with memories of the beauty and happiness of childhood



ZENCUISINE: During the last 9 months of COVID19 lockdown in Bali, we developed a regenerative 3 Hectares farm with our own underground spring waters producing organic vegetables, fruits and culinary and medicinal herbs. Our chefs have combined the cuisines of Bali, Indian, Mediterranean and healthy cuisines from around the world to develop nutritionally balanced and delicious food, soup and juice menus with adaptation to dosha balance as well as any dietary and allergy restrictions



ZENIMMUNITY: During the COVID19 lockdown, at Zen we developed a Zen Shirin Yoko Nature Immunity Forest Centre of some 4 Hectares with ancient trees to hug, free-flow spiring water ponds to rejuvenate, Birds and Butterfly watching and Yoga-Meditation platforms, cocoa plantation & rice-fields to hike to the beach, just 300 meters away

At Zen Resort we also practice inclusive business and societal responsibility and implement sustainable development measures. We have implemented solar power, grey water recycling and ecologic waste management. We share knowledge and support to the local community, creating local employment and livelihoods sources such as sale of local crafts and art. We offer yoga and meditation classes for children and the elderly in the local village and we have programs of agricultural advise and marine rehabilitation

Over the last 15 years many guests from around the world have experienced wellness and healing at Zen. Our philosophy remains unchanged and our passion undiminished. We provide every guest with healthy practices and wellness regimes they can incorporate into their daily lives. Our holistic wellness resort sanctuary is a place where your energy, creativity, fantasy and mindfulness come to the surface. Places like this need to be at the core of sustainable wellness tourism integrated with the local community & bringing together traditional and modern healthcare & wellbeing knowledge & practices

Group retreats at Zen Resort Bali

Group Retreat Organizers: Please advise us of your retreat requirements and we will be happy to cost and advise an all-inclusive program or an a-la-carte program as required Bali, renowned for the blissful beauty of its rice-fields, luscious rainforests, surf beaches and spectacular diving, magnificent temples with daily spiritual offerings, as well as the compassionate and heart-warming hospitality of the Balinese people. All these aspects have made Bali, one of the world's foremost holistic wellness and spiritual group retreat destinations. Zen Resort Bali is a boutique resort in the serene and secluded environment of North Bali, nestled in tropical forests, rice fields and vineyards with wide open views over the Sea of Bali. The resort offers integrated holistic Ayurveda, Yoga, Meditation, Pranayama, Naturopathy, Organic Balanced Nutrition Cuisine, Detox and a wide choice of Recreational Nature and Cultural Excursions



Heartfelt Retreat at Zen Resort
<https://zenresortbali.com/groupsevents/#heartfelt>

Creative Rehab Retreat at Zen Resort
<https://zenresortbali.com/groupsevents/#creative>

Sacred Expression Retreat at Zen Resort
<https://zenresortbali.com/groupsevents/#sacred>

Zen Harmony Diving

Whilst some three billion people in the world live in coastal areas with easy access to the oceans, less than 70 million people have experienced scuba diving and snorkelling. For most people, the anxiety of the underwater world, lack of diving knowledge and skills, complexity of equipment and affordability are the main barriers to diving. We need to increase the number of divers and snorkelers such that they become the ambassadors and the public voice of the marine world observing and reporting the dangers and the potential consequences of the dumping the worldwide escalating land-based waste into the oceanic world. The world's oceans and seas are the lifeblood of our Earth, covering more than 70 percent of the planet's surface, driving weather and regulating temperature. We hold the Oceanic World in the highest regard, it being home to millions of marine species, flora and fauna, most of which remain unknown. This undiscovered wealth of the Oceans may hold the means for our sustainable future and the welfare of future generations.

In the 21st century, the two biggest challenges in the world comprise, firstly the emerging burden of the ailments and diseases of modern lifestyles and secondly the escalating pollution and degradation of the environment, 70% of which comprises the marine world.



Zen Harmony Diving

<https://www.baliadvertiser.biz/zen-harmony-diving-bridges-gap-physical-mental/>

Zen Harmony Diving "2"

https://www.youtube.com/watch?v=pOwzWjDCUyU&feature=emb_logo

Zentsu

https://www.youtube.com/watch?v=1wd7MnRL2oY&feature=emb_logo

ZHD, a unique concept formulated on the premise that scuba diving can enhance human health whilst discovering the amazing diversity of marine life in the underwater world, integrates Pranayama, Meditation, Yoga and Ayurveda with scuba diving, enabling divers to experiencing an exceptional pathway to enhancing human health and fitness through the effective practice of underwater controlled breathing, meditative focus and free flow physical exercise whilst at the same time discovering the amazing beauty and diversity of marine life in the underwater world.

Integrative Medicine in a Holistic Wellness Resort



Integrative Medicine in a Retreat Context

<https://blog.retreat.guru/integrative-medicine-retreat-context>

A fifth of the world's population in the developed countries rely on modern medicine and pharmaceuticals, based on modern science, research and clinical trials, whilst the other four-fifth of the World Population in developing countries rely mainly on traditional holistic medicine and medicinal herbs that has evolved that has evolved over centuries, accumulating knowledge, skills and practices based on the Vedic Science, beliefs and experiences. Given these diverging trends, the challenge for our generation today is to think how we can practically bridge traditional holistic and modern medicine with a focus on an integration of preventive restorative and curative healthcare.

The holistic integration has to be based upon a partnership that looks upon the human being as a whole living organism rather than merely a combination of parts, systems and symptoms. The wisdom of traditional holistic medicine is being increasingly embraced across the developed world, and a global revival is organically evolving. Ayurveda, Chinese medicine and natural medicinal herbs have taken their place in the modern lifestyle seeker's lifestyle, turning away from the reductionist and impersonal approach often experienced in modern medicine. We have found that traditional diagnosis of body impurity levels and a multi-dimensional approach to diet and detox facilitates an effective wellness practice to change course and begin a new life for those stressed out with modern lifestyles. In a world increasingly confronted by the emerging burden of the ailments and diseases of modern lifestyles, the practitioners of modern and traditional medicine need to heed their respective oaths of service and care towards mobilizing their science and practices to deliver the right mix of preventive-curative medicine towards restoring health and healing the body, mind and spirit.

Annex 1

The 1992 Rio Conference and Earth Summit

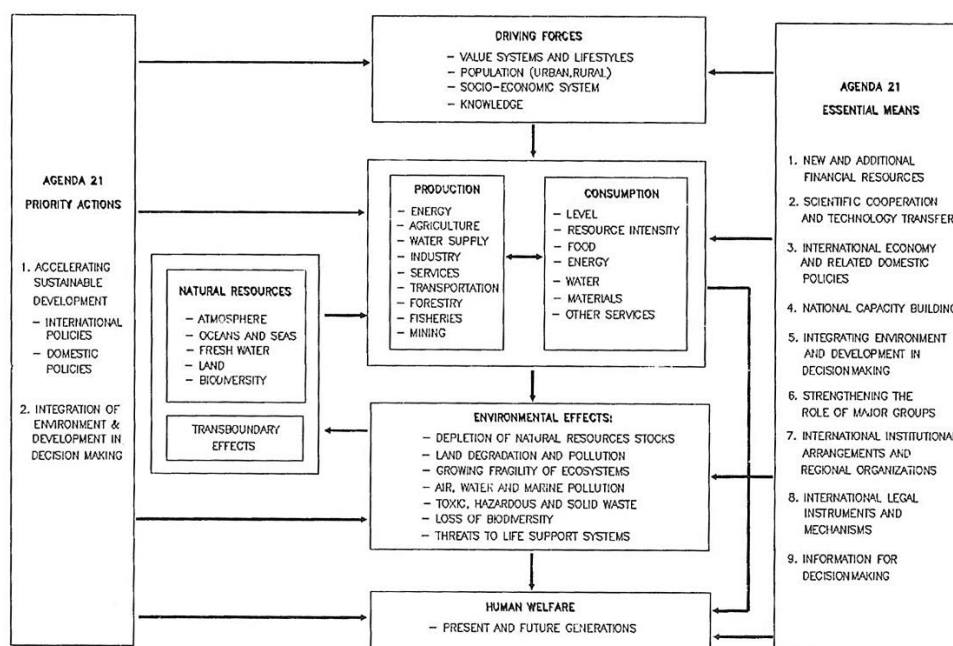
The Global Partnership for Environment and Development A Guide to Agenda 21

This UNCED Summary Report coordinated and prepared by Mahendra Shah

A systemic thematic conceptualization of the 37 Chapters of Agenda 21 with a view to identifying subsystems and interlinkages relevant to prioritising subsystems for detailed analysis and quantifying estimates of funding required for each theme in Agenda 21. This work was planned Post-Rio, taking into account the outcome of the Rio 1992 Conference and the Earth Summit. Unfortunately there was no follow up and the proposed work was left pending.

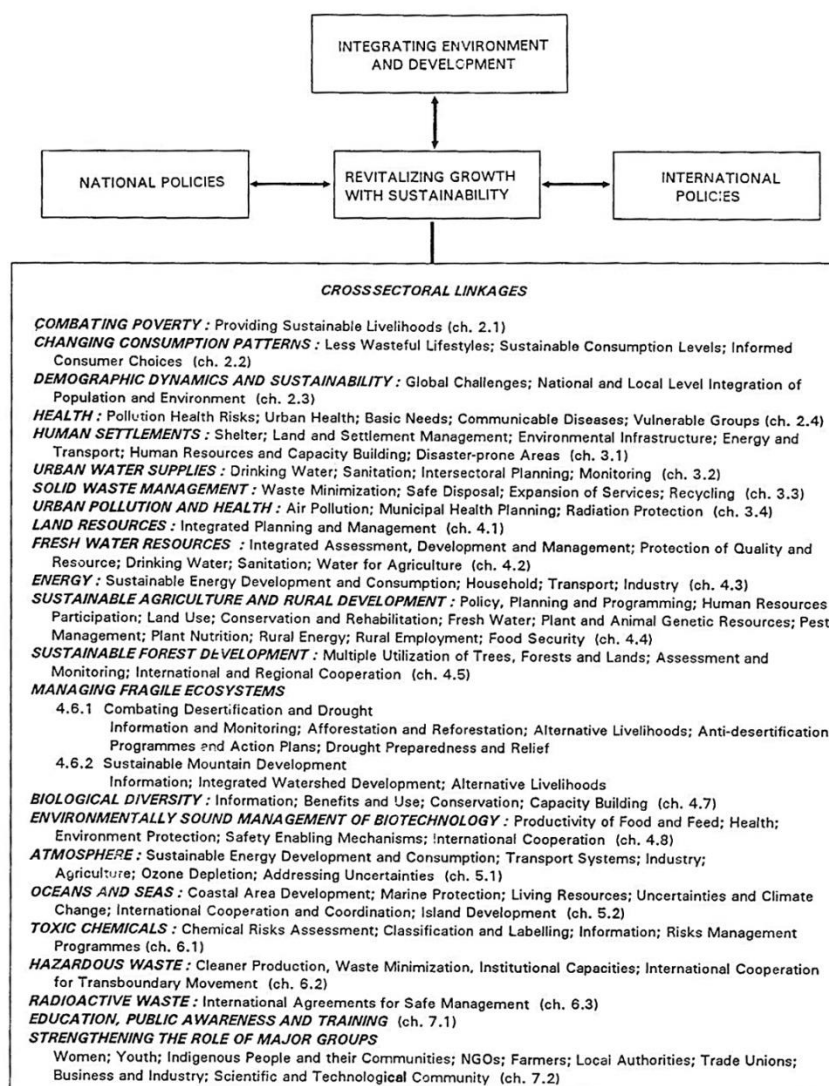
The subsystem classification is relevant to identification and incorporation of interlinkages and the utility is highlighted in the SDGs 2030 Section of this "My Journey of Sustainable Development

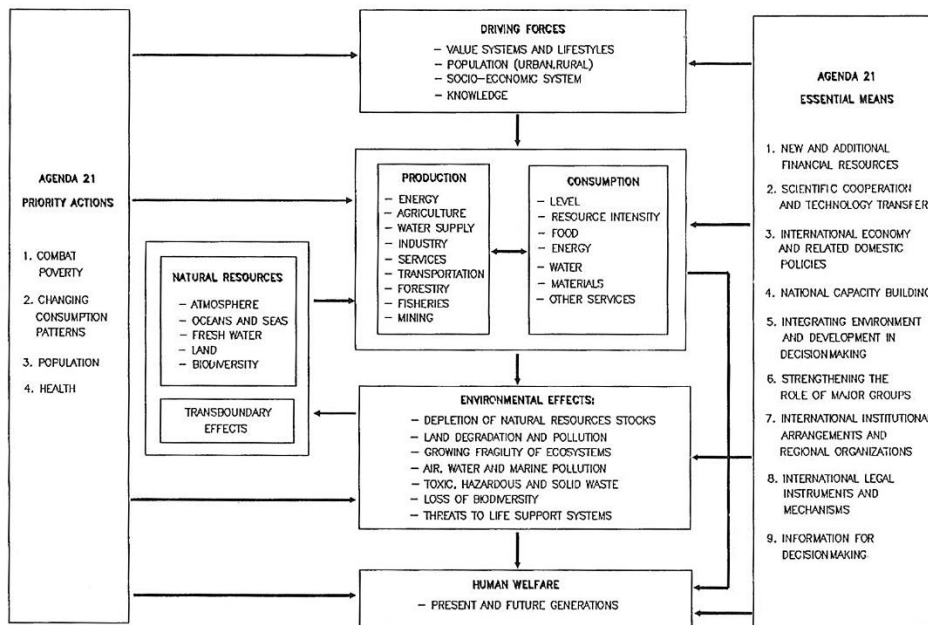




REVITALIZING GROWTH WITH SUSTAINABILITY

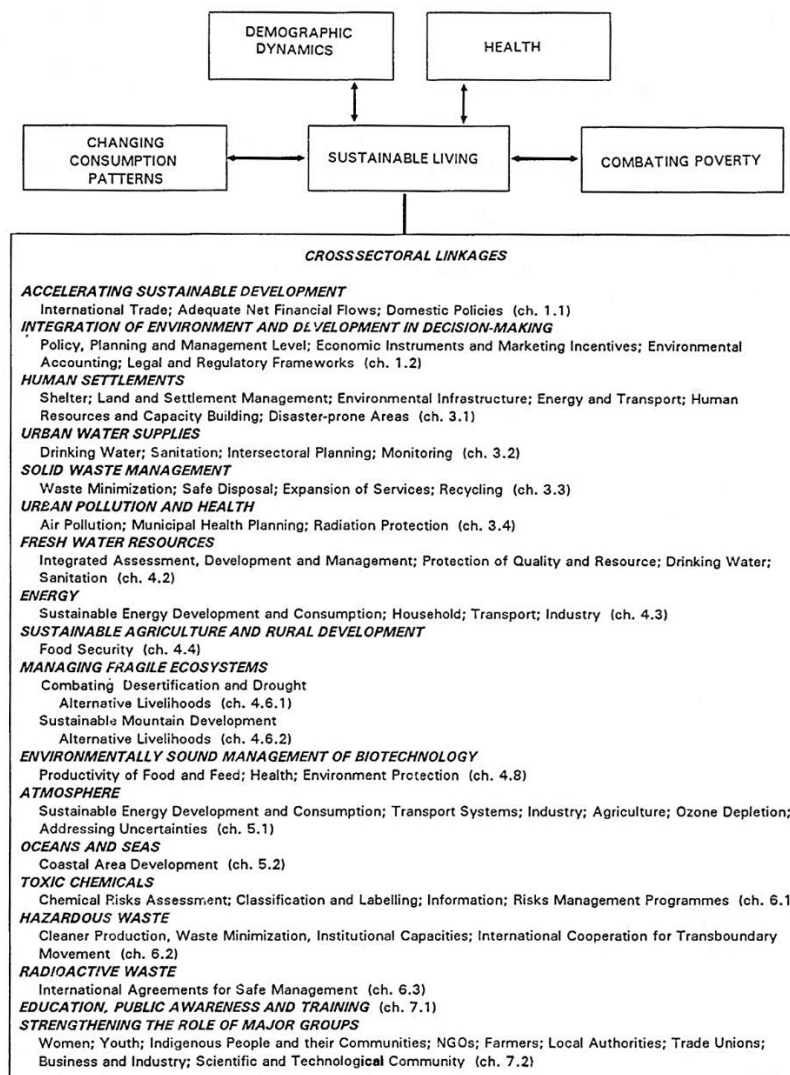
REVITALIZING GROWTH WITH SUSTAINABILITY

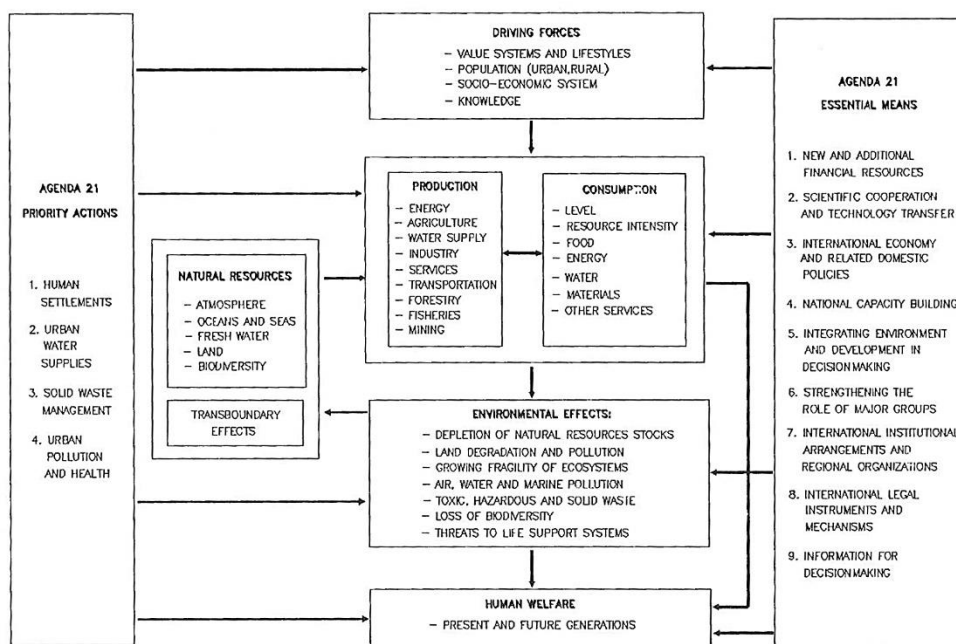




SUSTAINABLE LIVING

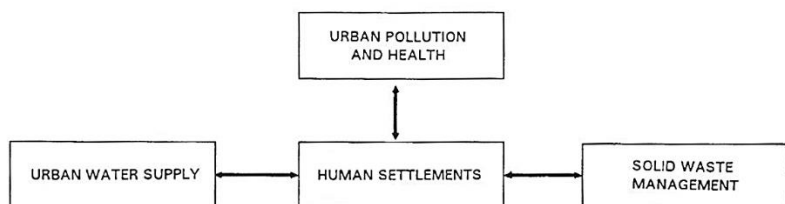
SUSTAINABLE LIVING





HUMAN SETTLEMENTS

HUMAN SETTLEMENTS



CROSSECTORAL LINKAGES

ACCELERATING SUSTAINABLE DEVELOPMENT

International Trade; Adequate Net Financial Flows; Domestic Policies (ch. 1.1)

INTEGRATION OF ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

Policy, Planning and Management; Level; Economic Instruments and Marketing Incentives; Environmental Accounting; Legal and Regulatory Frameworks (ch. 1.2)

COMBATING POVERTY:

Providing Sustainable Livelihoods (ch. 2.1)

CHANGING CONSUMPTION PATTERNS

Less Wasteful Lifestyles; Sustainable Consumption Levels; Informed Consumer Choices (ch. 2.2)

DEMOGRAPHIC DYNAMIC PRESSURES

National and Local Level Integration of Population and Environment (ch. 2.3)

HEALTH

Pollution Health Risks; Basic Needs; Communicable Diseases; Vulnerable Groups (ch. 2.4)

LAND RESOURCES

Integrated Planning and Management (ch. 4.1)

FRESH WATER RESOURCES

Integrated Assessment, Development and Management; Protection of Quality and Resource; Drinking Water; Sanitation (ch. 4.2)

ENERGY

Sustainable Energy Development and Consumption; Household; Transport; Industry (ch. 4.3)

SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

Rural Employment; Food Security (ch. 4.4)

ATMOSPHERE

Sustainable Energy Development and Consumption; Transport Systems; Industry; Agriculture; Ozone Depletion; Addressing Uncertainties (ch. 5.1)

OCEANS AND SEAS

Coastal Area Development (ch. 5.2)

TOXIC CHEMICALS

Chemical Risks Assessment; Classification and Labelling; Information; Risks Management Programmes (ch. 6.1)

HAZARDOUS WASTE

Cleaner Production, Waste Minimization, Institutional Capacities; International Cooperation for Transboundary Movement (ch. 6.2)

RADIOACTIVE WASTE

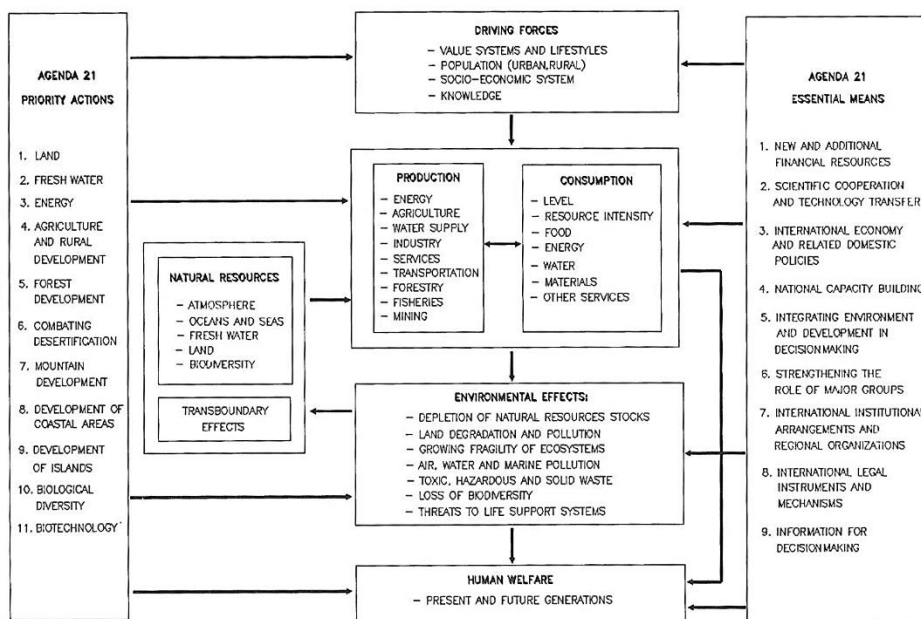
International Agreements for Safe Management (ch. 6.3)

EDUCATION, PUBLIC AWARENESS AND TRAINING

(ch. 7.1)

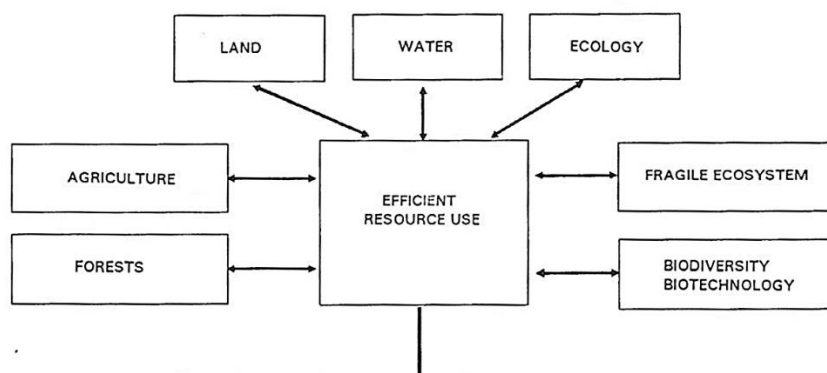
STRENGTHENING THE ROLE OF MAJOR GROUPS

Women; Youth; Indigenous People and their Communities; NGOs; Farmers; Local Authorities; Trade Unions; Business and Industry; Scientific and Technological Community (ch. 7.2)



EFFICIENT RESOURCE USE

EFFICIENT RESOURCE USE



CROSSSECTORAL LINKAGES

ACCELERATING SUSTAINABLE DEVELOPMENT

International Trade; Adequate Net Financial Flows; Domestic Policies (ch. 1.1)

INTERGRATION OF ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

Policy, Planning and Management Level; Economic Instruments and Marketing Incentives; Environmental Accounting; Legal and Regulatory Frameworks (ch. 1.2)

COMBATING POVERTY:

Providing Sustainable Livelihoods (ch. 2.1)

CHANGING CONSUMPTION PATTERNS

Less Wasteful Lifestyles; Sustainable Consumption Levels (ch. 2.2)

DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

Global Challenges; National and Local Level Integration of Population and Environment (ch. 2.3)

HEALTH

Pollution Health Risks; Basic Needs; Communicable Diseases; Vulnerable Groups (ch. 2.4)

HUMAN SETTLEMENTS

Shelter; Environmental Infrastructure; Energy and Transport; Disaster-prone Areas (ch. 3.1)

URBAN WATER SUPPLIES

Drinking Water; Sanitation (ch. 3.2)

SOLID WASTE MANAGEMENT

Waste Minimization; Safe Disposal; Recycling (ch. 3.3)

URBAN POLLUTION AND HEALTH

Air Pollution (ch. 3.4)

ATMOSPHERE

Sustainable Energy Development and Consumption; Transport Systems; Industry; Agriculture; Ozone Depletion; Addressing Uncertainties (ch. 5.1)

OCEANS AND SEAS

Marine Protection; Living Resources; Uncertainties and Climate Change (ch. 5.2)

TOXIC CHEMICALS

Chemical Risks Assessment; Information; Risks Management Programmes (ch. 6.1)

HAZARDOUS WASTE

Cleaner Production; Waste Minimization; International Cooperation for Transboundary Movement (ch. 6.2)

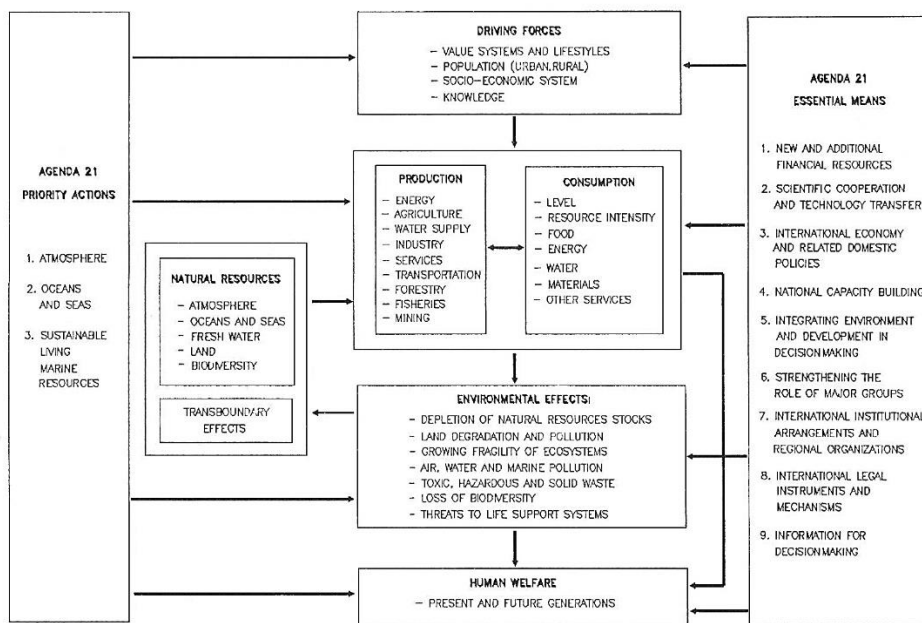
RADIOACTIVE WASTE

International Agreements for Safe Management (ch. 6.3)

EDUCATION, PUBLIC AWARENESS AND TRAINING (ch. 7.1)

STRENGTHENING THE ROLE OF MAJOR GROUPS

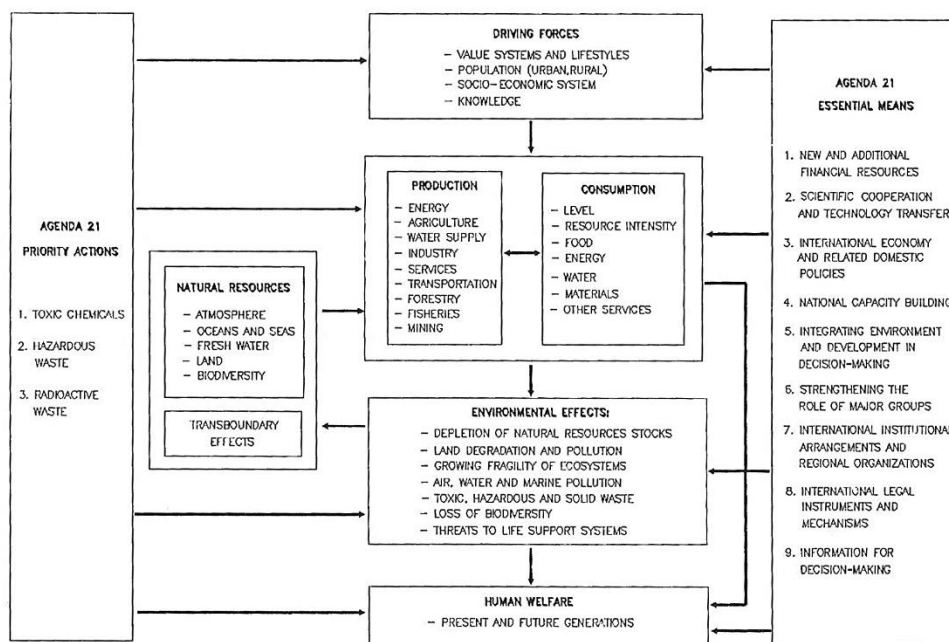
Women; Youth; Indigenous People and their Communities; NGOs; Farmers; Local Authorities; Trade Unions; Business and Industry; Scientific and Technology Community (ch. 7.2)



GLOBAL AND REGIONAL RESOURCES

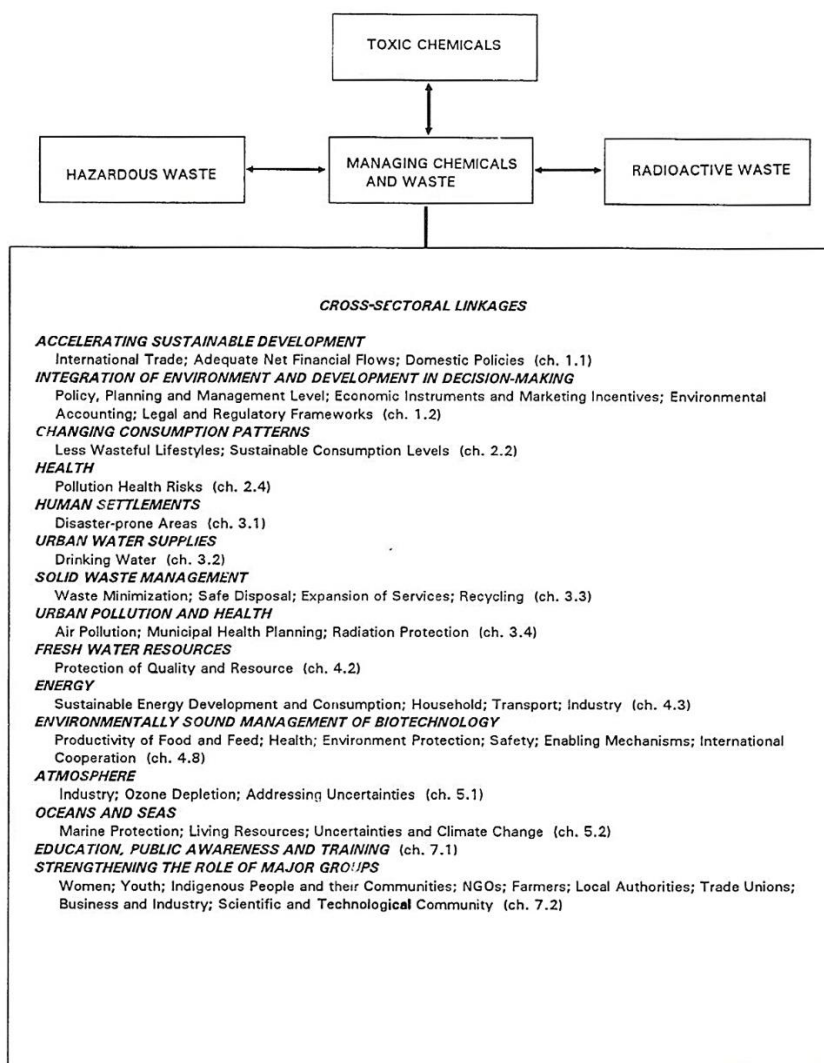
GLOBAL AND REGIONAL RESOURCES

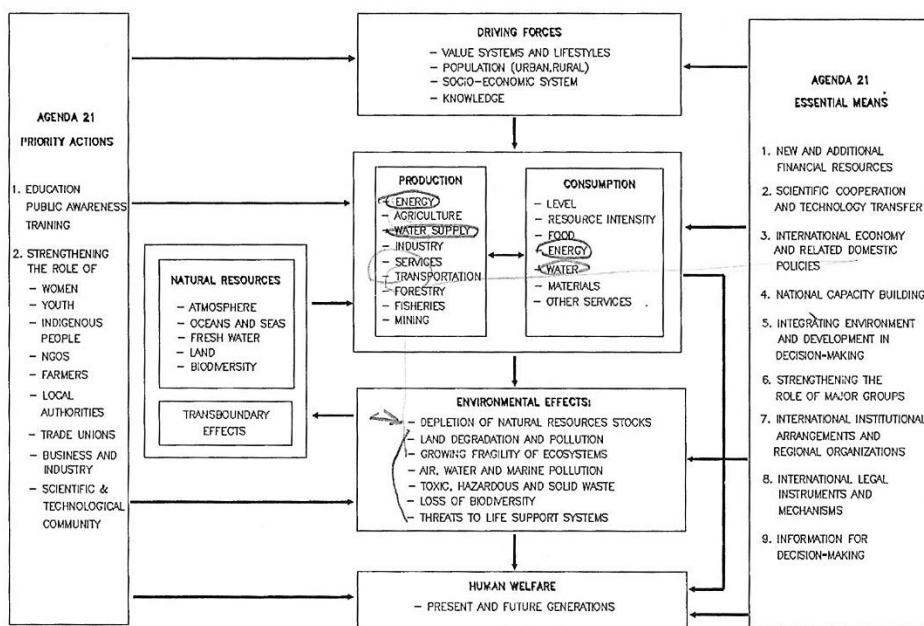




MANAGING CHEMICALS AND WASTE

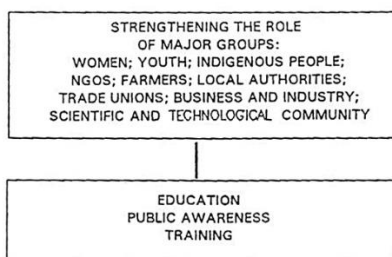
MANAGING CHEMICALS AND WASTE





PEOPLE PARTICIPATION AND RESPONSIBILITY

PEOPLE'S PARTICIPATION AND RESPONSIBILITY



CROSS-SECTORAL LINKAGES

ACCELERATING SUSTAINABLE DEVELOPMENT : International Trade; Adequate Net Financial Flows; Domestic Policies (ch. 1.1)

INTEGRATION OF ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING : Policy, Planning and Management Level; Economic Instruments and Marketing Incentives; Environmental Accounting; Legal and Regulatory Frameworks (ch. 1.2)

COMBATING POVERTY : Providing Sustainable Livelihoods (ch. 2.1)

CHANGING CONSUMPTION PATTERNS : Less Wasteful Lifestyles; Sustainable Consumption Levels; Informed Consumer Choices (ch. 2.2)

DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY : National and Local Level Integration of Population and Environment (ch. 2.3)

HEALTH : Pollution Health Risks; Basic Needs; Communicable Diseases; Vulnerable Groups (ch. 2.4)

HUMAN SETTLEMENTS : Shelter; Land and Settlement Management; Environmental Infrastructure; Energy and Transport; Human Resources and Capacity Building; Disaster-prone Areas (ch. 3.1)

URBAN WATER SUPPLIES : Drinking Water; Sanitation (ch. 3.2)

SOLID WASTE MANAGEMENT : Waste Minimization; Safe Disposal; Expansion of Services; Recycling (ch. 3.3)

URBAN POLLUTION AND HEALTH : Air Pollution; Municipal Health Planning; Radiation Protection (ch. 3.4)

LAND RESOURCES : Integrated Planning and Management (ch. 4.1)

FRESH WATER RESOURCES : Integrated Assessment, Development and Management; Protection of Quality and Resource; Drinking Water; Sanitation; Water for Agriculture (ch. 4.2)

ENERGY : Sustainable Energy Development and Consumption; Household; Transport; Industry (ch. 4.3)

SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT : Policy, Planning and Programming; Human Resources Participation; Plant and Animal Genetic Resources; Pest Management; Plant Nutrition; Rural Energy; Rural Employment; Food Security (ch. 4.4)

SUSTAINABLE FOREST DEVELOPMENT : Multiple Utilization of Trees, Forests and Lands; Assessment and Monitoring; International and Regional Cooperation (ch. 4.5)

MANAGING FRAGILE ECOSYSTEMS
Combating Desertification and Drought
Information and Monitoring; Afforestation and Reforestation; Alternative Livelihoods; Anti-desertification Programmes and Action Plans; Drought Preparedness and Relief; Drought Preparedness and Relief (ch. 4.6.1)

Sustainable Mountain Development
Information; Integrated Watershed Development; Alternative Livelihoods (ch. 4.6.2)

BIOLOGICAL DIVERSITY : Information; Benefits and Use; Conservation; Capacity Building (ch. 4.7)

ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY : Productivity of Food and Feed; Health; Environment Protection; Safety Enabling Mechanisms; International Cooperation (ch. 4.8)

ATMOSPHERE : Sustainable Energy Development and Consumption; Transport Systems; Industry; Agriculture; Ozone Depletion; Addressing Uncertainties (ch. 5.1)

OCEANS AND SEAS : Coastal Area Development; Marine Protection; Living Resources; Uncertainties and Climate Change; International Cooperation and Coordination; Island Development (ch. 5.2)

TOXIC CHEMICALS : Chemical Risks Assessment; Classification and Labelling; Information; Risks Management Programmes (ch. 6.1)

HAZARDOUS WASTE : Cleaner Production, Waste Minimization, Institutional Capacities; International Cooperation for Transboundary Movement (ch. 6.2)

RADIOACTIVE WASTE : International Agreements for Safe Management (ch. 6.3)

Selected Shah References: Sustainable Development Publications

- 1) Fischer, G., Shah, M.M., van Velthuisen, H.T. and Nachtergaele, F.O. (2006). *Agro-Ecological Zones Assessment*. IIASA Research Report (Reprint). IIASA, Laxenburg, Austria: RP-06-003. Reprinted from Encyclopaedia of Life Support Systems (EOLSS), EOLSS Publishers, Oxford, UK 2005.
- 2) Donella Meadows, All the Nations Can't Feed Themselves, but All the People Can Be Fed, 1987, <https://www.printfriendly.com/p/g/h4y7j>
- 3) Shah M. M, Coordinating Author, "The Global Partnership for Environment and Development - A Guide to Agenda 21", 1992 Earth Summit Report, Rio de Janeiro The United Nations Press, New York, June 1992

- 4) Shah M. M. and Strong M, "Food in the 21st Century - from Science to Sustainable Agriculture", ISBN 0-8213-4757-8, World Bank, Washington, April 2000,
- 5) Shah M. M, "Human Diversity, Nature Diversity and Sustainable Development", Opening Plenary Presentation, Global Science Open Conference, Amsterdam. July 2001
- 6) G Fischer, M M Shah, H van Velthuisen, Climate Change and Agricultural Vulnerability, Climate Change and Agricultural Vulnerability, World Sustainable Development Summit, Johannesburg, August 2002
- 7) Lutz W and Shah MM, "Population should be on the Johannesburg Agenda, Global Science Panel", Nature, 4th July 2002.
- 8) Shah M. M, "Food in the 21st Century: Global Climate of Disparities", House of Commons, London, 2002
- 9) Shah M M, European Forum on Sustainability of the Club of Rome - Sustainability Creates Prosperity, "The Climate Change – Mitigation and Adaptation", Peter Lang Publishers, ISBN 3-631-51973, Frankfurt, 2004.
- 10) Shah MM, Coordinating Lead Author Chapter 5 Food and Ecosystems, Millennium Ecosystems Assessment, Ecosystems and Human Well-being, Volume 3 Policy Responses, Island Press, ISBN-1-55963-269-0, 2005
- 11) Fischer, G., Shah, M.M., Tubiello, F.N. and van Velthuisen, H.T. (2005). *Socio-economic and Climate Change Impacts on Agriculture: An Integrated Assessment*. Philosophical Transactions of the Royal Society B: Biological Sciences, 360(1463):2067-2083 (29 November 2005).
- 12) Shah M. M, Pontifica Academia Scientiarum, Interactions between Global Change and Human health, "Food, Water and Infectious Diseases", Scripta Varia 106, ISBN 88-7761-085-9, Vatican City 2006
- 13) Shah M M, Ecology and Sustainable development, Ecology Encyclopaedia, Elsevier Press, London, UK, 2008
- 14) Shah M M, "Sustainable Development and the Future of Peace Building: From Agendas to Policy Actions", Alpbach European Forum - Preventing Conflict, Creating Resilient Societies, Alpbach, Austria, 2008
- 15) Shah M. M, Co-author, Biofuels and Food Security, The OPEC Fund for International Development, Vienna, Austria, 2009
- 16) Shah M. M, "Gulf Cooperation Council food security: Balancing the Equation, <http://www.nature.com/nmiddleeast/2010/100425/full/nmiddleeast.2010.141.html>, Nature Middle East, 2010
- 17) Fischer, Günther, and Mahendra Shah, 2011, "Farmland Investments and Food Security," World Bank World Bank - IIASA commissioned , "Lessons for the large-scale acquisition of from a global analysis of use"
- 18) Shah M. M, Sustainable Development and Survival of Nature, Visions of the Living Earth, Book Project of Shumei and Navdanya, ISBN 978-4-903930-03-9, Japan, 2012
- 19) Shah M. M, Integrative Medicine in a Resort Setting, Journal of Medical Tourism, 2016
- 20) Shah M. M. The Wealth of World Diversity - Humanity, Nature and Sustainable Development, Open Science Conference, Amsterdam, July 2001, <https://drive.google.com/open?id=1QFM8jyvHcJfpGrBCtOr9c2aotutdKZ1J>
- 21) Shah M. M. The Wealth of Diversity: Humanity, Nature and Sustainable Development, Open Science Conference, Amsterdam, July 2001 <https://drive.google.com/open?id=1UcUSXS0X8eKGhIaxnMvqMDROWxFrveEM>
- 22) Shah M, M,, Earth Odyssey Project Sustainable Human Lifestyles Video <https://youtu.be/ghsD90h0Pq0>

- 23) [Shah M.M.](#) Consilium Conferentiarum Episcoporum Europae, 50th Anniversary of the Rome Treaties - A New Humanism for Europe, " Food Security, Biofuels, Health and Environmental Change - The Challenges in the 21st Century", The Vatican, Rome, 21-24th June 2007
- 24) Shah M M, SBSTA, UNFCCC, "Impact of Climate Change on Agriculture - Towards an integrated global assessment of potential environmental, economic and social costs", Bonn, 18th June 2004
- 25) G.M. Higgins, A.H. Kassam and M.M. Shah. Land, Food and Population in the Developing World, Nature and Resources, Vol. XX, No. 3, UNESCO, Paris, July-September 1984.
- 26) G.M. Higgins, A.H. Kassam, L. Naiken (FAO) and G. Fischer, M.M. Shah (IIASA). Potential Population Supporting Capacities of the Lands in the Developing World. Final Report of the Resources for Populations of the Future project, FAO/IIASA/UNFPA, Rome, 1983.
- 27) D.G. Belshaw, T.J. Bjorlo and M.M. Shah. A Hierarchical Systems Formulation of the Rural Development Process. Automatica, Vol. II, pp. 401-408, July 1975.

IIASA Publications: Mahendra Shah

Articles

- 1) [Fischer, G., Shah, M.M., Tubiello, F.N. and van Velthuisen, H.T. \(2005\). Socio-economic and climate change impacts on agriculture: An integrated assessment, 1990-2080.](#) Philosophical Transactions of the Royal Society B: Biological Sciences 360 (1463): 2067-2073. DOI:[10.1098/rstb.2005.1744](#).
- 2) [Lutz, W., Shah, M.M., Bilsborrow, R.E., Bongaarts, J., Dasgupta, P. and Entwisle, B.](#)
- 3) [Lutz, W. and Shah, M.M. \(2002\). Population should be on the Johannesburg Agenda.](#) Nature 418 (6893) DOI:[10.1038/418017a](#)
- 4) [Lutz, W., Shah, M.M., Bilsborrow, R.E., Bongaarts, J., Dasgupta, P., Entwisle, B., Fischer, G., Jerneloev, A., Mackellar, F.L., Nakicenovic, B. et al \(2002\). The Global Science Panel on Population in Sustainable Development.](#) Population and Development Review 28 (2): 367-369. DOI:[10.1111/j.1728-4457.2002.00367.x](#)

Book Section

- 1) [Fischer, G., Shah, M.M., van Velthuisen, H.T. and Nachtergaele, F.O. \(2006\). Agro-ecological zones assessment.](#) In: Use, Cover and Soil Sciences/ EOLSS. Eds. Verheye, W.H., Oxford: Eolss Publishers.
- 2) [Shah, M.M. \(2004\). The climate change -- Mitigation and adaptation.](#) In: Sustainability Creates Prosperity: Basis for a New World Order, New Economics, and Environmental Protection. Eds. Feiler, K., Frankfurt: Peter Lang Publishing. ISBN 3-631-51973-7

Monographs

- 1) [Fischer, G., Shah, M.M., van Velthuisen, H.T. and Nachtergaele, F.O. \(2006\). Agro-Ecological Zones Assessment.](#) IIASA Research Report (Reprint). IIASA, Laxenburg, Austria: RP-06-003. Reprinted from Encyclopaedia of Life Support Systems (EOLSS), EOLSS Publishers, Oxford, UK [2005].
- 2) [Fischer, G., Shah, M.M., Tubiello, F.N. and van Velthuisen, H.T. \(2005\). Socio-economic and Climate Change Impacts on Agriculture: An Integrated Assessment.](#) IIASA Research Report (Reprint). IIASA, Laxenburg, Austria: RP-05-008. Reprinted from Philosophical Transactions of the Royal Society B: Biological Sciences, 360(1463):2067-2083 (29 November 2005).
- 3) [Fischer, G., van Velthuisen, H.T., Shah, M.M. and Nachtergaele, F.O. \(2002\). Global Agro-ecological Assessment for Agriculture in the 21st Century: Methodology and Results.](#) IIASA Research Report. IIASA, Laxenburg, Austria: RR-02-02
- 4) [van Velthuisen, H.T., Fischer, G., Mohamed Saleem, M.A., Kassam, A.H., Kaufmann, R. von and Shah, M.M. \(1995\). Potential of Forage Legumes in Land-Use Intensification Towards Sustainable Crop-Livestock Production Systems in West Africa.](#) IIASA Working Paper. IIASA, Laxenburg, Austria: WP-95-080
- 5) [Shah, M.M., Fischer, G., Kroemer, G. and Parikh, K.S. \(1985\). Africa's Growing Dependence on Imported Wheat: Some Implications for Agricultural Policies in Africa.](#) IIASA Collaborative Paper. IIASA, Laxenburg, Austria: CP-85-015
- 6) [Fischer, G., Shah, M.M. and Rollinson, D.H.L. \(1985\). Agricultural Perspectives in the Tsetse Infested Areas in Africa.](#) IIASA Collaborative Paper. IIASA, Laxenburg, Austria: CP-85-012

- 7) Fischer, G. and Shah, M.M. (1985). [Food Consumption and Nutrition Level \(Kenya Case Study\)](#). IIASA Collaborative Paper. IIASA, Laxenburg, Austria: CP-85-013
- 8) Shah, M.M., Higgins, G.M., Kassam, A.H. and Fischer, G. (1985). IIASA Collaborative Paper. IIASA, Laxenburg, Austria: CP-85-014
- 9) Shah, M.M., Fischer, G., Higgins, G.M., Kassam, A.H. and Naiken, L. (1985). [People, and Food Production - Potentials in the Developing World](#). IIASA Collaborative Paper. IIASA, Laxenburg, Austria: CP-85-011
- 10) Narayana, N.S.S. and Shah, M.M. (1984). [Farm Supply Response in Kenya: Acreage Allocation Model](#). IIASA Research Report (Reprint). IIASA, Laxenburg, Austria: RR-84-020. Reprinted from *European Review of Agricultural Economics*, 11 [1984].
- 11) Chibber, A.J. and Shah, M.M. (1983). [An Agricultural Policy Model for Kenya](#). IIASA Working Paper. IIASA, Laxenburg, Austria: WP-83-008
- 12) Shah, M.M. and Fischer, G. (1982). [Resources, Environment and Technology for Food Production and Self Sufficiency in Kenya](#). IIASA Working Paper. IIASA, Laxenburg, Austria: WP-82-127
- 13) Narayana, N.S.S. and Shah, M.M. (1982). [Farm Supply Response in Kenya: Acreage Allocation Model](#). IIASA Working Paper. IIASA, Laxenburg, Austria: WP-82-103
- 14) Williamson, C. and Shah, M.M. (1981). [Models of Expenditure Systems for Kenya](#). IIASA Working Paper. IIASA, Laxenburg, Austria: WP-81-071
- 15) Shah, M.M. and Fischer, G. (1981). [Assessment of Food Production Potential - Resources, Technology and Environment - A Case Study of Kenya](#). IIASA Working Paper. IIASA, Laxenburg, Austria: WP-81-042
- 16) Shah, M.M., Fischer, G., Higgins, G.M. and Kassam, A.H. (1981). [Food Production Potential and Assessment of Population Supporting Capacity - Methodology and Application](#). IIASA Collaborative Paper. IIASA, Laxenburg, Austria: CP-81-006
- 17) Fischer, G. and Shah, M.M. (1980). [Assessment of Population Supporting Capacities - Overall Computer Programs](#). IIASA Working Paper. IIASA, Laxenburg, Austria: WP-80-040
- 18) Shah, M.M. and Frohberg, H. (1980). [Food Consumption Pattern - Rural and Urban Kenya](#). IIASA Working Paper. IIASA, Laxenburg, Austria: WP-80-013
- 19) Frohberg, H. and Shah, M.M. (1980). [Nutrition Status - Rural and Urban Kenya](#). IIASA Working Paper. IIASA, Laxenburg, Austria: WP-80-014
- 20) Shah, M.M. and Willekens, F. (1978). [Rural-Urban Population Projections for Kenya and Implications for Development](#). IIASA Research Memorandum. IIASA, Laxenburg, Austria: RM-78-055
- 21) Shah, M.M. and Willekens, F. (1978). [Rural-Urban Population Projections for Kenya and Implications for Development: Some Preliminary Results](#). IIASA Working Paper. IIASA, Laxenburg, Austria: WP-78-006

Other

- 1) Fischer, G., Frohberg, K. and Shah, M. (1984). [Global Food Perspective: Assessing Agronomic Potential and Exploring Economic Policies](#). In: *Operational Research '84, Proceedings of the Tenth International Conference*, Washington DC.
- 2) Fischer, G., Hizsnyik, E., Prieler, S., Shah, M. and van Velthuisen, H.T. (2009). [Biofuels and Food Security: Implications of an Accelerated Biofuels Production](#). Summary of Final Report to Sponsor: OFID Pamphlet Series 38, The OPEC Fund for International Development (OFID), Vienna, Austria (March 2009)
- 3) Fischer, G., Hizsnyik, E., Prieler, S., Shah, M. and van Velthuisen, H.T. (2009). [Biofuels and Food Security](#). Final Report to Sponsor: The OPEC Fund for International Development (OFID), Vienna, Austria (March 2009)
- 4) Shah, M., Fischer, G. and van Velthuisen, H.T. (2009). [Food security and sustainable agriculture: The challenges of climate change in Sub-Saharan Africa](#). In: *[[Climate Change and Economic Development in Sub-Saharan Africa - AERC Senior Policy Seminar X, Addis Ababa, Ethiopia, 7-9 April 2008: Seminar Papers]]*, African Economic Research Consortium, Nairobi, Kenya
- 5) Shah, M.M. (2004). [Dimensions of Diversity - Humanity, Nature, and Sustainable Development](#). Opening Plenary Speech, International Association of Universities 12th General Conference: *The Wealth of Diversity*, 25-29 July 2004, Sao Paulo, Brazil [2004]
- 6) Shah, M.M. (2004). [Sustainable Development: Mobilizing Science for Policy Research](#). Presented at the First ASEAN-EU Rectors Conference on Higher Education and Sustainable Development, 4-6 October 2004, Kuala Lumpur, Malaysia [2004]

- 7) Fischer, G., Shah, M.M. and van Velthuis, H.T. (2002). Climate Change and Agricultural Vulnerability. IIASA, Laxenburg, Austria
- 8) Fischer, G., Shah, M.M., van Velthuis, H.T. and Nachtergaele, F.O. (2001). Global Agro-ecological Assessment for Agriculture in the 21st Century. IIASA, Laxenburg, Austria [2001]
- 9) Kassam, A.H., van Velthuis, H.T., Fischer, G. and Shah, M.M. (1994). Agro-Ecological Resources Assessment for Agricultural Development Planning: A Case Study for Kenya. Resources Data Base and Productivity: Technical Annex 6: Fuelwood Productivity. XQ-94-803 IIASA, Laxenburg, Austria.
- 10) Kassam, A.H., van Velthuis, H.T., Fischer, G. and Shah, M.M. (1994). Agro-Ecological Resources Assessment for Agricultural Development Planning: A Case Study for Kenya. Resources Data Base and Productivity: Technical Annex 7: Guide to Computer Programs for Productivity Assessments. XQ-94-804 , IIASA, Laxenburg, Austria.
- 11) Fischer, G., Shah, M.M., Kassam, A.H. and van Velthuis, H.T. (1994). Agro-Ecological Resources Assessment for Agricultural Development Planning: A Case Study for Kenya. Resources Data Base and Productivity: Technical Annex 8: Crop Productivity Assessment: Results at District Level. XQ-94-805 , IIASA, Laxenburg, Austria.

LinkedIn Articles and Posts: Mahendra Shah

Featured Articles

- 1) COVID19: The Lonely Death Without Goodbyes
<https://www.linkedin.com/pulse/COVID19-lonely-death-without-goodbyes-mahendra-shah/>
- 2) Attn Businesses and Corporations: Enhancing the Wellbeing of Your Workforce-The Real Business Wealth Creators
<https://www.linkedin.com/pulse/attn-businesses-corporations-enhancing-wellbeing-your-mahendra-shah/>
- 3) Zen Resort Bali: A Unique Holistic Wellness Destination in Perception and Reality in the wake of the COVID19 Pandemic
<https://www.linkedin.com/pulse/zen-resort-bali-unique-holistic-wellness-destination-perception-shah/>
- 4) World Oceans Day: Save Oceans-Save Ourselves
<https://www.linkedin.com/pulse/world-oceans-day-save-oceans-save-ourselves-mahendra-shah/>
- 5) The Imperative for Cooperation and Coordination: Together we can confront the Coronavirus
<https://www.linkedin.com/pulse/imperative-cooperation-coordination-together-we-confront-shah/>
- 6) A Sustainable World of Nature, ONLY when Humans live Sustainable Lifestyles
<https://www.linkedin.com/pulse/sustainable-world-nature-only-when-humans-live-lifestyles-shah/>

LinkedIn Featured Posts

- 1) A Plea to the United Nations Secretary General, Jan 2021
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_un-worldstage-youth-activity-6749171399006539776-bhBU
- 2) Youth Imperative: Changemakers for a Sustainable World in Harmony with Nature, Jan 2021
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_youth-empowerment-sustainable-activity-6748593266092052481-UxtR
- 3) Congratulations Prince William, Earthshot initiative with the focus on Restoring & Protecting Nature, Fixing Climate Change, Reviving Oceans, A Waste Free World & Clean Air, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_10-years-to-repair-our-planet-prince-william-activity-6747698793111781376-AU7k
 - b. <https://lnkd.in/gqraZDr>
 - c. <http://earthodyssey.org/>
 - d. <https://www.youtube.com/watch?v=jZLiqMzinBo&feature=youtu.be>

- 4) A Decade to stay focussed SDGs 2030 and Climate Goals 2030, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_a-decade-to-stay-focussed-on-2030-sdgs-activity-6746568132598603776-rimY
- 5) Principles, as fundamental truth or proposition, are meant to be put into practice as a chain of Systemic Reasoning, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_rio-principles-the-imperative-for-sustainable-activity-6745540223125594112-76gK
- 6) Diversity and Sustainability have to be explicitly at the core of the Imperative for Sustainable Development, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_the-imperative-for-sustainable-development-activity-6744525468806066176-ueI1
- 7) The greatest honour of my 50 Years Journey of Sustainable Development, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_poetry-is-the-culture-and-heritage-of-humanity-activity-6743933210234900480-t5Wq
- 8) Stop Marching for Climate Action and for success March for Climate Action related to Specific Issues, A Lesson from Ghanaian Youth Campaign for Clean Energy, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_for-success-march-for-specific-issue-climate-activity-6742661790984994816-naaK
 - b. <https://lnkd.in/gn5vGny>
 - c. <https://lnkd.in/gY8dAka>
- 9) The Indigenous Peoples Plea to develop with Wisdom & Peace, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_the-indigenous-peoples-to-development-with-activity-6741942233768964096-o7AV
 - b. https://lnkd.in/dpRJg_g
- 10) The Suisse People lose the Battle, their Governments & Corporations celebrate success but our abuse of Nature will come to haunt sooner then we think, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_swiss-vote-to-reject-responsible-business-activity-6738967802365005824-MmF
- 11) The Year 2020 has been an unprecedented as it has put us on notice that we cannot continue with Human Divisiveness & Nature Destruction, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_climatechange-humanrights-sustainable-activity-6738321432289406976-pm60
- 12) China-India: Two equally populous Nations in the World struggling-competing to be Regional & Global Influencers. Bhutan The Kingdom of Happiness at the Cross Border, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_china-india-competing-to-be-regional-influencers-activity-6737229137959903232-YV0M
 - b. <https://lnkd.in/ghvzB5C>
- 13) Global Wellness Awards for Best Director/ Manager Asia, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_howawards-poweredbyspaconnectors-activity-6736885273235361792-ijgW
 - b. <https://lnkd.in/dFiZWMY>
 - c. <http://hallofwellnessawards.com/>
- 14) Un-locking the Power of Belonging, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_un-locking-the-power-of-belonging-global-activity-6735010954263822336-bea
 - b. <https://lnkd.in/gJJ4faM>
- 15) Unlocking the Power of Belonging by the World Happiness Fest, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_unlocking-the-power-of-belonging-by-the-world-activity-6734620087707402240-25i
 - b. https://hopin.com/sign_in
 - c. <https://lnkd.in/geyd9i6>

- 16) Zen Resort Bali Wellbeing Pre-Divorce Group Retreat, Dec 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_before-divorcing-a-wellness-retreat-might-activity-6732943590177280000-et3l
 - b. <https://lnkd.in/geXSKEC>
- 17) Nature-Harmony-Peace Earth Odyssey Webinar, 1 PM GMT, 15th November 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_earth-odyssey-webinar-nature-harmony-peace-activity-6732607097567092736-62-3
 - b. <https://lnkd.in/gxdTcsu>
 - c. <https://lnkd.in/gt6mVj8>
- 18) The 21st Century Human Health, Sustainable Lifestyles and Protecting Nature Challenges: Mainstreaming Ayurveda, Nov 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_mainstreaming-ayurveda-yoga-modern-health-activity-6729632562236526592-sAth
 - b. <https://lnkd.in/ggUvCbc>
 - c. <https://lnkd.in/gRN-SGt>
- 19) Sustainable Development is no longer an Option, It is an Imperative, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_sustainability-earthodyssey-inspiringwomen-activity-6727777308683313152-JRwN
 - b. <https://lnkd.in/gGkbwKJ>
 - c. <http://earthodyssey.org/>
 - d. <https://lnkd.in/gfjv2YT>
 - e. https://lnkd.in/d_GVUfb
- 20) 24th October: A Day to celebrate UN at 75 Years/Wonder Where is our Humanity?, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_24th-october-a-day-to-celebrate-un-at-75-activity-6725641061756215296-HNpf
 - b. <https://lnkd.in/gHGKBH6>
- 21) Earth Odyssey 2020-2022
An Imperative for Sustainable Development, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_earth-odyssey-project-brief-2020-2022-activity-6724263463046258688-A5eb
 - b. <https://lnkd.in/gY8dAka>
 - c. <https://lnkd.in/gWr4qHZ>
- 22) Earth Odyssey 2020-2022 : Mobilising the World Community for Sustainability Actions Leaderships :
An Imperative for Sustainable Development, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_sustainable-development-an-imperativeno-activity-6724258037894406144-LWfJ
 - b. <https://lnkd.in/gfjv2YT>
 - c. <https://lnkd.in/gWr4qHZ>
- 23) Climate Armageddon Foretold, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_the-great-unravelling-i-never-thought-i-activity-6723361735883001856-kh5J
 - b. https://www.theguardian.com/australia-news/2020/oct/15/the-great-unravelling-i-never-thought-id-live-to-see-the-horror-of-planetary-collapse?CMP=share_btn_tw
- 24) Calling Businesses, Governments & Citizens to Reach out to those in Need: COVID19 Pandemic: Despair, Death, Dehumanization, Destitution, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_one-world-confronting-human-tragedy-economic-activity-6722476049420062720-5tLL
- 25) The Wellbeing Future of Global Tourism, Holistic Health, Nature Immunology and Leisure Recreation, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_wellbeing-future-of-global-tourism-health-activity-6719113529678536704-NJMt
 - b. <https://lnkd.in/g4kVWmF>

- 26) World Animal Day, The Living World: To be or Not to be, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_world-animal-day-the-living-world-to-be-activity-6718383315738611712-gcl3
- 27) Professional Awakening for Actions, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_linkedin-professional-pandemic-activity-6717596886494248960-douU
- 28) From Egocentricity to Essential Sustainability Actions to Save Nature & Humanity, Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_from-egocentricity-to-essential-sustainability-activity-6713994705547354112-eFdp
 - b. <https://lnkd.in/d2pyPE4>
- 29) Reflections triggered watching an incredible documentary "My Octopus Teacher", Oct 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_reflections-pandemic-crisis-activity-6712885388152856576-ls14
- 30) Dalai Lama calls for unified global action on climate change, Sep 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_dalai-lama-calls-for-unified-global-action-activity-6711439281447149568-ZdQD
 - b. <https://lnkd.in/gY8hKjH>
- 31) The Lethality of the Pandemic: A Foreboding, Sep 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_the-mums-asking-suicidal-teens-to-please-activity-6709490524698636288-D2y8
 - b. <https://www.bbc.com/news/av/world-asia-54068937>
- 32) The Original Garden System Company, Founded M M Shah 1988, Sep 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_verticalgardens-urbangardens-municipalities-activity-6708643911625261056-TDft
- 33) Banksy "Louise Michel" : Gratitude Compassion Humanity, Aug 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_banksy-funds-boat-to-rescue-refugees-at-sea-activity-6705271565929586688-ZKC1
- 34) An Imperative for Climate Actions, Transportation, Sustainable Lifestyles, Aug 2020
 - a. <https://www.linkedin.com/posts/activity-6704606292264280064-bKKM>
- 35) Zen Resort Bali Awaits: Opening Bali's World Renowned Tourism, August 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_the-spirit-of-zen-resort-bali-captured-beautifully-activity-6700017499653713920-tTjQ
 - b. <https://www.youtube.com/watch?v=rQey65hPD1E>
- 36) Bali International Tourism: Benefits well beyond travel carbon footprint, August 2020
 - a. <https://www.linkedin.com/posts/activity-6703149164898996224-EzF9>
- 37) Attn Businesses & Corporations: Enhancing the Wellbeing of Your Workforce-The Real Corporate Wealth Creators, August 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_zen-resort-bali-staff-zenchi-10-minutes-activity-6700624763339059200-Lyk3
 - b. <https://www.youtube.com/watch?v=h2g1uam1PpU&feature=youtu.be>
- 38) Bali's first Shinrin Yuko Forest Bathing with free-flow spring water river and ponds, enhancing personal immunity and Nature healing at Zen Resort Bali, July 2020
 - a. https://www.linkedin.com/posts/mahendra-shah-89483b2a_wellness-forestbathing-holistic-activity-6689029486383644672-oCs1

- 39) International Day of Yoga and Consciousness, June 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_3-yoga-activity-6680100300520615936-wSAb
 - https://www.youtube.com/watch?list=PLTmloKK33O7N9j-6oZz2ijd1jLpS0ej11&time_continue=14&v=-mm04Fg6-d4&feature=emb_logo
- 40) BBC Who is to blame for climate change, June 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_who-is-to-blame-for-climate-change-activity-6679605987021869056-OMln
 - <https://www.bbc.com/future/article/20200618-climate-change-who-is-to-blame-and-why-does-it-matter?ocid=ww.social.link.linkedin>
- 41) I Can't Breathe : Enhance Humanity, Save Nature, Embrace One World
Mahendra Shah, Zen Resort Bali, June 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_i-cant-breathe-humanity-nature-world-activity-6679047795233714176-s_Q2
- 42) WHO changes its advise on Face Mask, June 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_who-changes-its-advice-on-face-masks-activity-6674801626512949248-mxFd
 - <https://www.bbc.com/news/health-52945210>
- 43) World Ocean Day: Earth Odyssey Webinar June 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_oceanday-humanhealth-sustainability-activity-6674201115757813760-c9tM
- 44) Wellness World Sustainable Human Lifestyles, Development & Protection of Nature, May 2020
- Mahendra Shah Vision
https://www.linkedin.com/posts/mahendra-shah-89483b2a_vision-of-zen-activity-6668346976100331520-W8z6
 - <https://www.youtube.com/watch?v=vpwQxcalMZg&feature=youtu.be>
- 45) Sustainable Development is not an option
- EarthOdyssey.org
https://www.linkedin.com/posts/mahendra-shah-89483b2a_aberturawebsiteearthodyssey-activity-6665469700119638016-w2qR
 - <https://lnkd.in/gY8dAka>
 - <https://www.youtube.com/watch?v=5KWxpRUBZRI>
- 46) Women in Lockdown: An Opportunity to Save the World, Earthodyssey Webinar, April 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_coordination-cooperation-women-activity-6661841448570359808-OOCM
 - https://www.linkedin.com/posts/mahendra-shah-89483b2a_join-our-cloud-hd-video-meeting-now-activity-6664782974455816193-68NF
- 47) The Imperative for Cooperation and Coordination: Together we can confront the Coronavirus, April 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_cooperation-coordination-un-activity-6658839989851422720-IFLB
- 48) Tree of Life Dedication to Australia, January 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_pray-for-australia-activity-6621321934317678592-Co47
 - <https://www.facebook.com/watch/?v=1067017523650746>
- 49) Coronavirus: An Awakening and a Reckoning to secure the Sustainable Future of Humanity and Nature, February 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_coronavirus-climatechange-sustainabledevelopment-activity-6642602156794974208-NaQs

- 50) Coronavirus: A Reckoning to Secure the Sustainable Future of Humanity and Nature, February 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_virusmutations-lifestyles-sustainability-activity-6642603695760605184-oPdE
- 51) Bali hasn't imposed any travel restrictions and Zen Resort Bali remains open, February 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_zenchipdf-activity-6645494706501488640-vW91
- 52) Yoga Consciousness with Pranayama, Meditation and Worship, February 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_yoga-consciousness-with-pranayama-meditation-activity-6645496426044497921-FwVu
- 53) Coronavirus: A Global Pandemic needs a Global Contentment Response, February 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_unity-activity-6645527662460837888-mpiz
- 54) A Global Taskforce Imperative for Corona Epidemic, March 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_a-global-taskforce-imperative-for-corona-activity-6647781528560644096-9Gqn
 - <https://www.youtube.com/watch?v=hHccg2db98o&feature=youtu.be>
- 55) An International Corona Crisis Plea for a United Nations Coordinated Task Force, March 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_an-international-corona-crisis-plea-for-a-activity-6648198668103049216-zQL
- 56) Social Isolation: Locked Down but soon to soar Free Forever, March 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_social-isolation-locked-down-but-soon-to-activity-6650216436469981184-iorD
 - <https://www.youtube.com/watch?v=LKr2IAw66QI>
 - <https://lnkd.in/g5nffEj>
- 57) A Human Health Imperative: World Pandemic Precautionary Principle, March 2020
- https://www.linkedin.com/posts/mahendra-shah-89483b2a_pandemic-precautionaryprinciple-publicfacemasks-activity-6651467837590380544-L22V
- 58) A Sustainable World of Nature, ONLY when Humans live Sustainable Lifestyles, March 2020
- <https://www.linkedin.com/pulse/sustainable-world-nature-only-when-humans-live-lifestyles-shah/>
 - https://www.youtube.com/watch?v=rsrg_1mNdLM&feature=youtu.be



"Embrace your humanity and create a sustainable humane world"
Mahendra Shah, December 2016