

Report on the Discussions held in Sri Lanka

June 8-11, 2009

Agricultural Renewal in Northern Sri Lanka

Prof M S Swaminathan

Member of Parliament (Rajya Sabha)

Over 80 percent of the population of the Northern Province of Sri Lanka, comprising the districts Jaffna, Kilinochi, Mullaithivu, Mannar and Vavunia, depend on farm enterprises from their work and income security. Prior to the conflict, the Province had a cultivable area of about 300,000 ha, of which over 100,000 ha were under rice. The remaining area was planted with onion, chillies, mung bean, sesame, groundnut, yams, fruits, vegetables and coconut. At the moment, it is not known how much area can be farmed, since there has been much damage to agriculture due to mines, protective structures and security measures. The northern province was an agricultural paradise before the conflict but currently it is estimated that crop production may be of the order of 150,000 tonnes as against 800,000 tonnes earlier. A large proportion of farms is in the form of home gardens of about 0.1 ha, producing a variety of horticultural and animal products. The Tamil farmers of the Northern Province have been as precious to Sri Lanka, as the Sikh farmers of the Punjab are to India, since both have farming in their blood. Unfortunately, the war has led to a bread basket being reduced to a begging bowl.

The Northern Province had over 2300 minor tanks, about 50 medium tanks and 11 major tanks prior to the war, but most of them now need restoration. Forests also need to be replanted and rejuvenated. **The pathway to livelihood rehabilitation in this area is agricultural renewal.** India, with its vast agricultural research and educational infrastructure is in the best position to usher in an era of hope and income security in the lives of the farm and fisher families of the Northern Province. Because of the loss of life and livelihoods, the working population among men has been reduced. Feminization of agriculture is hence a reality in this area. **Engendering all agricultural research, education, extension and development programmes is a must.**

Taking advantage of my visit to Sri Lanka from June 7 to 11 for delivering a lecture on Building a Sustainable Water Security System (Annexure 1), I undertook an in-depth study, with the encouragement of the Minister for External Affairs, Government of India, on the role India can play in accelerating the pace of progress in the livelihood rehabilitation of the farm and fisher families in the conflict zone. In addition to discussions with a wide range of officials, experts, NGOs, media representatives, I had the privilege of discussing issues concerning “India and the Agricultural Renaissance of the Northern Province” with the following:

- H. E. Mahinda Rajapaksa, President of Sri Lanka
- H. E. Ratnasiri Wickremanayake, Prime Minister of Sri Lanka
- Hon Mr K N Douglas Devananda, Minister of Social Services and Social Welfare
- Hon. Maithripala Sirisena, Minister of Agricultural Development and Agrarian Services
- Hon Chamal Rajapaksa, Minister of Irrigation and Water Management.
- Mr Alok Prasad, High Commissioner of India

A summary of the points which emerged during these discussions is given below:

A. Meeting with H. E. Mahinda Rajapaksa, President of Sri Lanka on Tuesday, 9th June, 2009.

1. Theme: Shaping the Future of Agriculture of the Northern Province.
2. Over 80% of the Tamil population in the Northern Province covering Jaffna, Kilinochi, Mullaithivu, Vavuniya and Mannar depend on agriculture and allied occupations for their work and income security. Hence the revival and revitalization of agriculture holds the key to the livelihood rehabilitation of the Internally Displaced Persons (IDP).

Already, the Ministry of Agriculture of Sri Lanka has prepared a strategy for “Vaddakkin Vasantham” (Revitalization of Northern Province). The President requested Prof. Swaminathan to review the plans already prepared and help in preparing a road map for the future.

3. The President mentioned that because of very high subsidy (96%), chemical fertilizers are displacing compost and other organic manures. Prof. Swaminathan said that an Integrated Nutrient Supply System comprising of vermiculture (earthworm), biofertilizers, compost, green manure crops and cereal-legume rotation will help to reduce the dependence on mineral fertilizers. Green manure plants like *Sesbania rostrata* fix nitrogen both in stem and in the roots. Seeds of such plants should be multiplied and distributed. At the same time, Soil Health Cards giving data on the physical, chemical and microbial status of the soil should be issued to each farm family. Mobile Soil Testing vans have to be mobilized for this purpose.
4. Every calamity presents an opportunity for progress. A new chapter in the agriculture of the Northern Province can be opened up by introducing farmers to conservation farming and integrated pest management and integrated natural resources management. Soil Health care and enhancement, and more crop per drop of water techniques developed by IWMI will help to increase yield and reduce the cost of production. Post-harvest processing and value addition will help to generate more off-farm employment and increase earning opportunities for women.
5. Special attention will have to be paid to the needs of women in agriculture. They can be helped to take to seed production and the preparation of the biological software essential for sustainable agriculture, like vermiculture, biofertilizers and biopesticides. The Bank of Ceylon can make the necessary credit available. There is need for concurrent attention to increasing on-farm productivity and off-farm employment, so that there are multiple avenues of income to small farm families. The marketing infrastructure needs to be built. There is much scope for cattle and buffalo rearing as well as goat and poultry rearing. Mixed farming systems involving crop-livestock integration will help to enhance income as well as household nutrition. Technology, training, techno-infrastructure and trade will have to be attended to in an integrated manner.

6. India's assistance in strengthening agricultural research, training and development will be timely. There is need to move fast, since the internally displaced population urgently need a message of hope. India can also provide the necessary seeds, biofertilizers and biopesticides, farm equipment and post-harvest infrastructure. For strengthening location-specific research, an existing centre in Vavuniya can be strengthened. Mobile Seed Testing Vans may be provided.
7. For fishermen, it will be useful to develop an existing Centre in Mannar as a "Fish For All" Training Centre on the model of the one set up Poompuhar, Tamil Nadu by the M. S. Swaminathan Research Foundation. Such a Centre will impart Training in all aspects of fisheries, starting from capture and extending up to consumption.
8. The President appreciated greatly the assistance and support being provided by the Government of India. Agricultural revival holds the key to livelihood rehabilitation in the Northern Province and India's assistance will hence be timely.

B. Discussion with Hon Ratnasiri Wickremanayake, Prime Minister of Sri Lanka (9 June 2009)

1. The role of women in the areas of food production and water conservation and management is extremely important. Hence, all programmes in this field should be gender sensitive.
2. Islands like Sri Lanka are in great danger of submergence due to rise in sea level arising from global warming. Anticipatory steps should be taken to protect coastal communities, such as raising bioshields.
3. Scientists should work out methods by which the excess carbon dioxide in the atmosphere can be sequestered. At the same time humankind as a whole should adopt sustainable life styles and reduce drastically the emission of green house gases.

4. Water quality is deteriorating. Even drinking water is likely to get scarce. It is important that bioremediation agents are developed to remove the heavy metals and other pollutants from water.
5. With the cultivation of high yielding hybrids of crops, there is indiscriminate application of pesticides and mineral fertilizers. This is leading to the depletion of earthworms and micro-organisms from the soil. Soil Health Cards to farmers should contain information on the chemical, microbiological and physical conditions of the soil.
6. The Impact of climate change on rubber and other plantation crops should be studied and anticipatory steps taken to protect the livelihoods of those working in the plantation crops sector.

All the above points need careful and urgent consideration from scientists.

C. Discussion with Hon. Maithripala Sirisena, M. P., Minister of Agriculture Development and Agrarian Services (June 10, 2009)

1. Average Farm size is small (1 to 2 acres) and increasing the income of small farmers is an urgent task. Labour and input costs are going up.
2. Rainfall distribution is erratic and uncertain. Water harvesting and management holds the key to stable agriculture. Power shortage adds to the problem.
3. A special agricultural programme is being developed for the Northern Province. Farmers of the region are very hard working and capable. Paddy is the main crop. At the same time, farm women and men produce a wide range of vegetables and fruits, such as red onions, mung beans, chillies, sesame, groundnut, papaya, pineapple, mango and guava.
4. Excessive use of mineral fertilizers and chemical pesticides is damaging ground water quality. A special programme for organic fertilizers is being organized.

5. Good quality seed is a major constraint. Under the Government of India supported programme, Seed Villages can be organized immediately. Seeds of appropriate varieties and crops could be supplied to help in initiating farm operations.
6. Long term measures to take the river water now going to the sea to the Northern Province are also needed. This will help farmers to take 3 crops a year.
7. If farm ecology and economics go wrong, nothing else will go right in agriculture. Therefore, environmentally sound practices which can help to enhance productivity in perpetuity without associated ecological harm should be promoted.
8. A discussion can be organized at Vavuniya soon to finalise the action plan.

D. Setting up an Institute for Agricultural Transformation and Capacity Building and Fish for All Training Centre, Northern Province, Sri Lanka

Discussions held on 11 June, 2009 with:

Hon. K N Douglas Devananda, Minister of Social Services and Social Welfare

Ms Viji Jegarasasingam, Secretary, Ministry of Social Services and Social Welfare

Eng. M Ramathanan

Dr N. Selvakkumaran, Dean, Faculty of Law, University of Colombo

Dr A S Vivekanandan

Mr K Dayananda, PS to Minister

Prof Swaminathan summarized the conclusions of the discussions held with H. E. the President, Hon. Prime Minister, Hon. Minister of Irrigation and Water management and Hon Minister of Agricultural Development and Agrarian Services. The major suggestions which emerged at these meetings are the following:

1. The proposed Institute for Agricultural Transformation and Capacity Building for the Northern Province could be developed at Vavuniya. The Fish for All Training Centre can be set up in Mannar. Both these institutions can function on a hub and

spokes model, with the main centres having outreach activities at appropriate locations. The existing Agricultural Faculty in Jaffna could also be strengthened.

2. The agricultural revitalization of the Northern Province (“Vaddakkin Vasantham”) will be based on the following components.
 - a) The Institute will be based on a pro-small farmer, pro-woman and pro-nature orientation to technology development and dissemination. Over 20 per cent of the families are female headed and the empowerment of women in agriculture should include support services like crèches, day-care centres, nursery schools, etc. Gender sensitive farm implements will be needed.
 - b) Technology: Eco-technologies based on a blend of traditional ecological prudence and frontier science will be developed. Green Agriculture practices like Integrated Pest Management (IPM) and Integrated Nutrient Supply (INS), Seed Technology, and improved post-harvest technology will receive priority attention. Cattle, buffalo, goat and poultry rearing and mixed farming will be paid equal attention.
 - c) Techno-infrastructure: Seed and Grain Banks, farm implements, revitalization of farm ponds and other water-harvesting structures, storage godowns, post-harvest processing and value addition will have to be organized. Mobile Soil Testing Vans will undertake soil testing (both macro and micro-nutrients) and will help to issue Soil Health Cards to farm families. Storage and marketing infrastructure both for perishable and non-perishable commodities will have to be created. In view of energy shortage, solar and wind energy should be mobilized.
 - d) Training: The training methodology will be learning by doing. Farmer to Farmer learning as well as Lab to Land (Scientists to Farmer) programmes will be organized. Trainers’ Training Programmes will be organized at Vavuniya, Jaffna and Mannar.

- e) Trade: Assured and remunerative marketing opportunities will determine the economic viability of farming. Market linkages, contract cultivation in the case of vegetables and fruits, and other forms of assured methods of achieving income stability will be explored.
3. **Legal structure:** Prof N Selvakkumaran, Dean, Faculty of Law, University of Colombo, suggested that the proposed Agricultural and Fisheries Centres may be created as Statutory Bodies by a Presidential decree under Schedule 9 of the 13th Amendment to the Constitution. Schedule 9 deals with agriculture, agrarian services, research and extension. The Sri Lanka financial year is from January to December. This will be used for auditing purpose.
 4. **Next Steps:** After receiving Government of India's official concurrence for organizing the proposed Indo-Sri Lanka institutions for the livelihood rehabilitation of the farm families of the Northern Province and other Internally Displaced Persons (IDP), a Multi-disciplinary and multi-stakeholder consultation will be held at Vavuniya for finalizing the details of the initiative. Before experts discuss the matter, the voices of the affected population will be heard, particularly in the area of research and training priorities, so that the work becomes demand driven. Appropriate women and men representatives of IDPs should be invited.

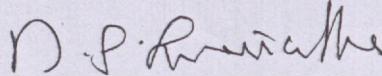
The next major cropping season will start in October, coinciding with the N.E. Monsoon. Therefore, the Planning Meeting should be held in July, so as to ensure that one year is not lost in the farm rehabilitation programme. One meeting may be held at Mannar with Fisher Communities. Special efforts should be made to attract youth to farming.

At the proposed July Planning Meeting, suitable experts from Sri Lanka and India, appropriate Ministers and officials, credit and financial institutions, input supply agencies and above all, representatives of farm and fisher families should be invited to attend. The Ministry of Social Services and Social Welfare of the Government of Sri Lanka will

make the necessary logistic arrangements. As desired by the President of Sri Lanka, Prof M S Swaminathan may be requested to chair the Planning meetings.

Way Forward:

- Government of India may convey their willingness to extend assistance in the areas of agriculture, animal husbandry and fisheries research, education and development, in order to accelerate progress in the livelihood rehabilitation of farm and fisher families in the Northern Province.
- On receipt of an official welcome from the Government of Sri Lanka to such an offer, the Government of India may constitute an Expert Team, comprising both technologists and social scientists (with several women scientists), to participate in the proposed consultation at Vavuniya in July, 2009.
- Representatives of the affected farming population in the Eastern Province should also be invited to the Vavuniya consultation.
- The Indian Team to the Vavuniya Consultation may include appropriate scientists from institutions like the Tamil Nadu, Kerala and Karnataka Agricultural and Animal Sciences Universities, the Indian Institute of Horticultural Research, Bangalore, Central Rice Research Institute, Cuttack, Rice Directorate, Hyderabad, National Dairy Research Institute, Central Marine Fisheries Institute, Cochin, MSSRF, Chennai, representatives of fertilizer, seed and farm implements manufacturers, and a few outstanding farm women and men from Tamil Nadu.
- Based on the outcome of the Consultation, the Government of India may consider making an initial commitment of about Rs.50 crores during the next 3 years for building the Agricultural Transformation and Capacity building Centre, the Fish for All Research and Training Centre and the agricultural revival programmes.


(M S Swaminathan)

11 June 2009

BARI Papers



PALACE ¹⁹⁵⁶  ²⁰⁰⁶ HOTEL
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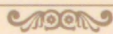
Jonas Hoffman

(1731 - 1780) scuola olandese

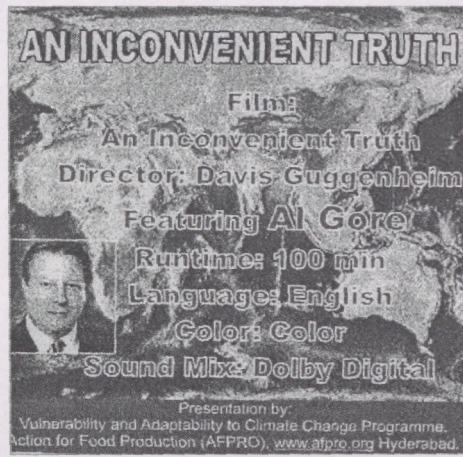
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Collezione Palace Hotel



**Climate Change :
A Mega Threat to Human Security**



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Inki -
governmental
Panel on
climate
change

Professional
Voice in



dealing
with threats to
human security

Natural and Human Tragedies

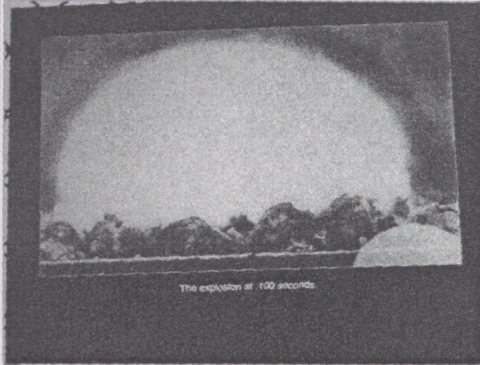


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Public
Understandly



Trinity Site : The Beginning of the Nuclear Peril



5.30 a.m. on July 16, 1945
And just at that instant there rose
From the bowels of the earth
A light not of this world,
The light of many suns in one

William L Laurence

*Sun set
in the
lives of
Billions -*

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When an atomic bomb is dropped,
Day becomes night and
People turn into ghosts

Primary School third grader
Hatsumi Sakamoto

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The Pugwash Agenda : 50 Years Later

Heartland : Eliminating the catastrophic threat posed to humanity by nuclear and other weapons of mass destruction

Means to this end: Ways of alleviating the conditions of economic deprivation, environmental deterioration and resource scarcity and unequal access, which leads to resentment, hostility and violence throughout the world

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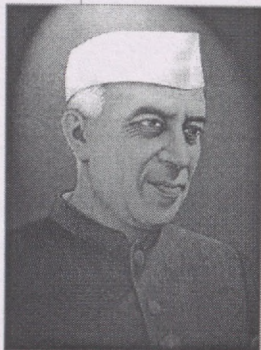
Wake Up Call

- o Daily reports of deaths of innocent civilians in suicide bomb blasts in Iraq, Afghanistan and other places as well as ethnic strife and cleansing no longer shock us. Hence, urgent steps are needed to heal wounds and restore harmony within the human family. We need a Convention on Human Diversity, on the lines of the Global Convention on Biological Diversity, in order to foster love and respect for diversity and pluralism

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Goals of Jawaharlal Nehru : Architect of India's Atoms for Peace Programme (1947-1964)



- o Prevent further poliferation of Nuclear Weapons
- o Accelerate movement towards universal nuclear disarmament
- o Promote world wide use of Nuclear energy
- o Ensure Nuclear safety and security

Dr Homi Bhabha was the Chairman of the First UN Conference on the Peaceful Uses of Atomic Energy held in Geneva in 1955

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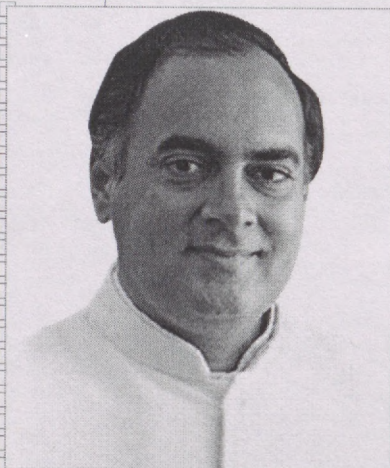


1958
Atoms on the Farm
Gen. Eisenhower

Responsible
Nuclear Laboratory
for Global
Peace

Rajiv Gandhi Plan for a Nuclear-Weapon Free World

(presented to the UN Special Session on Disarmament, 1988)



- o Time bound elimination of all nuclear weapons
- o No first use policy
- o Voluntary Moratorium on further testing
- o A comprehensive Test Ban

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No Room for Double Standards

So long as any State has nuclear weapons, others will want them. So long as any such weapons remain, there is a risk that they will one day be used, by design or accident. And any such use would be catastrophic.... The Commission rejects the suggestion that nuclear weapons in the hands of some pose no threat, while in the hands of others they place the world in mortal jeopardy”

Blix Commission, June 2006
Report on "Weapons of Terror"

Root Cause

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Dr Mohamad El-Baradei, Director General of the International Atomic Energy Agency (2007)

“Soon, there could be 30 virtual new nuclear weapons states on the horizon. **There are no legitimate nuclear weapon powers.** Elimination of nuclear weapons in all countries is the only way that will prevent new countries from acquiring nuclear weapons”.

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**50th Anniversary – Proposal for a Pugwash Appeal
Major Components**

1. All nations with nuclear weapons should adopt a legally mandatory policy of "no first use".
2. Respect commitments to nuclear non-proliferation treaty (NPT), ratify Comprehensive Test Ban Treaty (CTBT), conclude a Fissile Material Cut Off Treaty, and end all research relating to the development of new nuclear weapons
3. Conclude a Nuclear Weapons Convention outlining a time frame for getting to Zero by 2020.
4. Avoid prospects for nuclear terrorism and adventurism by eliminating all unsecured nuclear fissile material and by implementing the concrete steps proposed by Pugwash for the elimination of highly enriched uranium; otherwise there is risk of nuclear power groups and individuals emerging, in addition to nuclear power States.

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**50th Anniversary Pugwash Appeal
Major Components**

5. Because of the multi-dimensional threats posed to human security by climate change, and the consequent need for reducing green house gas emissions, interest and investment in nuclear power plants are growing. The civilian uses of atomic energy are likely to grow. Hence, the UN may convene an International Conference on the Civilian Uses of Atomic Energy to develop a Code of Conduct to ensure that the non-military use of nuclear fuels does not get abused and to further strengthen safeguards and the inspection role and monitoring capacity of IAEA.

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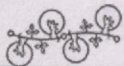
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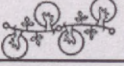


*3 Mile island
Chernobyl*

*Climate
change*

Bulletin on the Atomic Sciences US 2008 Presidential Campaign, current and future size of the US Nuclear arsenal, the state of the stockpile Stewardship Program

	<h3>50th Anniversary Pugwash Appeal</h3> <h3>Major Components</h3>
	<p>6. Democratic systems of governance are fast spreading in the world, which involve the holding of free and fair elections periodically. It would be useful to develop a Pugwash 50th Anniversary Appeal which calls upon all political parties in every country to include in their next election manifesto, a firm commitment to work for speedy nuclear disarmament. Without global political commitment, this goal cannot be achieved.</p> <p>7. Introduce in all school curricula, information relating to the consequences of the use of nuclear weapons in Hiroshima and Nagasaki in August 1945, so as to bring home the immediate and long term disastrous impact of a nuclear war. Without a nuclear peril literacy movement, the climate for eliminating nuclear weapons and ending nuclear proliferation cannot be generated.</p> <p style="text-align: right;">Proposed by M S Swaminathan at Hiroshima, August 2005</p>
	<p>MSSRF</p> 

	<h3>Peace Dividend</h3>
	<h1>UNCOMMON OPPORTUNITIES</h1>
	<p>An Agenda for Peace and Equitable Development</p> <hr/> <p>The Report of the International Commission on Peace and Food Chaired by Prof M S Swaminathan, 1994</p>
	<p>MSSRF</p> 

Pugwash and Non-Military Threats to Human Security

1. Bio-perils
 - o HIV/AIDS-Tuberculosis
 - o Influenza
 - o SARS
2. Environmental damage, with particular reference to climate change
 - o Agricultural productivity in Africa and Latin-America could fall as much as 30% in this century due to climate change
3. Bread and Biotechnology

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Non-nuclear Threats to Human Security HIV/AIDS

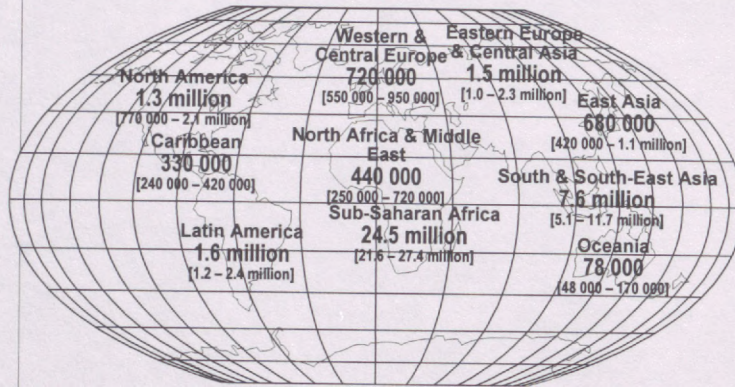
In recent years, the Pugwash movement has expanded its definition of threats to human security to include HIV/AIDS. Five conferences have been held so far to deliberate on the subject.

The last was in Chennai in April 2006

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Adults and Children estimated to be living with HIV/AIDS

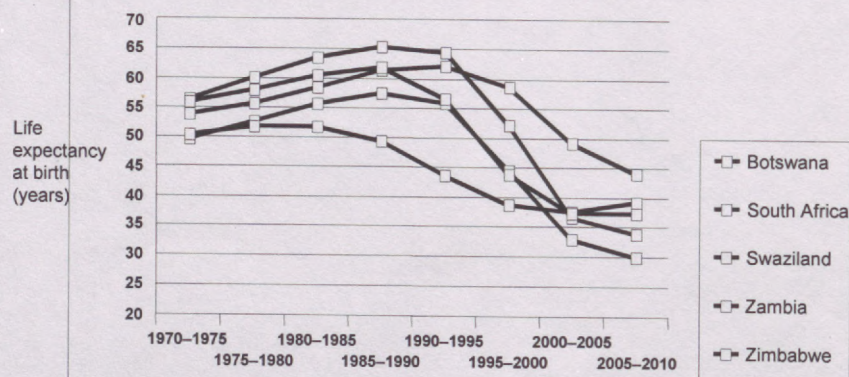


Total: 38.6 (33.4 – 46.0) million

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Impact of AIDS on life expectancy in five African Countries, 1970-2010



Source: United Nations Population Division (2004). World Population Prospects: The 2004 Revision, database.

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5th Pugwash Conference on HIV/AIDS

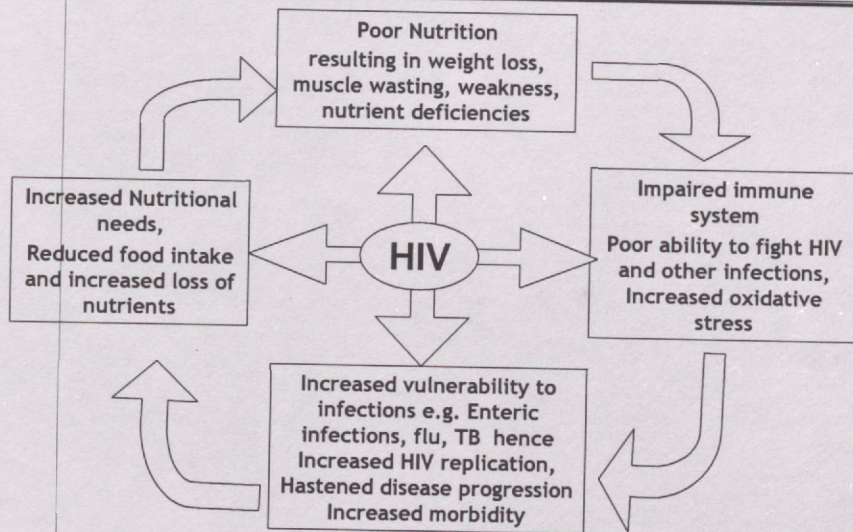
The 5th Pugwash Conference on HIV/AIDS was held at the M S Swaminathan Research Foundation, Chennai, India, from 7-9 April 2006. It focussed on the theme 'Sharing of Experiences, What Works?'. 52 participants from 8 countries participated.

Experts from "first wave" countries where the epidemic struck first and with great intensity (e.g. South Africa, Kenya and Uganda) and those from "second wave" countries where the epidemic threatens to spiral out of control (e.g. India) came together to exchange successful and replicable strategies for the prevention, management and mitigation of HIV and AIDS.

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Vicious Cycle of Malnutrition and HIV



Source: Adapted from RCQHC and FANTA 2003

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Strategies to Reduce HIV

- o Improving awareness about sexual and reproductive health, among adolescents and youth
- o Improving gender equity
- o Improving livelihood security, thus reducing poverty, migration and risky sexual behaviours
- o Introducing a Food-cum-Drug approach
- o Reducing stigma in communities so that people come forward for testing and treatment
- o Increasing treatment access for infected people, including access to second line drugs

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Chennai
to Point
agenda

Climate Change

- o Climate Change could cause the Global Economy almost \$7 trillion by 2050 – equal to a 20% fall in growth – if no action is taken on green house gas emissions
- o Taking action now could cost just 1% - \$350 billion – of Global GDP

Source: Stern Report, October 2006

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IPCC – Key Findings (February 2007)

- o Mean sea level rise of 0.5 m (range: 0.09 to 0.88) is projected by 2100 but with significant regional variations
- o Total radiative forcing of Earth's climate by rising concentrations of GHG (CO₂, methane and nitrous oxide), and the rate of increase in GHG over the past century, are unprecedented in at least the last 20,000 years
- o Human activities since 1750 are almost certain to have caused net warming of the Earth's climate - dominating over the last 50 years.
- o There is considerable confidence that models provide useful projections of future climate change, particularly at global scales. They are able to explain observed features of recent climate and past climate changes under very different conditions

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Environmental Grenelle, Paris, 2007

Key Proposals:

- o All newly built homes to produce more energy than they consume by 2020. Renovate all existing buildings to save energy. Ban incandescent light bulbs by 2010. Reduce greenhouse-gas emission by 20% by 2020
- o Increase renewable energy from 9% to 20-25% of total energy consumption by 2020
- o Bring transport emissions back to 1990 levels. Reduce vehicle speed limits by 10 kms per hour. Taxes and incentives to favour clean cars. Shift half of haulage by road to rail and water within 15 years. Develop train and public transport

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*Dr Pierre
Carone*

President Sarkozy

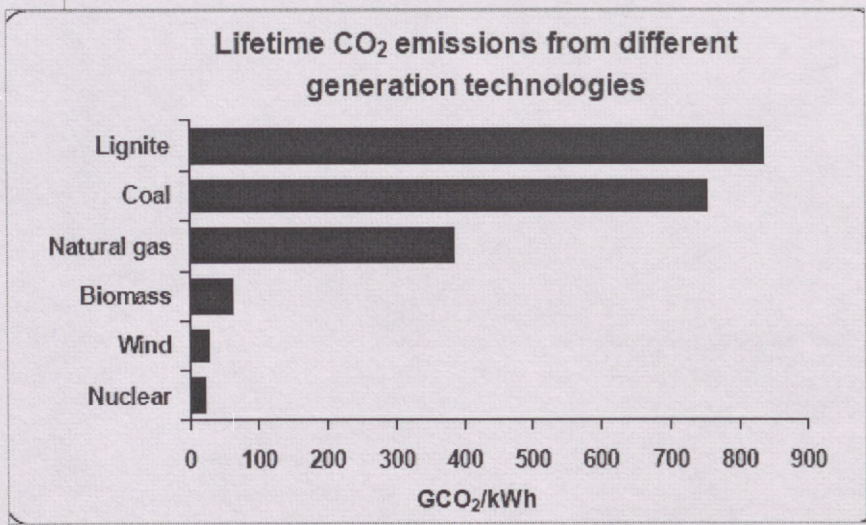
- o Reduce air pollutants quantitatively
- o Create a national network of "green" corridors and nature reserves
- o Increase organic farming from 2% to 6% of total acreage production by 2010 and to 20% by 2020
- o Ecological groups to be stakeholders, like trade unions, in government negotiations
- o Create a body to review planting of genetically modified crops on a case-by-case tests.
- Areas lacking consensus
 - o Nuclear Power
 - o Genetically Modified Crops

Nature, 4 October 2007

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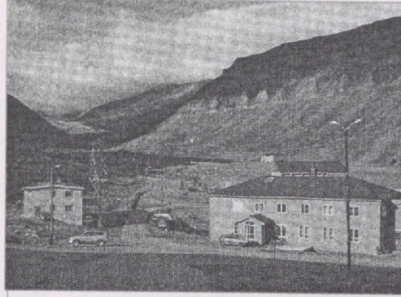
Nuclear Power and Carbon Emissions



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The Svalbard International Seed Vault near the North Pole



Saving Genetic Diversity for Posterity

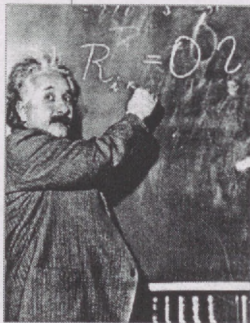
- o Established by Denmark, Finland, Iceland, Norway and Sweden with a holding capacity for three million seed samples
- o Storage Temperature -3.5°C
- o Inauguration in September 2007

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Noah's
Ark

Ensuring Social Inclusion in access to technologies relevant to Food and Health Security



“Concern for man himself and his fate must always form the chief interest of all technical endeavours in order that the creation of our minds shall be a blessing and not a curse”

Albert Einstein

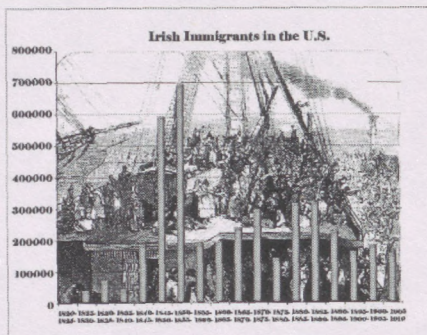
Scientists as Trustees of their intellectual property; Create an International Patents Bank for Climate Friendly Technologies

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Karen
Hallberg.
IPR in
Nanotechnology

Non-nuclear Threats to Human Security Hunger



"A hungry person listens neither to reason nor religion,
nor is bent by any prayer"

Roman Philosopher Seneca

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The Hot Springs Conference Declaration 18 May to 3 June 1943

"This Conference, meeting in the midst of the greatest war
ever waged, and in full confidence of victory, has
considered world problems of food and agriculture and
declares its belief that the goal of freedom from want of
food, suitable and adequate for the health and strength of
all peoples, can be achieved".

Conference convened by President Franklin D Roosevelt

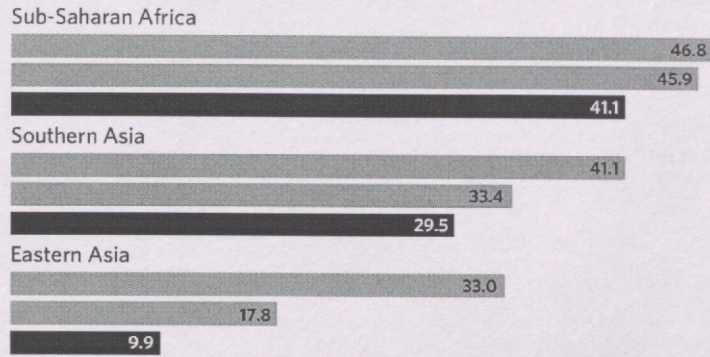
*64 years
later*

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UN Millennium Development Goal No.1 : Reduce Poverty and Hunger by Half by 2015

Proportion of people living on less than \$1 a day, 1990, 1999 and 2004
(Percentage)



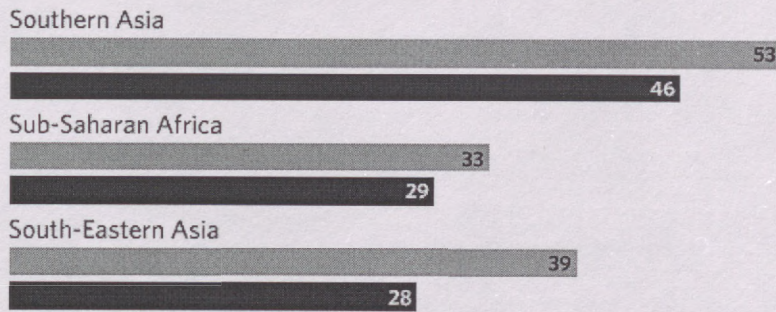
Sources: The Millennium Development Goals Report 2007, United Nations

MSSRF



*July - 2007.
And-junt
China >
Vietnam.*

Proportion of Children under age five who are underweight, 1990 and 2005 (Percentage)

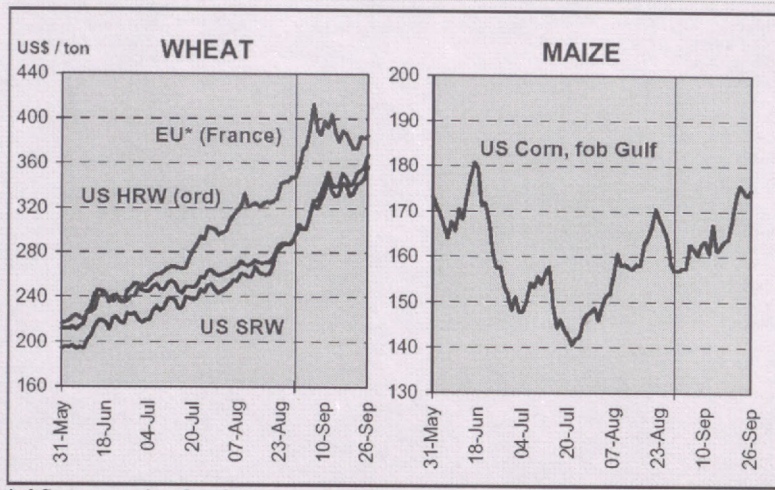


Sources: The Millennium Development Goals Report 2007, United Nations

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Export Prices : Food versus Fuel



* After export refunds

Sources: International Grains Council, Grain Market, Report, 27 September 2007

MSSRF



International Student/
Young Pugwash
January 2007

*Juan
Carlo Palka*

Where hunger rules, peace cannot prevail. The knowledge era opened up by modern biotechnology, information communication technology (ICT), space technologies and other areas of science relevant to sustainable advances in agriculture, provide uncommon opportunities for achieving the goal of food for all and forever. The UN Millennium Development Goals represent a global common minimum programme for sustainable human security. There will be lasting peace and security for all, if the basic minimum needs of every human being can be met. There is no technological, economic, social or political excuse for not doing so.

Consultation on Food Security : A Great Threat to Human Security

MSSRF



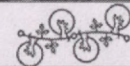
**Pugwash-MSSRF
International Dialogue**

**Bread &
Biotechnology**

**M. S. Swaminathan
Research Foundation,
Chennai, August 7-9,
2007**



MSSRF



**Pugwash-MSSRF International Dialogue on
Bread and Biotechnology (August 7-9,2007)**

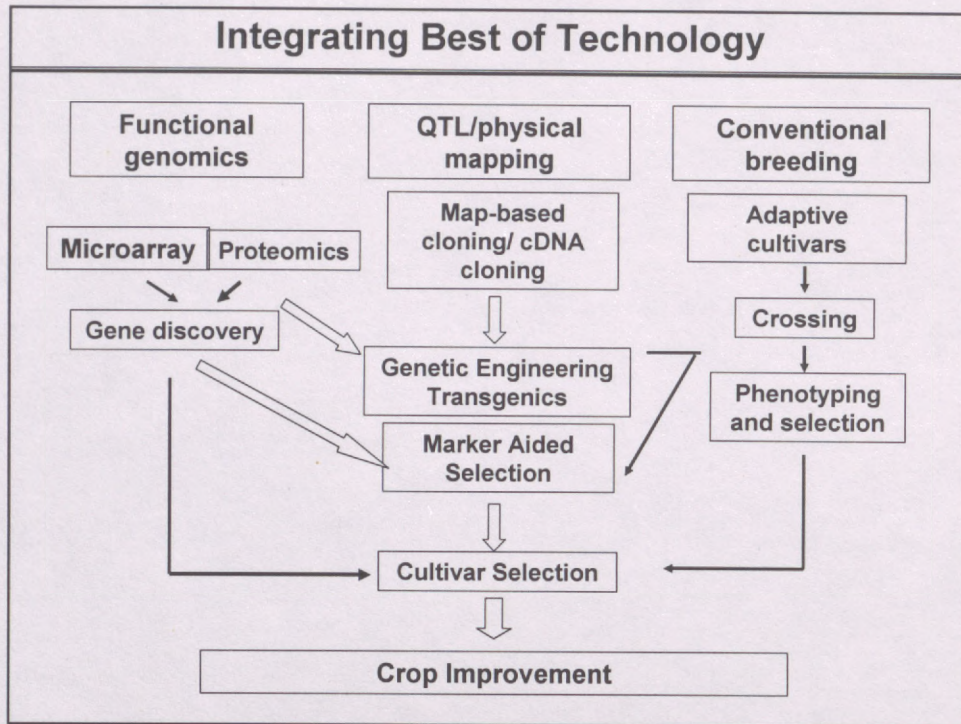
- o To discuss and deliberate on issues related to safe and sustainable use of Biotechnology in the priority areas of Agriculture and Human Health.
- o To develop a roadmap for the safe and responsible use of biotechnology and for assessment of risks and benefits in a transparent manner, which will build professional, political, public and media confidence.

Thematic Areas:

- o Food, Nutrition and Human Health – Emerging Challenges
- o Increasing Agricultural Productivity
- o Protecting Crop Productivity
- o Emerging technologies for human health
- o Societal, Trade and Proprietary Issues
- o Public-private Partnerships
- o Regulations in Biotechnology

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Transgenic Indica Rice Resistant to Sap-Sucking Insects

Transgenic rice plants along with susceptible variety (TN1) and resistant variety (PT833) before BPH infestation.

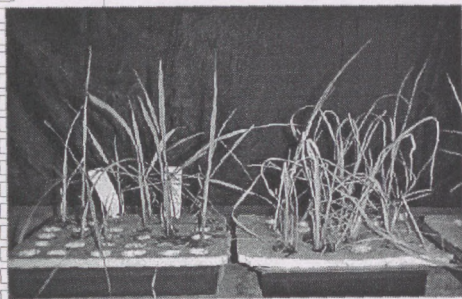
Transgenic rice plants showing resistance against BPH after 10 days of infestation.

- o *Agrobacterium* - mediated genetic transformation in indica rice susceptible to sap-sucking insects, viz., brown planthopper (BPH) and green leafhopper (GLH).
- o Snowdrop lectin gene (*gna*) from *Galanthus nivalis*, driven by phloem-specific promoter was employed for genetic transformation.
- o This is the first report dealing with transgenic indica rice exhibiting high resistance to both insects.

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Responsible
Ethical
responsibility

Avicennia marina
Source plant for genes
for salinity tolerance



Hydroponic assay –
7 days of treatment with
150mM salt of seeds
from T₃ plants

Tsunami
Bioshield

Transgenic Control

MSSRF



Prosopis juliflora:
Donor of Genes for
Drought Tolerance

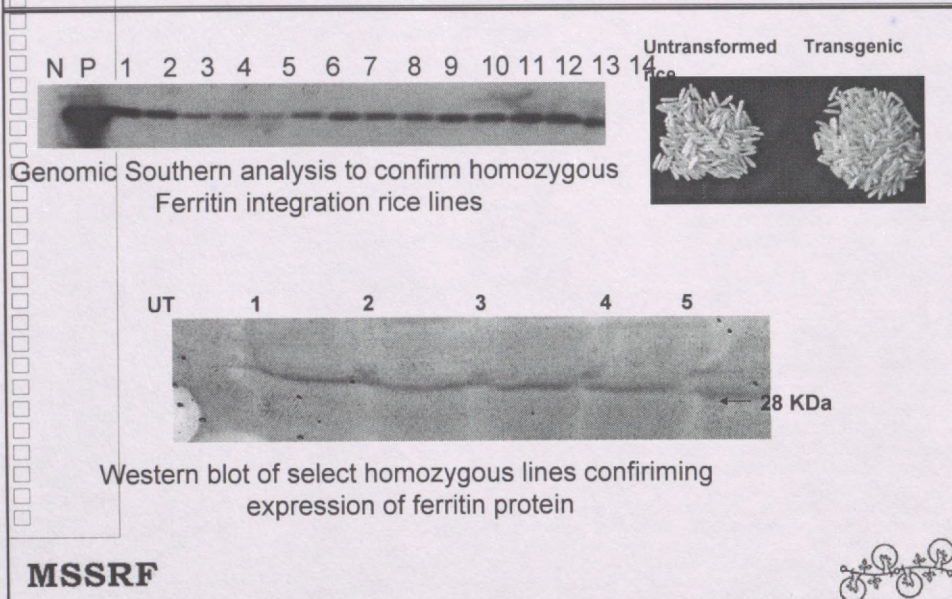
Transgenic Rice
Plants with genes
Isolated from *P.*
juliflora



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Analysis of transgenic rice lines transformed with ferritin



Key Recommendations

- o Enormous progress has been made in developing and deploying biotechnologies in addressing the emerging problems related to Agriculture, human health and environment.
- o It is important that biotechnology is used for the social benefit and for economic development.
- o To fulfill this vision, it has to be ensured that research and application in biotechnology is guided by a process of decision-making that safeguards both human health and the environment with adherence to the highest ethical standards.
- o Choices are required to be made that reflect an adequate balance between benefit, safety, access and the interest of consumers and farmers.

Contd..

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Public & Political
Understanding of
Nuclear Perils

Back to Basics



"The atomic bomb did not only fill me with dread, it made me wonder about the survival of the human race. It also made me determined to devote the rest of my life to making sure that nuclear weapons would never again be used.

To begin with, in 1946 I established the Atomic Scientists' Association in England in order to organize scientists to fight against any effort to use nuclear weapons. Next, I felt impelled to share the reality of nuclear weapons with the public at large, because the average person had no idea about the damages and threat of nuclear arms". This is true even today

Continuation of his Legacy :
Establishment of Sir
Joseph Rotblat Fund

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Role Model
in the
global
movement for
a Nuclear
Free World

50th Anniversary Russell - Einstein
Fund -



via lombardi, 13
angolo c.so vittorio emanuele II
70122 bari - italia
tel. + 390805216551
fax + 390805211499
www.palacehotelbari.it
e-mail: info@palacehotelbari.it
n. verde 800.019332

