

DHAN Foundation
Tata - Dhan Academy
Madurai

Second Biennial Convocation

July 5, 2005

M S Swaminathan
Chairman
National Commission on Farmers

I am extremely happy to be here on a day when the Tata-Dhan Academy is making available to our country outstanding young professionals who have mastered the multi-dimensional aspects of development management. Our country urgently requires vast numbers of development managers who are committed to the cause of participatory and sustainable development, rooted in the principles of ecology, social and gender equity, economics and employment generation. I wish to congratulate both the Dhan Foundation and Sir Ratan Tata Trust for their vision in establishing this unique Academy, and the scholars for choosing to join this great center of learning. In this address, I would like to deal with some of the pressing national and international concerns in the area of sustainable and equitable development.

The world is facing today a trilemma, or a triple dilemma. Over 3 billion people, struggling to survive with an income of less than US \$ 2 per capita per day, are crying for peace and **equitable** economic development. Several countries in Africa are still in the midst of serious famines. The Roman philosopher Seneca said 2,000 years ago, “A hungry person listens neither to reason nor religion, nor is bent by any prayer.”

Thus, one aspect of the trilemma is the craving for a peace and development that is equitable in social and gender terms. On another side, there is a **growing violence in the human heart**. Terms like ethnic cleansing, and biological and biochemical terrorism, are widely used in the media. The nuclear peril has again raised its head. There are over 30,000 nuclear weapons in the arsenals of major and minor nuclear powers. The availability of large quantities of highly enriched uranium increases opportunities for nuclear adventurism. Thus, we are living in an age of nuclear and bio-perils.

The third side of the trilemma is the spectacular progress of science and technology, resulting in increasing **technological divide** between industrialised and developing countries. If access to technology has been a major cause of economic inequity in the past, the challenge now lies in enlisting technology as an ally in the movement for social and gender equity.

In 1994, the report of the *International Commission on Peace and Food*, which I chaired, was released through UNESCO by its then Director General, Prof. Federico Mayor. Unfortunately, the Peace Dividend we had then anticipated, as a result of the end of the Cold War and the break up of the Berlin Wall has yet to materialise. In fact, the expenditure on military hardware and internal security is increasing day by day, particularly after the tragic events of September 11, 2001.

Contemporary developmental challenges, particularly those relating to poverty, gender injustice and environmental degradation are indeed formidable. Adding to these is the HIV/AIDS – tuberculosis pandemic. However, the remarkable advances now taking place in information and communication technology, space technology, biotechnology, agricultural and medical sciences, and renewable energy and clean energy technologies provide hope for a better common present and future. Genomics, proteomics, internet, space and solar technologies and nanotechnology are opening up uncommon opportunities for converting the goals of **food, health, literacy and work for all** into reality. It is however clear that such uncommon opportunities can be realised only if the **technology push** is matched by **ethical and ecological pulls**. This is essential for working towards a world where both unsustainable life styles and unacceptable poverty become features of the past.

Also, there is a growing mismatch between the rate of progress in science (particularly in the area of molecular biology and genetic engineering), and the public understanding of its short and long term implications. There is an urgent need for institutional structures that can inspire public confidence that the risks and benefits are being measured in an objective and transparent manner. Scientists and Technologists have a particularly vital role to play in launching an **Ethical Revolution**. The Pugwash movement, which I now have the privilege to lead, is an expression of the social and moral duty of scientists to promote the beneficial applications of their work while preventing its misuse, to anticipate and evaluate the possible unintended consequences of scientific and technological development, and to promote debate and reflection of the **ethical obligations of scientists in taking responsibility for their work**.

It will be appropriate to quote in this context, what Albert Einstein once said, “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.” Shall we renounce war and violence as a method of settling disputes, or shall we put an end to the human civilization? This is the question facing us today, even 50 years after the *Russell–Einstein Manifesto*. We are witnessing a growing intolerance of diversity and pluralism in human societies, as for example in terms of religion, ethnicity, political belief, colour, culture, gender and language. In contrast, the goal of sustainable

development, accepted in various UN Conferences (including the recently held World Summit on Sustainable Development at Johannesburg), as the only pathway to a happy human future, can be realised only if there is harmony between humankind and nature. It is obvious that we cannot be non-violent to nature, if we are going to be violent to each other.

We now have a **Global Convention on Biological Diversity** to help in the conservation and sustainable and equitable use of biodiversity. We need urgently a similar **Convention on Human Diversity**. While a Convention alone will not be able to halt the growing intolerance of diversity, particularly with reference to religion and political belief, it will help to foster a mind set which regards diversity as a blessing and not a curse. Both biodiversity and human diversity are essential for a sustainable future.

It is also necessary to reflect on methods of giving meaning and content to the ethical obligations of scientists in relation to society. The World Conference on Science held at Budapest in 1999 called for a new social contract between scientists and society. With a rapidly expanding Intellectual Property Rights (IPR) atmosphere in scientific laboratories, the products of scientific inventions may become increasingly exclusive in relation to their availability, with access being limited only to those who can afford to pay. The rich-poor divide will then increase, since orphans will remain orphans with reference to scientific attention. How can we develop a knowledge management system that will ensure that inventions and innovations of importance to human health, food, livelihood and ecological security benefit every child, woman and man, and not just the rich? This is now being discussed in the forum of WTO, particularly with reference to drugs relating to the cure of HIV/AIDS. I propose that UNESCO may explore the possibility of establishing an **International Patents Bank for Peace and Human Wellbeing**. Scientists and technologists from all parts of the world should be encouraged to assign their patents to such a bank, so that the fruits of scientific discoveries are available for public good. This would stimulate scientists to consider themselves as trustees of their intellectual property, sharing their inventions with the poor in whose lives they might make a significant difference for the better. The French mathematician, Marquis de Condorcet, a contemporary of Thomas Malthus, said over two centuries ago that the human population will stabilise itself **if children are born for happiness and not just existence**. The Government of Bhutan has taken the lead in developing a **Gross National Happiness Index**, based on the economics of human dignity, love of art and culture and commitment to spiritual values. Making all well-to-do members of the human family regard themselves as trustees of their financial and intellectual property will be essential for fostering a human happiness movement. We already have many philanthropic organisations for harnessing financial resources. The creation, under UN auspices, of an **International Patents Bank for Peace and Human Wellbeing** will help scientists and technologists to practice what the great Indian spiritual and intellectual leader Swami Vivekananda advocated as the true pathway to human fulfilment: “In this life, give everything you can – give money, give food, give love or anything else you can - **but do not seek barter**”.

In the ultimate analysis, peace and security are vital for global sustainability. Lasting peace and security can be achieved only if the principles of equity (gender and social) and ethics get integrated in the global developmental agenda. It would be useful to recall what Bertrand Russell once said, “wars do not determine what is right-only what is left.”

The first and foremost goal of the Pugwash movement is to work for a nuclear peril-free world. It is unfortunate that even 60 years after Hiroshima and Nagasaki, humankind has not abandoned the concept of a nuclear deterrent. All great struggles in the world – whether it be freedom from colonial rule or the ending of apartheid – have been achieved only through the pathway of non-violence. History teaches us that wars breed wars and that lasting peace will be possible only if violence as a method of resolving conflicts is banished from our minds.

When I assumed the position of President of the Pugwash Conferences on Science and World Affairs three years ago, I was optimistic that the year 2005 would be a watershed year in realising the goal of a nuclear peril-free world. Unfortunately, matters are getting worse and not better, with the recent failure of the NPT negotiations. I am greatly concerned about the recent failure of the Seventh Review Conference of the Non-Proliferation Treaty (NPT), held in New York in May, to deliver a final document with concrete indications on how to progress towards the reduction and ultimately the elimination of nuclear weapons, as called for when the NPT entered into force in 1970.

The difficulties and even the possibility of a collapse of the nuclear non-proliferation regime, the weakening of the taboos in place since 1945 on the use of nuclear weapons, coupled with the dangers of a terrorist group detonating a nuclear explosive device, combine to produce a recipe for potential unmitigated disaster.

Despite the urgency of the threat and the gravity of the situation, the lack of political will of some NPT states parties to live up to their obligations under the Treaty produced a deadlock and paralysis during the meetings in New York. Despite the best efforts of the NPT Review Conference President, Amb. Sergio Duarte, and many others, the Seventh Review Conference actually represented a step back from the conclusions made at the two previous review conferences in 1995 and 2000. In particular the important conclusions of the 2000 review Conferences, which have never been implemented, have not been even mentioned in any official document of the 2005 review Conference.

For their part, the original nuclear weapons states (US, Russia, UK, France and China) have not lived up to their obligations under Article VI of the NPT to move decisively toward the irreversible elimination of their nuclear arsenals. More broadly, the entire framework of nuclear weapons disarmament is in danger of being swept away. Strategic arms control between the US and Russia is not progressing, the Comprehensive Test Ban Treaty (CTBT) has not entered into force, and serious negotiations have not even started on a Fissile Material Cut-off Treaty (FMCT) to eliminate production of weapons-grade Highly Enriched Uranium (HEU) and plutonium. Moreover, too little is being done to control and dispose of existing stockpiles of HEU that run the risk of falling into the hands of terrorist groups. No attention is being paid to large numbers of

tactical nuclear weapons that continue to exist in great numbers with no military rationale whatsoever, while the deployment of weapons in space moves closer to reality.

I am mentioning all this to stress that unless we generate an atmosphere of harmony and trust among all nations, achieving the UN Millennium Development goals will not be possible. Time is running out if a nuclear catastrophe is to be averted. Political solutions are urgently needed to resolve those conflicts that either spawn international terrorism, or increase the risk of the use of nuclear weapons or other WMDs, or destabilize the Non-proliferation regime or all of these things combined. Global security must be based on international institutions and the rule of law rather than on unilateral action and an excessive reliance on military force.

Rabindranath Tagore had the following advice to those involved in shaping human destiny:

“With your mind intent, cross this sea of chaos,

And sail to that shore of new creation”

Let the political leaders of the world have the wisdom to concentrate on achieving the UN Millennium Development Goals in the area of hunger and poverty, and thereby reach the shore of new creation. The Tata-Dhan Academy should promote the formation of coalitions of all concerned with the cause of achieving a hunger-free world as who pointed out by W.H. Auden in the following poetic excerpt, show an affirming flame in the midst of the sea of despair surrounding us.

Hunger allows no choice

To the citizen or the police;

We must love one another or die.

Defenceless under the night

Our world in stupor lies;

Yet, dotted everywhere,

Ironic points of light

Flash out wherever the Just

Exchange their messages:

May I, composed like them

Of Eros and of dust,

Beleaguered by the same

Negation and despair,

Show an affirming flame.

-W. H. Auden, September 1, 1939

How can we eliminate poverty induced chronic hunger?

The concept of food and nutrition security can be defined on the following lines:

- that every individual has the *physical, economic, social and environmental access* to a balanced diet that includes the necessary macro- and micro-nutrients, safe drinking water, sanitation, environmental hygiene, primary health care and education so as to lead a healthy and productive life.
- that food originates from efficient and *environmentally benign production technologies* that conserve and enhance the natural resource base of crops, farm animals husbandry, forestry, inland and marine fisheries.

The above comprehensive definition of food and nutrition security provides guidelines for developing an effective operational strategy for achieving the goal of freedom from hunger. Hunger has three major dimensions.

- a. Chronic or endemic hunger resulting from poverty-induced undernutrition.
- b. Hidden hunger arising from micro-nutrient malnutrition, caused by the deficiencies of iron, iodine, zinc and Vitamins in the diet.
- c. Transient hunger caused by disruption in communication arising from **natural or man-made disaster**. A sustainable national nutrition security system should cover all these three categories of hunger.

Similarly, *availability* of food at the household level depends upon (a) food production and / or imports; (b) *access* which depends on livelihoods / purchasing power and *absorption* which is influenced by access to clean drinking water, environmental hygiene and primary health care.

Thus, nutrition security involves concurrent attention to both food and non-food factors. Cutting across all these issues is the overriding need for ensuring the stabilization of the human population. India is likely to overtake China by 2030 in the size of its population. Human numbers even now are far in excess of the population supporting capacity of the ecosystem. We also have nearly 20% of global farm animal population, to sustain which adequate land will be needed for grazing and for the production of the feed and fodder.

Hunger-Free India : Components of Action Plan:

1. Restructure the delivery systems relating to all nutrition support programmes on a **life cycle basis**, starting with pregnant women and 0-2 infants and ending with old and infirm persons. An illustrative list of the programmes which will benefit from a life-cycle based delivery system is in Table 1.

2. Promote **community food security systems** based on an integrated attention to conservation, cultivation and consumption.

Gene Bank

Seed Bank

Water Bank

Grain Bank

This programme should be based on the principle “**store grain and water everywhere**”.

The Community Grain / Food Bank system will help to widen the food security base by including a wide range of millets, grain legumes and tubers.

3. Promote the growth of **community water security systems** based on a 5-pronged strategy consisting of:

- Augment supplies through mandatory water harvesting and conservation
- Curtail demand by eliminating all sources of unsustainable use of water and promoting “more crop per drop” methodologies of crop cultivation
- Harness new technologies relating to improving domestic water use efficiency, de-salination of sea water, breeding of drought and salinity tolerant crop varieties, bioremediation, etc.
- Promote seawater farming through integrated agro-forestry and aquaculture production systems in coastal areas.
- Pay attention to water quality. The quality of drinking water is deteriorating due to pesticide and bacterial contamination in ground water. As much attention should be paid to the improvement of drinking water quality, as to the augmentation of water supplies. Bioremediation techniques will have to be used for removing arsenic and heavy metals from tube well water.

4. **Eradicate hidden hunger** caused by micro-nutrient deficiencies based on natural food cum food fortification approaches. For example, salt fortified with iron, iodine, minerals and vitamins, coupled with the consumption of beta-carotene rich sweet potato or vegetables will be very helpful to fight hidden hunger. Nutritious biscuits can also be made by local self-help groups. Nutritional literacy should be promoted at the school level.

5. New Deal for the Self-employed:

The unemployment rate on current daily status was about 9.21 percent (34.85 million) in 2001-02 in rural areas. Unemployment among rural youth increased from 9 percent in 1993-94 to 11.10 percent among males and 10.60 percent among females in 1999-2000.

Rural employment grew at 0.67% and agricultural employment at 0.02% during 1999-2000. According to the 55th round of survey of NSSO the share of self-employed in 1999-

2000 was about 53%. The share of self-employed in total employment, 58% (133 to 134 million) was in the primary sector, i.e., agriculture and allied activities.

Detailed analysis of the causes of food insecurity in rural and urban India have revealed that inadequate purchasing power due to lack of job/livelihood opportunities is now the primary cause of endemic or chronic hunger in the country. Since opportunities for employment in the organized sector are dwindling, we have to create a policy environment which enlarges opportunities for remunerative self-employment in rural India in order to avoid an era of jobless economic growth.

Agriculture, comprising crop and animal husbandry, fisheries, forestry and agro-forestry and agro-processing is the largest private sector industry in India, providing livelihood opportunities for over 600 million women and men. There is need to intensify efforts to create more opportunities for gainful livelihood opportunities in the farm and non-farm sectors.

The menu of income earning opportunities for the self-employed needs to be enlarged. NCF has already recommended that all the existing Krishi Vigyan Kendras (KVKs) should be provided with a post-harvest technology wing. In addition, there is an urgent need for at least **50 SHG capacity building and mentoring centers** in every State, to enhance the management and marketing capacities of Members of the Self-help Groups (SHGs). Such centers can be established in existing institutions like Agricultural, Rural and Womens' Universities, IITs, institutions operated by NGOs, etc. Village Knowledge Centres can provide SHGs with e-commerce facilities. Accounting software will have to be introduced. SHGs will be sustainable in the longer term only if they have backward linkages with technology and credit, and forward linkages with management and marketing. Sustainable Self-help Groups (SSHGs) will emerge only if we build the capacity of the key members (both women and men of SHGs). **The SHG Capacity Building and Mentoring Centres** may be financially supported by the Union Ministry of Rural Development. This will be an essential component of the New Deal for the Self-employed.

6. Enhancing the Productivity of Small Holdings:

Nearly 80% of the land holdings are below 2 ha in size. Unlike in industrialized countries where only 2 to 4% of the population depend upon farming for their work and income security, agriculture is the backbone of the livelihood security system for 2/3 of India's population. **Therefore, farmers constitute the largest proportion of consumers.** The smaller the farm, the greater is the need for marketable surplus in order to get cash income. **Hence, improving small farm productivity, as a single development strategy, can make the greatest contribution to the elimination of hunger and poverty.**

Indian soils are both hungry and thirsty. Hence, soil health enhancement and irrigation water supply and management hold the key to the enhancement of small farm productivity. The following steps are urgently needed.

- National network of advanced **soil testing laboratories** with facilities for the detection of micro-nutrient deficiencies. As a single agronomic intervention, supply of the needed micronutrients in the soil has the greatest impact on increasing yield. Hidden hunger is as widespread in soils, as in human beings. In fact, the two have causal relationships.
- Million Wells Recharge Programme
- Restoring Water bodies and promoting mandatory water harvesting.
- Establishment of 50,000 Farm Schools to promote farmer to farmer learning.
- Organisation of Small Farmers' Horticulture, Cotton, Poultry and other Estates, to promote group farming and to confer the power of scale to small producers both at the production and post-harvest phases of farming.

7. Proactive Advice on Land and Water Use:

Farming is becoming a gamble both in the monsoon and the market. Farmers urgently need **proactive advice** on land and water use. Land use decisions are also water use decisions. (Figure) The Every Village a Knowledge Centre Movement will help to give farmers dynamic advice on meteorological and marketing conditions.

In addition to dynamic advice, farmers also need proactive advice on land and water use. For this purpose, State Land Use Boards should be restructured, retooled and reactivated on the lines indicated in Fig. This is a task of the utmost priority.

8. Designing and introducing a Food Guarantee Act:

We have over a century of experience in organizing relief works (under the provisions of the Famine code in the Colonial Period) and Food for Work programmes. It is clear that our agriculture has reached a stage when farmers will grow more only if we can consume more. Hence, a **National Food Guarantee Act**, combining the features of the Food for Work and Employment Guarantee Programmes, will represent a win-win situation both for producers and consumers. Women, in particular, prefer a combination of grains and cash as wage, provided the food grains are of good quality.

A National Food Guarantee Act should lead to a decentralized network of grain storage structures and would help to prevent panic purchase of food grains during periods of drought or flood. They will also help to prevent distress sales by producers at the time of harvest. In addition, it will help to enlarge the composition of the food security basket.

Brazil, Kenya and a few other countries have announced, "Zero Hunger" programmes. India can take the lead to give meaning and content to the zero hunger concept by developing a National Food Guarantee Act.

I wish to pay my tribute to the founder of the Tata-Dhan Academy, Shri M P Vasimalai for his tireless efforts to develop and nurture institutions like the Kalanjiam Community Banking and Tank-fed Agriculture Development Movements. I am confident that all those graduating today will follow GuruDev Tagore’s advice, “it is a man’s true function to make the impossible into the possible by dint of his own efforts”. In this effort Shri Vasimalai serves as a role model for all of us.

Table 1: Current Status of Interventions

S.No	Stage of Life Cycle	Intervention / Action
1.	Pregnant Mothers	Food for Nutrition to avoid maternal and foetal mal- and under- nutrition resulting in LBW children
2.	Nursing Mothers	Support needed for breast feeding, for at least six months
3.	Infants (0-2 years)	Not being reached by ICDS
4.	Pre-School Children (2-6 years)	Integrated Child Development Services
5.	Youth going to School (6-18 years)	Noon Meal Programme
6.	Youth out of School	Not being attended to
7.	Adults (18-60 years)	Food for Eco-Development (Sampoorn Gramin Rozgar Yojana), PDS, TPDS, Antyodaya Anna Yojana
8.	Old & Infirm Persons	Annapoorna and Food for Nutrition Programmes
9.	Emergencies	Food during natural calamities