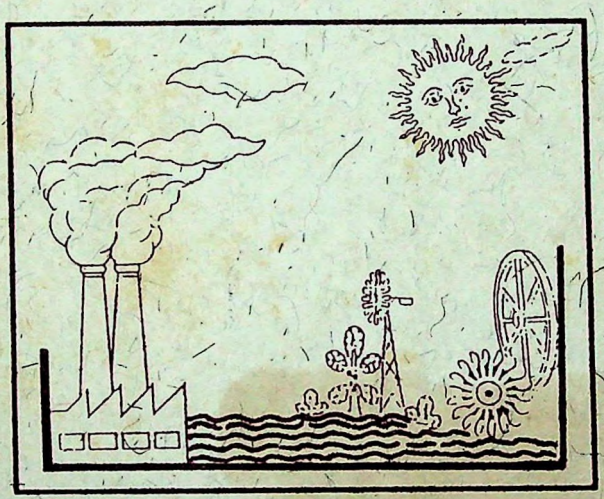
# *An Alternative Vision*



AN ECUMENICAL CHRISTIAN CENTRE PUBLICATION

# An Alternative Vision

*A collection of papers presented in the National Seminar on Alternative and Sustainable Development*

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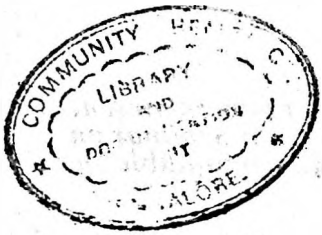
An Alternative Vision
1995
Copies: 500






*Editor*
**George Cheriyan**

Published by

Ecumenical Christian Centre
Post Bag 11
Whitefield
Bangalore 560 066
India.

Printed at

Pan Media, Bangalore
Printed on recycled paper

# *Contents*

# Forward

*Humans are just one of the nearly 10,000,000 species inhabiting the Earth and all its natural resources are being* **managed** *by just this one species. Little wonder, vested interests and conflict of interests loom large in this management! What new environmental ethic can change the course that's now leading to rapid depletion of natural resources, degradation of environment and endangering quality of life and, in the long run, threatening its very survival? Could these alarming trends be arrested and reversed?....But aren't these trends inextricably linked to our principal models and means of Development? Will arresting of the trends jeopardise or slow down Development?*

*Development is a multi-dimensional, immensely complex social phenomenon. It is increasingly becoming evident that our governmental policies are perceiving Development more and more only in terms of economic reforms at the expense of all else. The concept of caring and sharing - caring for Nature and sharing her gifts with each other among ourselves and with the rest of Creation - seems t oo utopian. How and where c ould changes for the better - development with a human face, strategies for sustainability and a new reverence for Nature-be ushered in and strengthened? What promise does one seek to discern and promote at the individual, community, national and global levels?*

*The development dilemmas are many in the now popular models and modes of Development. The search for alternatives is a must and justifiably praiseworthy; but often, our lifestyles do not bear us out and sadly betray us. One more dilemma ! Valuing the programme thrust of environmental protection, the Ecumenical Christian Centre too joined the debate inviting to it environmentalists committed to the cause for long and others interested in learning of alternative and sustainable modes of development. How else, but through enlightened debate, could we in our different spheres of living and in collective management of Nature, arrive at alternative visions? The presentations that sparked off and sustained the spirited debate through the five days of the Seminar are in this small publication of our Centre. We are indebted to all who have made the programme and the publication possible.*

Ecumenical Christian Centre
7th July, 1995.

Mithra G. Augustine
Director

## *INTRODUCTION*

*Today many people are dissatisfied with what is usually called development and are talking about alternative development. More and more people involved with development issues are recognising that after several decades of planned development, the plight of the poor is no better if not worse; the number of malnourished and illiterate people is larger than ever before; the violence against nature is such that our very survival is threatened. More and more communities are becoming vulnerable, women continue to be marginalised and disempowered. At the global level the gap between the rich and poor and the North and South is increasing. Militarisation and violence of all kinds engulf increasingly larger numbers of people and areas.*

*What are the reasons? In trying to identify the reasons we find that the development itself is the villain.*

*Upto the beginning of '90s there were two development models. One is the capitalistic model and the other the socialistic model. But after the fall of socialistic model in USSR and Eastern Europe the capitalistic model is dominating all over the world. Even though the developed world is trying to sustain this model with their progress in Science and Technology, Economic power and Political hegemony the model is in crisis. Depending on a continuous increase in production and consumption, the model does not satisfy the two cardinal tests which are applicable to any development model. It is neither socially equitable nor is it sustainable. Social justice demands, whatever attractions the model promises, that it should be accessible to or attainable by the vast majority of the people if not now, hopefully in the nearest future. Sustainability demands that its privileges should continue to be available to the future generations as well. The capitalistic*

*model demands perpetual growth. Perpetual growth in any finite system is a mathematical impossibility. So at the global level, the development is in stagnation. Since it is in stagnation, the developed world by itself cannot sustain it over any length of time. So they are spreading this model to the entire world through MNCs, Technology transfer, Media and treaties like GATT. The poor countries trying to adopt this model soon find themselves in debt crisis, ethnic and communal conflicts, political instability, cultural destruction and environmental degradation.*

*All these trends indicate that the kind of development we now have is not capable enough of meeting the basic needs of the world. The situation is growing worse. Societies are looking for an alternative model of development. Hence the national seminar organised on alternative and sustainable development and this book of the seminar papers to help accelerate the search.*

*26th June 1995*

*George Cheriyan*
*Asst. Director*

# Living in the Garden: The Real Alternative

*Partap C. Aggarwal*

For several years I have avoided seminars, meetings and workshops. Being an academic person participation in such programs had earlier been part of routine. I cannot say I liked them but I thought they were useful and necessary. So I participated in programs relevant to any work of academic interest.

There were two principal reasons for my reluctance: One, there was too much talk and very little intent for change of lives; and two, a realisation that I did not know. The first point needs little elaboration for those who are familiar with seminars know that talkers are rewarded and doers penalised.

Let me however, elaborate the second point with a couple of examples. Long ago, in the early 70's, I studied the Green Revolution in Punjab. In my book I gloated over the achievements of Punjabi farmers in their success in abandoning subsistance farming practices of their ancestors and in adopting modern agricultural techniques. I praised the farmers for using chemical fertilisers, pesticides, tractors and also for becoming market oriented in their production decision-making. Just a few years later ill-effects of heavy use of chemicals and excessive irrigation became apparent. Soil scientists found that by the end of the 80's most of Punjab's soil had become deficient in micro- nutrients and inert, due to reduced microbial activity. In addition salinity was rapidly increasing and making the soil sick. I had to admit I was wrong. By now we are aware how, due to high cost of inputs, Punjab farmers have begun even to lost monetarily and their debts have increased. Young sons of farmers, seeing all this, are losing interest in agricultural and are easily attracted to violence and crime. This, it is believed by many, was the main reason behind a long spell of unrest in Punjab.

Another example of how I became aware of my ignorance relates to my study of the American Indian. As a graduate student in Anthropology of Cornell University I was exposed to the vast literature on this subject. Studying it I was deeply impressed with the erudition of the scholars who had painstakingly produced it. Naturally I imbibed the conclusions drawn by the learned anthropologists and became convinced that the American Indian by and large was 'primitive-savage' and he lacked in 'scientific' understanding of his environment. I also

learned that he was crude, cruel and uneducated in skills and we all value. Few years later a new genre of literature appeared written by American Indians themselves, younger anthropologists, and environmentalists. The image of the American Indian people coming through this new literature was extremely positive. These so- called primitive people were so sensitive and close to natural environment, that their culture was in near perfect harmony with their setting. They lived long, happy, healthy lives and had 'scientific' understanding much more solid than our own. No wonder then that these people lived in North America for approximately 50,000 years without damaging the environment. All this and more new awareness of the same sort jolted my minds false self-assurance.

So when Mr. Cheriyan called inviting me to this seminar on alternative development at ECC, my first reaction was to say 'no'. But something prevented that and I asked for a day's time to consider the proposal. I called my friend George Cheriyan the next day and said 'yes I will come'. The reason for the change was certaining not that I know. As a matter of fact I now realise that I not only do not know, but with my limited faculties I cannot know. This feeling is reflected in the following poem which I recently read:

*No single thing abides; but all things flow.*
*Fragment to fragment clings - the things thus grow*
*Until we know and name them. By degrees*
*they melt and are no more the things we know.*

*This bowl of milk, the pitch on yonder jar,*
*are strange and far-bound travellers from far,*
*This is a snowflake that was once, a flame-*
*The flame was once the fragment of a star.*

*The seeds that once were us take flight and fly,*
*winnowed to earth or whirled along the sky,*
*Not lost but disunited, Life lives on.*
*It is the lives, the lives, the lives, that die.*

When this is the way things are, how can we ever know? But, we function at any time on the basis of our limited point of view unique to each individual. Like the 5 blind men who experienced parts of an elephant did not know the whole animal but they were right in describing the part they felt. So there is value in sharing our viewpoints for widening our horizons. Hence I come to this seminar only to share my limited view without claiming to know the truth and with no desire to prove or defend anything.

## *Alternative Development to what?*

In this seminar we are going to deliberate on alternative development. It seems useful to raise the question right in the beginning as to what we are seeking an alternative to. In my option it is the whole urban-industrial culture which we need to target and not merely one or more of its aspects. If this seems reasonable, then we are talking about 80% or more of our world population and area. I submit that the *whole world*, including predominantly agricultural countries are sharing this one culture. True, the industrial revolution took place in Europe first but through the colonial expansion the rest of the world was pulled into its orbit soon afterwards.

Furthermore, industrialised countries are beginning to show signs of greying and degeneration. They are rapidly losing their position as models for the less industrialised countries. In fact it is becoming apparent that industrial culture has failed. All culture are developed to help their users to adapt to their environment. Obviously, if a culture makes a people unviable, that culture is a failure.

Let me illustrate the above by describing some of my first-hand experience in USA and India. I have been in these two countries intermittently for 35 years, and because of gaps in my stay in each I notice the changes more clearly. Having just returned home to India after a year in America impressions are sharp in my mind.

Before I talk of my impressions of America let me make it clear that I regard it as my second home and I love it and its people as my own. So the unhealthy developments there hurt and pain me as they trouble the American people themselves.

I noticed enormous increase in violence. Inner cities are lawless, even suburbs and small towns are affected. There are more guns than people, and in some places children carry guns to schools. Jails are full and new ones are being built for which legislators readily approve allocation.

Families are breaking up with increase in divorce rate. Single parent homes are common. One hears of high incidence of woman and child abuse. Single sex marriages are performed in some churches. Spouses fight court cases and children suffer. Pollution of air, water and soil is increasing despite much advertised control laws. Landfills are full but people produce more, not less, garbage. Radioactive debris in huge amounts all over the country threaten to leak out.

Country's rich natural resources such as forests, fertile soil,

subterranian water, oil, minerals, clean drinking water are nearly exhausted. Most people buy bottled spring water to drink. In many areas to conserve water lawns are disallowed and people are advised not to flush everytime - I saw a billboard in California saying 'Every pee does not need a pull'.

Manufacturing industry is grown so that most consumer goods including food are imported resulting in a huge increase in foreign debts every year. Unemployment has increased. Number of workers on minimum wage and below the poverty line has risen. Homelessness is high and rising. One could go on and on.

Similarly in India conditions are no better. Our cities are filled with people living in festering slums, with employment opportunities decreasing in villages and migration to cities increasing every year. Due to lack of mass transit, roads are choked with traffic. Cities are filthy and worsening. Violence has increased. Government machinery has become corrupt and very sluggish. There is no enforcement of rules, so law has lost its sanctity. Again, one could go on and on and on.

Experts tell us that at this rate we will not only destroy civilization and the human race but jeopardise all life on earth. That will happen when the oxygen producing rain forests are destroyed, genetic diversity decimated, and ozone filter rendered inoperative. We face a situation never before experienced by our ancestors, not even by any other species on earth.

## *Need for a Comprehensive Alternative*

All cultures are integrated wholes. So is this modern industrial culture. Its race to the stars, strong desire for speedy movement, tendency to waste, luxurious living, dominating nature, all are linked one with the other. Experiences of the few hundred years have shaped the present lifestyle. And these link with what has gone on for a few thousand years.

It is good to recycle paper and beer cans. Also it is desirable to encourage people to organise car pools to conserve fuel. One cannot say that reforestation should not be endorsed. But these piecemeal changes cannot change a culture. All of it at its very base needs to be reorganised.

In our country the ideas suggested by Gandhiji have so far been dominant. And indeed there is merit in what he taught us. Essentially, he emphasised revival of a society based on self-reliant rural communities enjoying maximum autonomy integrated with a few

shared overall services and structures.

Gandhi had a keen mind able to see far with the help of small, seemingly insignificant experiences. In the early years of his struggle against the British establishment in Bihar, he came in close touch with an old weaver couple. They were in miserable condition. In talking with Gandhiji they pointed out that replacement of their cloth with machine made substitute from England was the root cause of their problem. Gandhi understood and organised his campaign for *Khadi* and Swadeshi. In the process he became convinced that the existing Indian socio-economic system which the British were destroying was the last alternative for India and indeed the whole world. People in the villages were familiar with that system and it had proved its worth by surviving in our society successfully for five thousand years if not more. All over the world people have studied the so called Gandhian alternative and have found it very attractive.

Several times I have had the opportunity to live in Indian villages and observe them closely by participating in rural life. At one time I even had a life-time opportunity to organise one with about twenty families at Rasulia in M.P. From a hierarchically structured institution we tried to become a natural sharing, feeling, thinking community. We all got a beautiful glimpse of what a village Indian must have been like.

By living and working together for several years we learned many new things. But one that made the deepest impression on all of us was rediscovering of *Rishi Kheti* or Natural Farming. We learned slowly through trial and error that it was possible to grow healthy as well as heavy crops without applying any of the traditional or modern knowledge of agriculture. Our rice crops were much superior to our neighbours' without the use of chemical fertilizers, pesticides, ploughing and transplanting. We found that there was no need even to make compost, because organic material could just as easily be decomposed in the fields where we grew our crops. We all felt that Natural Farming is not just another technique but a whole different way of relating with our environment.

I realised together with other people in the Rasulia community that periodic digging up and upsetting the natural process of the soil is not necessary. A whole new range of possibilities opened up and that has now brought me to an awareness that the human race, particularly the civilized society, urgently needs a sort of paradigm shift in its thinking. Our entire understanding of nature and our place in its needs change from the roots.

## *The Garden of Nature and Our Place in it*

We came from the garden or were put into one by the Creator. That is what the Bible says and many other religious traditions concern. The *Vedic Rishis* of our country insisted that they were *Aranyak* people, ie., belonged to the forest which is the true garden of nature. They did not plough the soil to raise crops, but gathered fruits, tubers and wild grains. These were healthy and most desirable foods for human. In fact the rishis subsisted on fruits and vegetables. Grains were stored up reserved for use in an emergency. There are extensive and clear references to this effect in the Vedas and the Upanishads.

All humans everywhere for more than 99% of their existence live in the forest and ate what nature provided. No one claimed any special rights over the garden. It was for all and Mother Nature made sure that our needs were satisfied. A glimpse of that lifestyle can be obtained by looking at the forest dwelling tribals of today.

About ten thousand years ago a major shift occured in human culture which archaeologists refer to as the 'agricultural revolution'. It is this change that has gradually led us to our modern industrial civilization.

Some ancestor of ours decided to clear a piece of land of its vegetative growth. The animals living there were exposed and they fled to the safety of the forest. This person was the first farmer. The piece of land was fenced to keep intruders away. Mother Earth was cut and claimed as property. Those who adopted agriculture were opposed by those who did not. But the agriculturists won and their opponents were driven deeper into the forest.

The agriculturists began to acquire more and more land and to take control of life around them. Soon they began to think of themselves to be special. They thought all evolution was directed towards the creation of the *Homosapiens* and that nature's whole purpose was now achieved. Because humans were special they were meant to be rulers of nature, they thought. In order to justify their assumption they began to imagine that nature was after all not that very efficient. In nature carnivorous animals killed and ate other animals, and life eats life in a continuous chain. Seeing this, humans or the agriculturists saw nature as red in tooth and claw and they thought they could improve on it. Bit by bit they began to meddle in more and more of nature including rivers and mountains. We became out-laws disobeying nature.

Of course no one liked what the humans were doing; the humans,

systematically to subdue those who stood in the way. We became the enemy of nature. No wonder our languages are full of dominating, aggressive terms such as control, conquer, eradicate. We control Malaria, rivers, animals, pests etc. We conquer Mt. Everest the oceans, the North Pole, the Moon and even space. And what we don't like we eradicate.

When the Europeans came to America about 500 years ago the natives there were still living in the 'garden' and at peace with plants and animals. Seeing their behavior an American Indian named Sitting Bull said this about the Europeans:

"They claim this Mother Earth of ours for their own and fence their neighbours away from them. They degrade the landscape with their buildings and their waste. They compel the natural earth to produce excessively and when it fails, they force it to take medicine to reproduce more. This is evil".

When we clear and fence a piece of land we in effect say to all beings living on it this is mine, you have to leave, or I will kill you. I want to produce only human food from this soil because we are special.' No wonder there are six billion of us today. In nature any species whose food supply increases inevitably multiplies.

We must get over our superior attitude and know that we are children of nature, not its master. Further we must know that order and harmony in nature which we can neither control or improve. We must learn to respect and obey nature. We can learn this only when we live in nature's garden and let go of the farm.

### *How?*

In my opinion it is not so difficult to be in the garden because we never really left it. The earth is our garden. As soon as we surrender to nature the garden takes over. Let me elaborate a little on this theme.

All farmers, land owners, home owners with open land can start growing trees of local variety to provide food, fibre, fuel. At Navadarshanam land just South of Bangalore we notice that garden does not even have to be planted. It will plant itself and grow happily if only we protect it from overgrowing. Thousands of trees are shooting up which were earlier growing horizontally along the ground. Many were planted by birds and animals; their droppings have seeds of the berries and fruits they eat. Some seeds are brought by the wind and some by water. These naturally planted trees are far hardier and drought

resistant thanthe ones that we plant. All of the ground is automatically being covered by a thick growth of grasses and shrubs checking soil erosion and impregnating the land with moisture of rain water - we notice that as time passes a larger variety of trees is growing while more congenial conditions are being created for the relatively delicate fruit trees that we put in as saplings.

In our area many small farmers were encouraged to invest in wells and to grow hybrid vegetables for the Bangalore market with irrigation and heavy input of chemicals. This land is eroding fast and due to excessive pumping, underground water table is dropping. I have no doubt that most of these farmers who are in great financial strain now can turn viable if they plant right kind of trees on their land. In addition to food for their families a mixed eco-friendly garden can easily provide reasonable cash income as well through sale of surplus produce.

In addition to being eco-friendly, living in nature's garden is healthy and congenial for spiritual growth. Most people of our country have close links with the soil and plants, and they can easily understand the value of trees. However, a movement towards natural living needs to be initiated by the people and not by government or large institutions. This is because only individual human beings, not government, are grounded in God, or Truth.

## *Summary*

We started out by listing some of the environmental, social and economic problems faced currently by people in America and India. These problems hurt us and furthermore experts tell us that due to depletion of genetic diversity, reduced oxygen in the air, and damage to the ozone layer we bring life on earth to the brink of extinction. This clearly indicates that the modern Industrial Culture has failed and we urgently need an alternative. A paradigm shift is needed because piecemeal solutions such as recycling of paper or beer cans is not enough. Gandhi had favored revival and strengthening of small, self-reliant, rural communities like the once existing in India for thousands of years. This is a very good suggestion but in view of the alarming situation today, we need to go a step further and return to our real home; the garden of nature where we came from. With the invention of agriculture about 10,000 years ago humans began to imagine being a special species destined to take over from natural and run the universe. This theory is obviously flawed. We must therefore stop being adversaries and return to our proper place as children of nature and learn to obey laws which govern all life including ours.

# Some thoughts on the concept of Sustainable Development.

*K. V. Surendra Nath.*

The view that safeguarding the environment would result inevitably in hampering economic and social development is sought to be widely propagated by interested parties.

For them it is as though the two are clearly antithetical. Such contraposing is baseless and untrue.

Production of goods and services for bettering life and its quality depends on an eco-friendly use of material resources found in nature. At any point of time these resources would be limited in quantity and quality. They are amenable to depletion and exhaustion. Unrestrained use of resources cannot be made up by substitution or reproduction by human effort.

Hence the need to exercise prudence, thrift and continence in the use of natural resources.

It is well to remember Gandhiji's words: "There is enough in the world to satisfy man's need, but not his greed".

The diversity of flora and fauna, the interrelated and interdependent factors of the eco-system, and the biosphere which is our common home are bequeathed to us as gifts of nature. Man is not yet anywhere near the stage where all these could be reproduced in the laboratory or fabricated in a workshop.

Due to irrational use and profligacy, much of the bio-diversity has already been destroyed. Hundreds of species of plants and animals have become extinct. This process instead of being checked or halted is gathering momentum every day.

The unsatiable thirst for profit, the greed to wield the power that would ensure domination over others and the enormity of the waste of natural resources which should have been used to provide basic substances to the poor and hungry millions constituting 75% of humanity if continued, would be betrayal of the interests of generations to come.

The world and its bio-wealth that we have the good fortune to be born into is a sacred trust to be handed over safe and in fair condition to

the succeeding generations.

A very small minority of people who have the money, power and technological capability now control and is using up much of the resources available on earth.

The earth is fast being reduced to the state ultimately of an uninhabitable waste, an unfriendly desert deprived of much of the wealth of bio-diversity and life sustaining eco systems resulting in:

- denudation of forests wiping clean the green cover and exposing soil to sun and rain.
- desertification of fertile land at a dangerously fast pace.
- despoiling of the soil salinity and acidity.
- erosion of fertile top soil by rain and wind and disappearance of biota (miniscule microbes) which render the soil rich.
- diversion of natural water source, lowering of the water tables, floods, land slides and man made droughts.
- wiping off of mangroves, lagoons and back-waters rendering estuaries into mere marshes.
- annihilation of wild life by hunting, poaching
- depriving wild life in the forest of their habitats their natural prey or feed ( many species already extinct and vast number endangered).
- genetic erosion of flora vital to man's sustenance like rice, wheat, etc. (Thousands of plants species including the medicinal herbs and plants being destroyed).
- pollution of rivers and sea coasts and ocean beds used as garbage dumps.
- over exploitation of aquatic wealth including hundreds of varieties of fish.
- manipulation of agro and horticultural processes, modifications due to application of chemicals engendering loss of resistance, health hazards.
- changes in climatic conditions - the Green house effect.
- piercing of Ozone layer - chloroflurocarbon emission

— air pollution, effluents from factories and workshops and automobiles.

— noise pollution affecting man's nervous system.

— problems of waste disposal, loss of play grounds, dearth of drinking water, drainage disposal of solid wastes, problem of housing etc. due to unplanned urbanisation.

## *Science and Technology:Technical Capabilities*

In the same way as all other development activity, science and technology must care for human survival, human welfare and bettering human life on earth. Science and technology can be used either for human good or for evil.

Man is not the sovereign overlord of all nature. He is part of it, one among other living beings. His survival is inextricably bound up with the fate of other living beings and the earth itself. His efforts to master nature, natural forces is an unending quest for fulfillment and not for final victory.

Man therefore, in his approach to nature, in his relationship with co-beings on earth must temper every activity of his with this consciousness - deal with life in all its forms as co- inhabitants on the earth, make use of natural resources with frugality, prudence and continence so that life on earth is sustained.

All development therefore should be attuned to the need of the following four "E"

1. *Environment*
2. *Equity* so that three-fourths of humanity now helpless in the clutches of hunger, privation, disease and ignorance get their due share of the earth's bounties.
3. *Employment* to ensure a decent living for each human being, of livelihood, housing, health care and education.
4 *Empowerment:* The people who are to reap the benefits of development plans should be conscious and active participants of its formulation, execution and accomplishment. They are the subjects and not objects of progress and of history.

# Towards Natural and Wholistic Living:

## *The Navadarshanam Perspective*

*Jyothi Ananthu*

The ferment of events and ideas which have hit the world during the last three decades have a powerful potential for questioning the very basic premises and fundamental beliefs and assumptions which have been guiding and girding the dominant industrial-urban mode of life. Actually it is having, and naturally so, a differential impact on governments, industrial entrepreneurs, farming communities, lay public and is evoking a variety of responses. At one end of the spectrum are the governments of nations and international organizations which talk aloud of 'sustainable development', and 'environment protection' or 'eco-friendly' policies and ventures. But this goes hand-in-hand with a mad race for markets, unbridled competition and consumerism and more sophisticated automotive technologies which invade every action and aspect of life and living. On the other hand, there are individuals and groups who perceive radically differently the realities of ecological destruction, exploitation and societal disintegration as evidenced by increasing poverty, unemployment and unmanageable levels of violence, which is going hand-in-hand with alienation of the individuals and groups today constitute an amorphous network linked by the search for and in some cases, the practice of alternatives which they see as - all encompassing or partial answers and solutions to the riddles of contemporary life and times. The 'natural' and 'wholistic' ways of thinking and living is at this end of the spectrum of change.

The Navadarshanam venture and experience is one among many such ventures which fall under this category which aims at moving towards natural and wholistic living. Hence, this brief review. The experience of Navadarshanam is also an opportunity for understanding the worldwide resurgence of interest in alternative ideas. The dialogues, discussions and serious introspection which eventually led to the launching of Navadarshanam, can be traced to the decade of the eighties. In Delhi, a few individuals from different backgrounds and work-setting found each other by the 'law of strange coincidences' and discovered common concerns. They began sharing grave doubts and questions regarding education, the very fundamentals of science and scientific method as carried over from 19th century state of knowledge, modern technologies in industry, modern agriculture with its misplaced faith in

petro-chemicals and pesticides and the hazards of all varieties of energy fuels, modern medicine and its mechanistic approach. This was of course, accompanied by a questioning of the modern urban-industrial society and its pivot the exclusive striving for material and physical well-being through increasing levels of wants and consumer goods and services. Actually, they were trying to understand, through all this questioning, the very meaning and purpose of life.

These discussions were inspired by a large number of books and magazine articles which were published during that period. To mention just a few - E. F. Schumacher's writings, Marilyn Ferguson's 'The acquarian conspiracy', Duane Elgin's 'Voluntary Simplicity', Fritjof Capra's 'Turning Point' and 'The Tap of Physics,' Ken Wilber's 'The Sociable God,' the contributions of David Bohn and of course, Masanobu Fukuka's 'The One straw Revolution'.

The inspiration drawn was, however, not limited to foreign thinkers and writers. The spiritual heritage of the country such as the Bhagwad Geetha and the writings of all saints and seers, were also referred to.

Another very important development in the last years of the 1970's was the renewed interest in Mahatma Gandhi because of his radical critique of modern industrial civilization which questioned its very claims of being a civilization. Until then his little book 'Hind Swaraj' had been ignored as inconsequential, but against the back drop of the disastrous and grave consequences of unlimited growth and development on the human habitat itself, Gandhi's warnings and ideas on social reconstruction were regarded worthy of being looked into. His life, which was a striving towards Truth and Non Violence started making sense to many.

This study group was not just talking. Among all those who participated certain changes were taking place in their styles of living - whether it was meditation, change of food habits, limiting their consumer needs etc. Some started trying out natural and organic farming. Some youngsters chose work avenues which fitted in with their new found convictions. Some others learnt to live with what they could not change. But for all, it was a relief to know that there were others who were thinking and feeling alike. Of the many efforts at change that this study circle triggered, the move towards Navadarshanam was one such venture.

Many scenarios were being painted, all over the world, of the 21st century, ranging from the high-tech global village to the breakdown of the planet earth itself. One booklet that the study group efforts led to

was 'The Technological Wonders of the 21st Century! A Gandhian Approach', by T. S. Ananthu. Again, by the operation of the same law of strange coincidences, this booklet proved instrumental in creating a new nucleus of individuals and a new venue of activity in South India. The Navadarshanam Trust was formed in 1990 and the venue of activity chosen was in the Thally region of Tamil Nadu, but only 50 km from the Karnataka capital of Bangalore. A beautiful expanse of undulating, dry land rising into gradually-sloped hillocks along the Thally reserve forest was selected by the late Swami Sahajananda. It even had the added attraction of visits by wild animals - the wild boar and elephants! It seemed to be an ideal setting for Navadarshanam to pursue the path leading towards natural and wholistic living and towards working out its aims and programmes. What do we understand by the terms 'natural' and 'wholistic' ? To state in simple terms what is actually too deep for communication:

* It is a way of living in which the motivating and central force is reaching out to the Creative Energy which has given rise to all mental and physical phenomena. Matter is not the ultimate reality and Mind is not a reflection of matter. Actions which, implicitly or explicitly are guided by such assumptions or beliefs, merely because they are the only realms accessible to the five senses and the intellect, will lead to imbalance in the outer and inner worlds of humans.

* It is this inner growth which should be the goal of life, and when the satisfaction of outer needs are subordinated to this goal they will be minimized.

* Nature should not and cannot be exploited. Wisdom lies in understanding her ways and being in tune with her. The natural way is to cultivate skill and abilities to appreciate and judiciously use what nature brings forth.

The Navadarshanam aims based on this understanding of the natural and wholistic approach are:

- to explore and adopt natural ways of fulfilling our outer and inner needs,
- to give up the path of development which fans consumerism, profiteering and growth measured purely in material terms,
- to deepen our relationship with the creation in all its

facets.

— Strive towards the transformation of self by reaching for that Creative Energy which gives rise to all physical and mental phenomena.

The major programmes of Navadarshanam during the four years of its existence have focussed on (1) initiating wholistic technologies, for which the land at Thally is the major, though not exclusive, venue, (2) The study, dissemination and sharing of ideas and experiences on this approach to life and living through a study circle which has been meeting regularly mainly in Bangalore; (3) building bridges with the local community of farmers in and around the Navadarshanam land.

In deciding the major areas for initiating wholistic technologies the interests and skills of the team members was a major factor. The crucial sectors of contemporary living which were identified as being ready for alternatives were the four related sectors of farming, energy, food health and housing, construction of simple dwellings using as far as possible natural materials and promoting a healthy diet of foods which are tasty yet easily digested and absorbed have been initiated.

As far as the land is concerned its, care and usage is guided by a code of mandatory and recommendatory provisions in keeping with the aims of the Trust:

## *Mandatory provisions of code*

i. Soil to be made fertile and healthy with the help of nature's own powers, e.g, by mulching. No chemical and/or genetically engineered fertilizers, pesticides or detergents to be used on the land.

ii. Only those irrigation techniques that do not deplete water to be practiced.

iii. No plants which adversely affect the ecology to be planted.

iv. No mono-culture practices; bio-diversity to be encouraged.

v. Trees that get planted and grow by themselves, through the mysterious processes of nature, to be encouraged and protected.

*Recommendatory*

i. Seeds, seedlings and cutting of local plant varieties to be planted wherever possible.

ii. Ploughing and composting to be avoided whenever possible.

iii. Grains, cereals and fruits grown on the land should preferably be used for consumption at nearby locations, rather than transported to far-off places.

It is now nearly four and a half years since the first nucleus of people came together to form Navadarshanam and tried to translate into action some of the ideals, hopes and dreams which they shared. For those who are or have been involved on a full time basis it has been a rewarding experience. But even for those who have been able to associate with it through occasional participation it provides a reference point for copying meaningfully with the day-to-day conflicts and choices confronting them. Natural and wholistic living is far from easy, far from literal 'do nothing'. The watchwords have to be 'awareness,' honesty and opens with self and other, patience and humility whether in interacting with nature or people if we are to not breed violence and exploitation. This is all therefore far removed from what goes under 'sustainable development' at the other end of the spectrum.

# Technology And Ecology

*T. S. Ananthu*

The need for seminars or workshops or research on 'sustainable alternatives' arises because of the Hobson's choice we face between technology and ecology; promoting one always seems to be at the expense of the other. Technology being seen as the primary mode of promoting human well-being, and ecology the basis of the well-being of our planets; the choice between the two leads to a serious dilemma. Is there any way out of this dilemma? Our present condition on planet earth is such that we had better find a way out, and that too pretty quickly. In my opinion, the only really viable way out lies in recognizing the link between ecology, morality and spirituality - all three arise from our quest for 'wholeness' - and this same 'wholeness' is also the fountain head of all creativity, a flowering of which can show us the way to meeting our needs (including technologies) without destroying the ecological balance.

To understand this link better, let us begin by looking at an ancient chinese story:

When Tzu-kung was passing through Han-yin, he saw an old man who was engaged in irrigating his vegetable plots. The way this old man did it was to let himself down into the well-pit by footholes cut into the side and emerge clasping a pitcher which he carefully emptied into a channel, thus expending a great deal of energy with very small results.

"There exists", Tzu-kung said to him," a contrivance with which one can irrigate a hundred vegetable plots a day. Unlike what you are doing, it demands a very small expenditure of energy, but produces very great results. Would you not like me to tell you about it?" The gardener raised his head and gazed at Tzu-kung. "What is it like?", he asked., "It is an instrument carved out of wood", said Tzu-kung, "heavy behind and light in front. It scoops up the water like a bale, as quickly as one drains a bath-tub. Its name is the well-sweep".

A look of indignation came into the gardener's face. He laughed scornfully, saying, "I used to be told by my teacher that where there are cunning contrivances there will be cunning performances, and where there are cunning performances there will be cunning hearts. He in whose breast a cunning heart lies has blurred the pristine purity of his nature has troubled the quiet of his soul, and with one who has troubled

the quiet of his soul the Tap will not dwell. It is not that I do not know about this invention, but that I should be ashamed to use it."

In the context of our discussion linking ecology with morality and spirituality, what this old Chinese gardener had to say about the introduction of even a simple technology like the well-sweep leading to a disturbance of our 'pristine purity' without which 'the Tap will not dwell' in our hearts makes very interesting reading. Even more important, the link this gardener has made between 'cunning contrivances', 'cunning performances', and 'cunning hearts' is worth deep reflection. This is particularly relevant in today's world, where smart machines are the order of the day, and the smarter we and our machines are, the more civilized we are supposed to be. Mahatma Gandhi had questioned this approach in a very fundamental way in his 'Hind Swaraj', maintaining that a process that makes us more cunning and therefore more self-centered and selfish cannot claim to be having a 'civilizing' effect on us. When, on a visit to England, he was asked by a reporter, "Sir, what do you think of Western civilization?", he replied puckishly," I think it would be a good idea".

Gandhiji's viewpoint in this regard has been shared by many wise personalities that we hold in high esteem, such as Albert Einstein, Will Durant, Arnold Toynbee and Erwin Schroedinger. To quote Arnold Toynbee:

" The most obvious ingredient in the western civilization is technology, yet human cannot live by technology alone. In the fullness of time when the ecumenical house of many mansions stands firmly on its own foundations and the temporary Western scaffolding falls away, as I have no doubt it will, I believe it will become manifest that the foundations are firm at last because they have been carried down to the bedrock of religion."

Like Gandhi, Toynbee too recommended a new era where the **foundations** of all human pursuits, including in the field of technology, are based upon the bedrock of religion. Like Gandhi, again, he was not referring to any particular religion or any rites, rituals or dogmas, but to those wonderful processes of enhancing our level of consciousness that Einstein had termed 'the cosmic religious experience,' and which Gandhi had called the religion that underlies all religions.'

What possibly could be the connection between technology, that produces goods and services for our 'here and now' existence, and

religion, which is generally associated with after life? This question often arises because of our ignorance of religion's deep connection with this life. Once the connection between religion in its true form and this life is understood in its proper perspective, we can find an answer to one of the most difficult dilemmas that modern man is facing: the apparent contradiction between technology and ecology. The enormity of this problem was referred to by the then Soviet Foreign Minister, Eduardo Shevardnadze, during the process of thawing the cold war in which he played on important role. Pointing out that the unforeseen but absolutely disastrous consequences of their rapid strides in technology was one of the main reasons for the failure of the Soviet experiment, he said:

"We are positive that the impending environmental disaster is a threat even greater than nuclear weapons. The process of disarmament has started and talks are underway. As for environmental hazards, humankind has not yet fully realized the full extent of the danger they carry and does not yet know any answer."

When we study some of the burning ecological issues of the day, such as the ozone layer deletion or the vanishing non-renewable resources, we get some picture of the horrors we may be subjected to in the years to come. Yet, as Shevardnadze was wise enough to point out, we have no clue as to how these disasters can be avoided. It seems a Hobson's choice between technologies that improve our standard of living and environmental preservation without which life on earth itself is likely to be wiped out.

This is a global problem of the most immense magnitude. How can we find a clue to the answers required? To do so, as we are sitting here on the Navadarshanam land, let us shift our focus from the global to the local.

When Navadarshanam's friends and well-wishers obtained this land from the local villagers, it could have been easily classified as 'wasteland', a term used for it by an IAS officer who had come for one of Atheetha Ashram's health camps. The top soil had been washed away, the land had become highly unproductive and there were only three trees in the entire 105 acres. It is now less than two years since we have been able to take full possession of this land, and erect a fairly good (though not foolproof) fence. We have tried to ensure that nature regenerates itself here, and that this process is not disturbed by grazing, logging our forest fires. We have not succeeded completely in our efforts - it is not easy to control the actions of hundreds of surrounding villagers

who own many thousands of cattle, especially as we have bent over backwards to ensure good relations with them. Yet, as you can see, the results are remarkable. Several thousand trees have made their appearance, without our having planted them in any way. Prominent among them are honge, accacia, flame of the forest, bilwar and the wild variety of birds (our friend Omkar Krishnan has identified 111 varieties that can now be spotted here) and the unhindered activity of the insects and micro-organisms have all contributed to a fantastic regeneration of the soil here. Perhaps ten years from now, the land will be like it is at the one place we know where a similar experiment has been carried out - the Valley School on Kanakapura Road south of Bangalore, which is now a lush, green forest where anything planted grows so well.

How did this land start regenerating itself despite having reached such a degraded condition? We can talk about the effect of the birds, insects, micro-organisms etc., but the fact of the matter is that we do not know and we cannot know, that is, at the level of the intellect, how this regeneration started and is carrying on. The mysterious processes of nature, and of life itself, are beyond the ken of our analytical, dissecting mind. This is the fundamental point we need to internalize if we want to understand that ecology is all about, and to resolve the technology-ecology dilemma. Donald Worster drove home this point with reference to soil regeneration:

"We can no more manufacture a soil with a tank of chemicals than we can invent a rain forest or produce a single bird. We may enhance the soil by helping its processes along, but we can never recreate what we destroy. The soil is a resource for which there is no substitute. Like the earth itself, it is a network of activity that we cannot yet understand let alone replicate."

The soil, and the earth itself, has life, and the Science of Life is not the physics and chemistry of the molecules that constitute our bodies, which only act as containers of this life force for limited periods of time. Once this fundamental fact is grasped, the link between ecology, morality and spirituality falls into place, and we can then recognize the immense necessity for those wonderful processes of education that Einstein referred to as 'the cosmic religious experience' - processes that can lead to a flowering of our creative talents in such a way that we will create technologies that help rather than destroy ecology by swimming along with rather than battling the tides of nature. Towards the end of his life, the great psychologist Carl Rogers termed this possibility the most exciting challenge before us in a speech appropriately titled "Do we dare?":

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"Perhaps in the coming generation of younger psychologists, hopefully unencumbered by university prohibitions and resistances, there may be a few who will dare to investigate the possibility that there is a lawful reality which is not open to our five senses; a reality in which present, past and future are intermingled, in which space is not a barrier and time has disappeared; a reality which can be perceived and known only when we are passively receptive, rather than actively bent on knowing. It is one of the most exciting challenges posed to psychology."

It is such an education that will open our eyes to the true secrets of the universe of which we are an integral part. In other words, learning to close the eyes of our consciousness to the external, physical world of duality will open our eyes to the wonderful, subtle forces that are at the root of your life and all creation, including this physical world. This is of course the path that the Father of our Nation had been constantly recommending to us. He was not 'anti-technology' or anti-science,' as is often made out; but spoke of a different kind of science, that would lead to even greater scientific 'miracles' than we are witnessing:

"Modern science is replete with illustrations of the seemingly impossible having become possible within living memory. But the victories of physical science would be nothing against the victory of the Science of Life, which is summed up in Love which is the Law of our Being."

It is such a new Science of Life that would on the one hand recognize the reality of the spiritual dimensions that are transcendent yet immanent (i. e, all around us, rather than in some distant heaven), and on the other hand lead to the creation of technologies that enhance rather than destroy ecology.

agriculture and alternative agriculture and their meanings differ. Most often they refer to incorporation of nutrient cycles, nitrogen fixation and other natural processes in production; following of integrated pest management practices; improving of the match between cropping patterns and the production potential and physical limitations of farm lands; and managing farms to maintain profitability while conserving soil, water, ecology, and biological resources. Minimum prerequisite in all situations is total withdrawal of chemical fertilisers, pesticides, herbicides, insecticides, and fungicides.

Sustainable agriculture endeavors to tackle many serious problems afflicting world food production: high energy costs, ground water contamination, soil erosion, loss of productivity, depletion of fossil resources, low farm incomes and a risk to human health and wildlife habitats. It is not so much a specific farming strategy as it is system approach to understanding the complex interactions within agricultural ecologies.

## *Role Of Soil in Plant Growth*

To understand the rationale for sustainable agriculture, one must grasp the critical importance of soil. Soil is not just another instrument for crop production like pesticides, fertilisers or tractors. Rather it is a complex living but fragile medium that must be protected and nurtured to ensure its long term productivity and stability.

Healthy soil is a hospitable world for growth. Air circulates through soil freely which in turn helps the soil to retain moisture long after a rain. A tablespoon of soil contains millions of grains of sand, silt and clay and has a vast expanse of internal surface area to which plant nutrients may cling. That same tablespoon of soil also contains billions of micro-organisms, including bacteria, actinomycetes, fungi and algae, most of which are principal decomposers for organic material. Decomposition results in the formation of humus and the release of many plant nutrients. The microbes also produce sticky substances called polysaccharides that glue soil particles together the soil to resist erosion.

Another essential activity taking place on the soil is the fixation of nitrogen. Certain bacteria in the soil or in the roots of plants, most notably the legumes, convert atmospheric nitrogen gas into fixed forms of nitrogen that plants and other organisms use to make proteins. The quantum of nitrogen available in the soil influences soil productivity.

Sustainable agriculture that rely on biological resources and their

beneficial interactions instead of chemicals can be successful. Well managed farms growing diverse crops with no chemicals are found to be as productive and often more profitable than conventional farms. It is also found that proven alternative systems would result in even greater economic benefits to farmers and environmental gains for the nation. External resources such as commercially purchased chemicals and fuels are replaced by resources found on or near the farm. These internal resources include nitrogen and other nutrients released from organic matter or from soil resources. As a result, such farming can differ considerably from one another because each tailors its practices to meet specific environmental and economic needs.

A central component of almost all sustainable farming practices is changing over from monoculture to multiculture including allowing ground cover through vegetation which is sometimes termed as weeds. In fact, continues input of fertilsers and pesticides is unavoidable for perpetuating monocultures. Rotating crops provides better weed and insect control, less disease built-up more efficient nutrient cycling and other benefits.

Regular adding of crop residues, manures and other organic materials to the soil is another essential feature of sustainable farming. Organic matter improves soil structure, increases its water storage capacity, enhances fertility and promotes physical condition of the soil. The better the physical condition, the more easily the soil can be tilled and the easier it is for seedlings to emerge and the roots to extend downwards. Water readily infiltrates soils with good physical condition, thereby minimising surface rub-off and soil erosion. Organic materials also feed earthworms and soil microbes.

The main sources of plant nutrients in sustainable farming practices are animal and green manures. A green manure crop is a grass or legume that is ploughed back into the soil or surface mulched at the end of the growing season to enchance the soil productivity and physical condition. Green manures help to control weeds, insect pests and soil erosion while providing simultaneously forage for live stock and cover for wildlife. By raising a diverse assortment of crops and livestock, a farm can buffer itself against economic and biological risks. Diversity results from mixing species and varieties of crops and from systematically integrating crops, trees and livestock. A biologically diverse farming practice is less prone to suffer loses due to a flooded market or a fall in prices of a single crop.

## *Integrated Pest Management*

Controlling insects and diseases without resorting to chemicals is also a goal of sustainable agriculture. The integrated pest management (IPM) involves growing disease resistant crop varieties and biological controls, such as natural predators or parasites that keep the pest populations below injurious levels. Farmers can also select till age methods, planting times, crop rotation and plant residue management practices to optimise the environment for beneficial insects that control pest species or to deprive pests of the habitat.

Integrated pest management programmes eliminate the use of pesticides. Biological control techniques are some of the most effective ways for controlling pests without resorting to pesticides. They have always been in use except for last few decades when the pesticides came on the scene.

## *Soil Conservation*

A sustainable farm invariably uses legumes as a cover crop and green manure. The soil where sustainable agriculture is practised, contains significantly more organic matter, nitrogen and biologically available potassium. It has better capacity to store nutrients, a higher water content, a larger micro-organism population and a greater polysaccharides content. The depth of the top soil is more because of reduced erosion. Although conserving soil productivity is important to farmers, they quite often select an agricultural system on the basis of its short term profitability. The long term profitability of modern agriculture seems questionable if the environmental and health costs currently borne by the society are taken into account. If these indirect costs are incorporated into the costs of the modern farm production, then sustainable systems would prove to be more profitable. It is observed that energy consumed by the modern farming is about the double of the one consumed in sustainable practices.

Agriculture is a fundamental component of the natural resources on which rests not only the quality of human life but its very existence. If sustainable agriculture is practised extensively, not only farmers will profit but society in general will benefit in many ways. More important, the country will be able to conserve its natural resources and move closer to attaining a sustainable society.

## *Role Of Fertilisers*

Fertilisers are a source of nutrition for plant growth. Both organic and synthetic fertilisers are used at present. Organic fertilisers turn the soil into a living medium, while synthetic substances like chemical fertilisers and hazardous pesticides make a lifeless medium incapable of growing anything without external help.

A typical nitrogenous fertilisers plant of 1600 tons per day capacity could require a capital investment of Rs. 4000 crores to produce 0.5 million tons/year of nutrients. Similar would be the cost of a phosphatic fertiliser producing plant. Potash fertilisers has to be imported in India. Manufacture of synthetic fertilisers is both capital and energy intensive. Production of synthetic fertilisers in addition depends on petroleum feedstock, which is estimated not to last in India beyond the year 2010 so that these investments are of short term value only. Clearly devising alternatives of lasting utility should be the objective of all new investments.

## *Agriculture in Pre-british Period*

Dharampal is an eminent historian of science and technology of pre-British India. His paper entitled "Productivity of Indian Agriculture in Historical Perspective" is indeed illuminating. Thirty years ago during his search for material on pre-British India he came across substantial and specific material relating to agriculture. He has been looking at the records written on palm leaf of a survey of about 2000 localities in the district of Chinglepet in the Tamil Nadu State, The Survey was conducted around 1770 by a British Engineer Thomas Barnard soon after these localities came under direct British control.

Preliminary data on 800 villages studied shows an average productivity of 3600 kg/ha of paddy over large area with more prosperous areas touching as high as 8200 kg/ha. Independent observers agree that yields obtained in India then were much higher than the yields obtained in England after the discovery of synthetic fertilisers and emergent agricultural revolution. We in India have never tried to understand the technology the Indian peasants employed to bring about this spectacular yield two hundred years ago and we have blindly aped the western pattern of treating agriculture as an industry for extracting maximum out of soil unconcerned about the consequent damage to the soil. Absence of chemical fertilisers and treating the soil as a living medium were definitely the reasons for high yields and good quality food.

This technology most likely involved recycling of organic matter, multiculture, crop rotation, biological control of pests, wise water management and prevention of soil erosion via green cover.

There has been a spurt in interest the world over to prevent loss of soil fertility due to chemical intervention. The US Department of Agriculture instituted a study in 1979 to evaluate US experience in organic agriculture. The results of this study were published in a report entitled "Report and Recommendation of USDA Study Team on Organic Farming" in July 1980. The report suggests that organic farming is more productive, consumes less energy and leads to more healthy environment.

The Indian Council of Agricultural Research has done extensive work in the area of organic farming. Gaur etc. has published a book entitled "Organic Manures". An exhaustive experimental testing of organic agriculture has been undertaken.

The investigations indicate that performance of organic manure is consistently superior. A typical data from Tamil Nadu Agricultural University collaborates the efficacy of organic agriculture. The recommendations contained in the last chapter of the book constitutes valuable reading. Also so little of it all is taken up seriously. The book, which can be a Gita for the farmers, is never translated in languages that the farmers can understand.

## *Demand for Organic Matter*

The demand for organic nutrients can be met through the harnessing of the available organic potential. Present estimates suggest that organic matter upto 2 T/ha of agricultural land is currently available. Estimates of productivity based on farm yard manure (FYM) indicates the need of 12.5 T/ha of FYM containing 30–40 percent manure. This suggests that urgent efforts to mobilise all potential organic resource must be made. These efforts will return nutrients contained in organic matter back to agriculture, to clean up or villages, towns, waterways as well as producing favourable results for people.

## *Farming and Depletion of Organic Matter*

Each season, substantial quantities of plant nutrients are removed from soil by crop harvesting. On an average, one ton of wheat, paddy, jower, bajra, maize and barley along with straw would remove 103 kgs of nutrients every year. Thus 170 million tons of foodgrains currently produced in the country draw out 17.51 million tons of plant nutrients

every year. Chemical fertilisers available in India are in the vicinity of 5 million tons. Even if all the chemical fertilisers available to the country are used, disregarding their conclusively proved harmful effects, we are still short of substantial quantity of nutrients essential for plant growth. Despite this, use of nonchemical nutrients is being neglected in our country. This situation has come about due to wrong priorities in the government approach and policy for agriculture.

One potential source for replenishing the supply of organic biomass, also totally disregarded at present, is the solid waste generated in our urban centres. With over 250 million of India's total population of 843 million (1991 Census) now living in urban areas, about one million tons of solid waste is generated every day. This can be turned into compost for regeneration of soil. In addition the sewerage coming out of cities which is now increasingly being piped and channelised can also provide the essential nutrients to the soil. Unfortunately all waste management programmes are directed towards dumping of raw untreated waste into low lying areas, water courses of sea instead of turning them into biomass which is required for maintenance of health and regenerating reproductive potential of the soil.

## *Organic Matter in Indian Farms*

Studies have shown that application of farmyard manure or compost is the best source for maintenance soil organic matter in Indian soils. The next in order is cereal straw/residues for the maintenance of organic matter in soil. Legume residues are not good for maintenance of soil organic matter in tropics but are good sources of plant nutrients, specially nitrogen and they may add as much as 40 kg N/ha in one season.

Controlled incubation studies conducted in different Indian soils for about six months has indicated that the application of farm yard manure at the rate of 44 tons/ha effectively builds up the organic matter status of different soils.

The results with different types of organic materials have clearly shown that living phase of soil was greatly stimulated which will be of consequence not only in biodegradation but in nitrogen fixation, phosphorous solubility and in increasing the availability of plant nutrients to crops. Phosphorus in non- renewable asset and nitrogen is highly subject to losses. The argumented microbial activity can tap the inert nitrogen gas from the atmosphere, reduce the leaching losses and regulate the supply of phosphorus.

The regulated application of organics as a practice energises the living micro-organisms of the soil involved in biochemical activity of importance to soil fertility and plant nutrition. Addition of farmyard manure and crop residues results in increase of total nitrogen varying from 10 to 70 percent depending on the plant material and soil type used.

Organically produced food is recognised to be healthy and free from injurious chemicals. Thus we observe that productivity of land managed organically is as good or superior to the one obtained through chemical agriculture. This ensures many other benefits such as clean environment and healthy food.

## *Goals for Sustainable Agriculture*

Sustainable agriculture in whatever, form, however noble from the point of environment conservation, has the fundamental and also the formidable task of providing adequate food to all the people of this country. Decline in yield from the level now achieved through whatever means including maximum input cannot be allowed. Any reduction in the rate of yield for a given unit is bound to create serious imbalances in a fragile infrastructure where the supply of food cereals just matches with the actual need in the country.

We have observed earlier that yields achieved over two hundred years back were markedly higher than the highest ever achieved through the so-called "Green Revolution". Increasing population brought pressure on lands that were hitherto used and/or reserved for agriculture, forests, pastures and grass lands. It is no more possible to increase quantum of land under cultivation hence the only solution lies in maintaining the present levels of yields for various crops and raising them gradually to keep pace with increasing demand for food.

Experiences of farmers who have changed over to sustainable agriculture bring out very clearly that the yields are not lower than what they were obtaining earlier. The average yields observed in Chinglepet survey provides a very clear proof of what can be achieved after initial reverses while changing over to sustainable agriculture.

## *Synthetic Fertilisers and Heavy Equipment*

Elimination or reducing of capital intensive, energy intensive harmful inputs like chemical fertilisers and pesticides from farming operations as well as withdrawal of heavy agricultural equipment and implements would definitely reduce the overall production costs to the farmer. The compulsion of selling off the produce, so often even before

it is ready to go out of the field, to pay off the bills of expensive inputs would be reduced as the farmer producing cereals without using synthetic inputs would not be under the burden of encashing his crop to pay off the debt.

## *Food for the Producers*

It is observed that despite the fact that India has achieved self-sufficiency in the food production, sufficient and appropriate variety of food is not available to all the people. In fact farmers and landless labourers forming the bulk of that section of society and subsisting below the poverty line are the very people who go without enough food because of their inability to acquire their needs in the competitive market. It is a paradox that the "Green Revolution", which has increased the food production, has thus been responsible for depriving the marginal farmers and landless labourers of their basic food needs. In the traditional agrarian society, people working on land were living in peace and harmony with one another. A sort of understanding based on egalitarian principles and mutual respect prevailed at that time where the owner farmer placed himsel at par with his labourer, treating him as partner in production, as far as the needs for sustenance and survival of the members of the families of all those who loboured together to produce food from a given piece of land was concerned.

Elimination of chemical fertilisers and pesticides and withdrawal of heavy farming equipment would regenerate the filial feeling in the relations between the farmers and landless labourers and create an atmosphere where low cost food would be shared on an egalitarian basis. The needs of the people instead of the hierarchical superiority and money power would rule the consumption of high quality food. More jobs in healthier infrastructure would ensure optimum utilisation of human and animal resources.

Change over to sustainable agriculture would also reduce and at a later date eliminate the need of investing scarce resources of the country in heavy plants which are unavoidable for producing synthetic chemical substances as well as heavy equipment. According to one estimate, about Rs. 100,000 crores are likely to be invested for setting up new or expanding existing manufacturing capacity for production of chemical fertilisers alone during the Eighth Five Year Plan. Matching investments would also made in the field of pesticide and heavy equipment

manufacture. as well as energy generation. Such heavy investment can be diverted for implementing other more urgent welfare programmes which are now held back on the excuse of paucity of resources.

### *Synthetic Substances and Water*

Application of synthetic chemicals necessitates use of more water which in turn results in developing mega water harnessing projects for providing regular irrigation. "Green Revolution" could not have succeeded in Punjab and Haryana if the heavy dose of chemicals and pesticides was not accompanied by Bhagra Nangal and other projects for daming the rivers and for increased supply of larger quantity of water. Use of chemical all resultant deprivation to the society. Shifting to sustainable agriculture can also obviate the need for undertaking large irrigation projects which submerge fertile lands and forests while displacing people who have sustained for time immemorial on the flowing river.

### *Conclusion*

The study has shown that sustainable agriculture is energywise more efficient, more productive and environmentally benign in contrast to modern agriculture. The organic nutrients are resources of agriculture, horticulture, forestry and therefore for animal and human habitation. The potential of these organic resources is very large and is higher than the current consumption of synthetic nutrients. There is therefore an urgent necessity to harness these resources before considering synthetic nutrients for agriculture.

The issue before the society are clear. What we need is the availability of noncontaminated health providing agricultural produce in quantity and at a price which will guarantee minimum food to the entire population of the country. What has been observed is that the cereals produced at present though quantitywise adequate for the entire population have not reached the lowest and most deprived sections of the society. Introduction of the so called scientific commercial and marketing approach aimed environmental and public health aspects and at making the product available to that section of the society which can pay the maximum has deprived the marginal farmers and landless farm labourers of their legitimate right to appropriate food.

The use of hazardous pesticides and chemical substances to agriculture is promoted by the government and big business through unsubstantiated till claims of increasing production as well as through unwarranted price control accompanied by unjustified subsidies and

support prices. A farmer following sustainable agricultural practices is at discount compared to those who fall in the trap of modern agriculture. This has resulted in the society being exposed to health risks, soil degeneration, high costs and unemployment.

The first thing that the authorities will have to do is to accept the experience of farming everywhere that production does not rise because of the use of hazardous pesticides and chemical fertilisers and then follow up with a number of actions including total withdrawal of support through undertaking the manufacture of chemical substances, making these chemicals available to the farmers at prices pegged below the actual costs, as well as providing undeserved subsidies as it is now observed that yields do not go up with increasing inorganic fertiliser input and pests do not vanish on the use of pesticides.

Use of media to boost artificially the demand for chemical fertilisers and hazardous pesticides should be discontinued and disallowed.

Change over to sustainable agriculture should be encouraged through appropriate extension programmes. The government should discontinue as well as dissociate from the manufacture of pesticides and fertilisers in any form or any stage and existing facilities should be diverted to other more essential programmes.

Manufacture, importation and marketing in pesticides, herbicides, weedicides and such substances for use in agriculture should be totally banned in view of the hazards they pose to the industrial workers who manufactures them, agriculture workers who use them and people who consume them. The objective before the people is to create a society which is environmental safe. Such a society has no possibility to come up as long as hazardous pesticides and inorganic chemicals are allowed to be used in agriculture.

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Mr. Kisan Mehta is indebted to authors of various publications enumerated in the References above as well as to Dr. H.S. Shanker, Anjani Mehta and Nancy Menezes for help extended to him in preparation of this Paper.

# Problem of Present Health Systems and Alternatives

*Dr. Shiridi Prasad Tekur*

## *Health Systems: History & Development*

### *Vedic Periods to Colonial Phase:*

Records of Health writings and Health care in India date back to over 5000 years. Some significant aspects of these are:

1. The contents and technology of sanitation in the Indus Valley (3000 B.C.)
2. The evolving of formalized health care systems like Ayurveda, Yoga, Siddha, Unani. etc.
3. The concepts and practice of 'vaccination' and plastic surgery (600 B.C.)
4. The development of Social Medicine and Hospitals for humans and animals during the Ashoka/Maurya Phase (279–236 B.C.)

EACH CULTURE HAS CATERED TO ITS LIFE-STYLE AND PATTERNS OF ILLNESS WITH AN INDIGENOUS RESPONSE, WITH A FEW EVOLVING INTO FORMALIZED SYSTEMS.

Eg. Ayurveda / Siddha / Unani

### *Colonial Phase*

In the 16th century, the Portuguese first introduced Western Medicine into Goa. The British colonial phase saw its spread and adoption all over the country. It was aimed at serving the rulers and the elite of the developing towns and cities.

The rural areas were generally neglected and continued dependence on indigenous systems. The positive aspects were, because of the Public Health Revolution in Europe during mid-nineteenth century affecting the process in India. They include

— Public Health concepts in tackling epidemics and other forms of disease prevention.

— Focus on women and children by the Missionary sector, and

— Training of local people as health professionals, after initial hesitation.

## *Bhore Committee / Sokhey Report*

The Health and Development Committee during 1943–46 drew up a comprehensive blue-print for Health Services for India. The Sohkey report of the Indian National Congress was a fore-runner to the new vision of Health / Health care in India.

Some highlights of the Bhore Committee recommendations were

— Health should be an integral part of socio-economic development

— Adequate and Free Health care for all.

— Reach out to vast rural population and correct rural-urban imbalance.

— Emphasis on prevention, promotion and education.

In retrospect some flaws in this expert prescription were:

— unrealistic targets

— vague budget allocations and distribution

— complete by-pass of the indigenous systems

— abolishing of licentiate doctors training.

THE BHORE REPORT BUILT THE FRAMEWORK AND REMAINED THE INSPIRATION FOR MUCH OF THE POST-INDEPENDENT HEALTH PLANNING IN INDIA.

## *Post-independent India*

The Constitution of India adopted in 1950 clearly recognises the Government's responsibility for the health of all people.

This commitment led to the evolution of a large number of health programs. They include

— The means to develop the above in terms of Research, Training, Technology development institutions.

— Establishment of PHC's (Primary Health Centres)since

1952 for every one lakh population (now 30,000)

These are the mainstay of Health Services.

— Clear emphasis on population control since mid 1960's

— Launching of sanitation and drinking water supply programs from the fifth five year plan.

— Launching of Integrated Child Development Services (ICDS) program for pregnant and lactating mothers and pre-school children in 1975.

— Launching of a package of minimum needs programs from early 1980's.

— Launching of the Multipurpose workers scheme in 1971 and Community Health Guide Scheme in 1977.

## *Constitutional Pledges*

The state shall regard the raising of the level of nutrition and standard of living of its people and the improvement of Public Health as among its primary duties.

It shall ensure

* that the health and strength of workers, men and women, and the tender age of children are not abused. . . . . .

* that children are given opportunities and facilities to develop in a healthy manner. . . . . .

It shall make

* Provisions for securing just and human conditions of work and maternity relief. . . . .

* for public assistance in cases of unemployment, old age, sickness and disablement and in other cases of underserved want.

— Constitution of India.

## *Achievements and Failures*

A study group of ICMR and ICSSR in 1984 listed the following as achievements:

— Life expectancy doubled

— Health care services expanded

— Human power training centres increased

— Small-pox eradicated

— Plague, Cholera and Malaria controlled

— MCH and Immunization programs increased

— Largest Family Planning program in the World.

### *Failures*

— Health not integrated with Development

— Little dent on Malnutrition and Environmental Sanitation

— Morbidity patterns not materially changed

— Health Education neglected

— TB, Leprosy, Filaria yet to be controlled

— Infant and material mortality rates still very high

— Population stabilization - a long way to go.

### *Overall*

1. The model of health care was out-dated and counter-productive beneficial to the rich and well to do upper and middle classes.
2. Health was a low priority national investment.

Many other expert committee reports and policy statements of the seventies began to make critical observations about the inadequacies of the health care model and exhorted all concerned to search for more relevant alternatives and approaches.

India was a signatory to the Alma Ata declaration in 1978 where member countries of the WHO agreed on the Primary Health Care Strategy.

— which sees people as active partners.

— is most suited to answer their needs and

— can provide the basis for Health for All.

The National Health Policy of 1981 takes into account all of our country's health needs and lays down guidelines to meet them.

The ICMR / ICSSR report is after all these!

## *The Situation Today*

1. There is dramatic decline in death rates, though skewed in favour of the urban people.
2. A status of health comparable to the best in the world in some states, while many are lumped with the worst in the world.
3. The female still dies more frequency in childhood and the child-bearing ages.
4. The sharp differences cited above directly linked with the percentage of people living below the poverty line in both rural and urban areas.
5. A continuing mortality due to communicable diseases like TB, Malaria, Filaria, Diarrheal diseases, etc., and an alarming addition to the list are Japanese encephalitis, Kala-azar, AIDS, Cancer and the latest being plague.

Despite a quantitative increase in the health care facilities, studies on the utilisation of these services reported by various agencies reveal that

1. Only 6.3% deliveries are institutional, and only 18% births are attended by trained personnel.
2. Only 31% of the population utilizes the PHC services, though 90% are aware of them. The reasons being-
   - — 65% because services are poor.
   - — 55% complain of distance
3. There has been an incredible growth in the private sector. About 70% of doctors work in this sector - mainly in urban areas.
4. The Voluntary Sector (roughly 7,000 organisations) are working in health. They started with hospitals and institutionalised services and have pioneered many new approaches discussed later in Community Health. They are small in size and are involved in filling up critical gaps in health care depending on local needs.

## *Problems*

The main problems with the present health care systems can be summarised as

a. Over-professionalization and mystification

b. Lack of flexibility to changing local needs

c. Inadequate and Ineffective decentralization

d. Passive participation of states in centrally sponsored 'National' programs.

e. A lack of faith in the system from people and hence minimal participation.

f. Inadequate Health Education.

These need to be understood in the context of the Indian situation, where

a. Diseases of poverty co-exist with those of affluence (the latter corners all resources)

b. The urban of Health Care is considered the exclusive responsibility of Health Care systems.

c. Yet, the production and availability of drugs is determined by the Ministry of Industries and Chemicals. We do not have a rational drug policy which enables production to meet needs.

d. There is an exclusive dependence on the Western Systems / models of Health Care.

e. The declining budget for health care is accepted due to other reasons / imperatives.

## *Alternative*

What are the alternatives in such a situation? Since early 1970's, many voluntary organisations have been successful in meeting local needs in various ways. Planners have been looking for "models" which can be up-scaled countrywide, and find that it cannot be such a thing as a 'model'. Yet underlying principles could be utilised.

A gradual recognition of the need for a social model of health has been the learning from numerous grass-roots efforts.

The paradigm shift needed from 'Medical' to the 'Social' model of health is enumerated below.

*The Paradigm Shift*

| From | To |
|---|---|
| MEDICAL MODEL | SOCIAL MODEL |
| Individual..... | Community |
| Disease | Health |
| Providing | Enabling |
| Drugs / Technology..... | Knowledge / Social processes |
| Professional Control..... | Demystification |

A broad definition of Community Health emerging from this is:

"Community Health is a process of enabling people to exercise collectively their responsibility to their own health and demand health as their right. It involves the increasing of the individual, family and community autonomy over health and over organisations, means, opportunities, knowledge, skills and supportive structures that make health possible.

The Technological / Managerial components of the new paradigm include

a. Integration of Health with development
b. Education for health
c. Community Organisation and participation
d. Community support of finance / resources
e. Appropriate technology for health
f. Community / Village Health Workers
g. Indigenous / Traditional Systems of Health Care to be included.

The Critical issues / values of the new paradigm include

a. Community building efforts
b. Social analysis and conflict management
c. Individual / Community autonomy

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f. Community / Village Health Workers
g. Indigenous / Traditional Systems of Health Care to be included.

The Critical issues / values of the new paradigm include

a. Community building efforts
b. Social analysis and conflict management
c. Individual / Community autonomy

d. Participatory / team decision making

e. Demystification and skill transfer

f. Medical Pluralism

g. Accountability / Socio-medical audit.

These involve, apart from the above, confronting with realities, the medicalized health system to become

— more poor-people oriented
— more community oriented
— more socio-epidemiological oriented
— more democratic, and
— more accountable.

As Dr. D. Banerji postulates, the development of health services in a country is on three-tiers, starting with

a. a socio-cultural process

b. a political process

c. a technological and managerial process with a socio-epidemiological perspective.

There is a lag between the phases (a) to (b) and (b) to (c). The task is to narrow if not totally eliminate lags that exist within the three tiers. Readymade solutions are not available, and the health services need to be built as we learn.

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## *Energy Crisis*

It is obvious that at the present rate of extraction of Oil (28 m T/year), our oil reserve will not last even 20 years. With the proliferation of personal transport, the annual consumption of oil will increase rapidly. The power crisis and the possible hike in power tariff are likely to lead to increasing diesel-power generation in industries. This will mean larger oil consumption which our oil reserve can hardly meet.

Indian coal although fairly large in quantity, is of poor quality (40% ash) and with increasing concern for environmental pollution the utilization of coal will be restricted to some extent.

The shortfalls in electrical power/energy last year are as below:

| | |
|---|---|
| Energy generated | 325 billion units |
| Plant load factor | 54% |

Shortfalls in supply

| | |
|---|---|
| Overall | 10% |
| Peak | 20%. |

The expected economic growth rate of 5°6% will place further demand on power generation as will be shown later.

## *Further Demand Growth*

Energy Options for the 21st Century

Can the traditional growth pattern be sustained?

1. A low growth scenario

   a. A 3–3.5% Economic growth rate.

   b. Large population growth

   c. Increasing urbanization

## *Energy Scene*

a. Non-conventional energy use continues, leading to further depletion of forest cover.

b. If further Oil reserves are not discovered, our present oil reserve will be depleted and most of our foreign exchange earning will be spent in importing oil.

c. Power crisis will continue since power projects cannot be funded. Industrial recession may alleviate power crisis.

2. A medium growth scenario:

   a. A 5–6% growth rate

   b. Population growth moderate

   c. Controlled urbanization. Business as usual.

*Energy Scene*

   a. Non-commercial energy use is reduced.

| | | | |
|---|---|---|---|
| b. Oil | 5.5% GDP | 122 mT | Year 2004–05 |
| | 6.0% GDP | 133 mT | –do– |
| c. Coal | 5.5% GDP | 628 mT | –do– |
| | 6.0% GDP | 713 mT | –do– |

Power crisis continues unless Hydro Power is augmented and T and D losses reduced. Unless transportation is rationalized with emphasis on *PUBLIC TRANSPORTATION;* shift to good transport by railway, oil situation will possibly lead to a crisis.

Planning Commission Estimate of Installed capacity for POWER in 1999–2000

   a. 5.5% GDP - 167 GW

   b. 6.0% GDP - 177 GW

*Estimated Cost Per*

   a. 320,000 Crores

   b. 350,000 Crores

3. High Growth

   a. The growth rate is 7% and above
   b. Population growth limited
   c. Urbanization also limited

## *Energy Scene*

a. Nonconventional Energy use is sharply reduced.

b. Oil for 7% GDP growth rate ..... 160 mT (2004–05)

c. Coal for 7% GDP growth rate..... 863 mT (2004–05)

Planning Commission Estimate of Installed Capacity for POWER in 1999–2000:

7% GDP rate ..... 199 GW

Estimated cost: Rs. 410,000 crores

EVEN FOR SUSTAINING MEDIUM GROWTH RATE WE NEED TO INVEST ATLEAST $100 BILLION IN THE POWER SECTOR ALONE (at present cost) DURING THE NEXT 5 YEARS.

None of the three scenarios seem sustainable. It is imperative that we look for an affordable and Eco-friendly solution to our Energy problem. The Eighth plan funds allocation of 1% for nonconventional energy sources seem grossly inadequate, although it is an improvement on the 7th plan allocation of 0.3%.

## *Energy end Use*

Using Electricity for heating water is uneconomical and highly inefficient. Electricity, on the other hand, is the appropriate form of Energy for LIGHTING.

If SOLAR HEATERS are used for water heating, considerable electric power installation and electrical energy consumption can be avoided.

**Since the installation of 1 kw generation costs:**

Rs. 40,000 (Thermal, Coal based)

Rs. 50,000 (Nuclear)

Rs. 30,000 (Hydro)

The Government spends about Rs. 60,000 to enable you to install a 1.5 kw Geyser for Water heating.

You spend nearly Rs. 90/- every month for using it for an hour every day. If the SEB (State Electricity Board) installed a SOLAR HEATER for you for Rs. 20,000 and charged you Rs. 100/- every month, it would be beneficial for all.

## *Pollution*

For an installed electrical capacity of 1000 MW the coal requirement is 3.8 million tonnes per year.

This amount of Coal will produce:

7 mT of Carbondioxide

1.5 mT of Ash

45,000 T of Oxides of Sulphur

20,000 T of Oxides of Nitrogen

## *Alternative Energy Sources*

One hears a great deal these days about Energy conservation and alternative energy resources. The resources shown are significant. The achievements so far are very limited. The table below indicates the projections and the achievements.

**Non-conventional Energy Sources**

| Estimated Potential | | Achievements | |
|---|---|---|---|
| | | Power Generation: | |
| Wind Power | 20,000 MW | Wind farms | 54 MW |
| Mini-micro Hyde | 15,000 MW | Mini-micro hydel | 94 MW |
| Biomass | 17,000 MW | Biomass | |
| | | Gasifier | <10MW |
| | | Cogeneration | 6 MW |
| Solar Energy (annual) | $5 \times 10^5$kWh | Photovoltaic power | 400 MW |
| Biogas Plants | 12 million | Wind Pumps | 3000 no. |
| Improved Chullas | 120 million | Photovoltaic pumps | <800 |

## *Energy Conservation*

1. Reduce T & D loss
2. Improve efficiency of Motors
3. Improve efficiency of various Industries
4. Encourage public transport

## *Conclusion*

i. Large amount of funds should be invested by the Government for R & D in renewable energy resources. Scientists, Engineers and Social workers have to work together to see how decentralized energy resources can be made efficient and self-sustaining.

ii. Reduction of Transmission and Distribution losses which are inordinately high (25%) must be made mandatory and computers used extensively so that loss minimization can be carried out cheaply.

iii. Out of 84,000 MW of hydroelectric power identified in the country only 21,000 MW has been harnessed so far. Hydroelectric power, large and small should be exploited to the fullest extent.

iv. Demand-side management of Electric power/Energy has to taken up in earnest and various incentive and disincentive schemes have to be developed so that peak demand of electricity is reduced and energy demand may be reduced by improving the efficiency of drives.

v. Public Transport has to be improved and private transport discouraged. Goods transport beyond a certain distance should be carried out by the Railways and there should be strong disincentives for long distance transport of goods using trucks.

vi. The management of State Electricity Boards should be autonomous organisations and not controlled by State Governments.

vii. Except for Bhagyajyothi schemes in which one 40 bulb is provided to the homes of the poor in rural areas for a flat charge of Rs. 5/- per month, unmetered electricity must not be provided to the agricultural sector as is done now in some states and in case the Government decides to subsidize electricity to the agricultural sector, it has to pay the SEBs the amount of subsidy.

viii. Finally and most important is the Government should develop a suitable energy policy for the country.

# Seminar Statement

We, the participants of the National Seminar on Alternative and Sustainable development organised by ECC from 11th to 15th October, 1994 at Bangalore shared among ourselves thoughts and experiences in the search for alternative development. Modern development which is mechanistic, consumerist and materialistic has to be countered by new eco-friendly appropriate technology which must be participatory and inclusive. It is asserted that we cannot be masters of nature and we should use our resources in a prudent, frugal and humble manner. It is also acknowledged that the proponents of this new alternative should also alter their life style and as far as possible detach themselves from consumerist culture.

Bio-technology causes immense problems, apart from the moral questions. It is another means to transfer the rich biodiversity resources of the South to the North. Thus the need for conserving our traditional seed varieties with peoples participation was emphasised.

We must expeditiously turn towards organic and natural farming which is proved sustainable. It endeavours to tackle many serious problems in food sector including high energy costs, soil contamination, soil erosion, loss of productivity, depletion of fossil sources, low farm income and risk to human farm habitats. We greet all the bold experiments in this area. The state should be a subsidiser to those who are in organic farming.

The race for the construction of big dams should stop. The SSP is going to displace one million people and submerge 39,134 hectare land. The Pooyamkutty will submerge the rich forest wealth in Idukki district of Kerala for a meagre 750 MW electricity. We ask for an entire review of these projects.

In the energy sector 20% of the total population consume 80% of the power produced. Our energy needs must clearly by related to the sustainable path of development we aspire for. There should be a balanced mix of medium and mini projects with peoples initiative. It is shocking to find that only one percent of the budget of the power sector in the eighth plan is allocated to the Non-Conventional energy while MNCs are granted even Counterguarantees in conventional energy sector buying power.

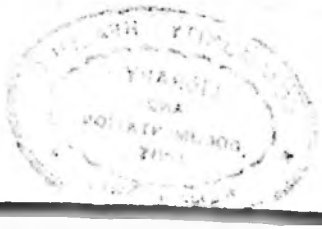
In the health area, although 70% of our population live in villages 78% of our doctors work in urban areas. The present model of health

care is outdated and counter productive and beneficial only to the rich. So there must be a paradigm shift from individual to community, from disease to health, from providing to enabling, from professional control to demystification. (from not only relaying an allopathic but developing a comprehensive health system).

The present day education is regimented and memory oriented. It must lead us to new understandings. It should enable us to question all kinds of fundamentals in our search for a new order.

Thus technology with all its facets has to be subjected to a proper analysis and critique. The modern technology is reductionist and life in its totality is ignored. The wholeness or the holistic perspective has to be restored. To rediscover it we may need a new spirituality, a spirituality that encompasses nature and the whole of nature.

(The statement, which was presented in the plenary session of the seminar on 15.10.94 by Prof. Varghese George was unanimously accepted by the participants).



# Seminar Report

The national seminar on alternative and sustainable development was held at ECC from 11th to 15th October 1994.

## *Objectives*

The national objectives of the seminar were three-fold

1. To initiate an in-depth analysis of the present model of development which is unsustainable and the alternative models of development which are in harmony with nature.
2. To bring together different small groups and individuals who are already experimenting with alternative models in small ways and to provide them an opportunity to share their experiences.
3. To contribute to a national networking of small groups and individuals who are already in this field.

## *Inauguration*

The inaugural session of the seminar began at 10.30 a.m. on the 11th of October 1994 in the Conference Hall. Dr. Partap C. Aggarwal, visiting Professor of Colgate University, Hamilton, New York inaugurated the seminar and delivered the keynote address on the topic. 'An alternative vision of Development'. In his address he analysed the present model, pointed out the alternative and stressed the need to return to the 'garden of Eden'. Mr. J.E. David, Consultant, WWF (India) DCNR, presided over the meeting. In his presidential address he requested the delegates to think about the question - at whose cost the people of developed countries are living, instead of talking about the living standards in the developed world. Dr. Mithra G. Augustine, Director, ECC introduced the Centre to the delegates. Mr. George Cheriyan, Asst. Director, ECC introduced the seminar theme and welcomed the guests and delegates. Ms. Rajalakshmi proposed the vote of thanks.

## *Paper presentations*

In the following sessions Mr. K.V. Surendranath (Some thoughts on alternative development), Dr. Vanaja Ramprasad (Development crisis, environmental degradation and alternatives), Mr. Kisan Goculdas Mehta (Problems of present agri-technology sustainable agriculture), Mr. Narayana Reddy (Organic farming), Dr. (Mrs) Jyothi Ananthu (Wholistic and natural way of living and thinking), Mr. T.S. Ananthu (Technology and Ecology), Dr. G.M. Oza (Environmental aspects of development projects with special reference to Narmada Valley), Prof. D.P. Sengupta (Present crisis of energy and alternatives), Dr. Shiridi

Prasad (Problems of present health systems and alternatives) and Ms. Sophia Ten Broeck (Sustainable development and alternative education) presented their papers. There were discussions and video shows on the theme presentations.

### *Field visit and Exposure trip*

The participants visited a nearby organic farm on 12th October and Navadarshanam - an alternative development centre on the 13th.

### *Participants*

27 delegates from 7 states, including 2 special invitees from Germany and Holland, participated in the seminar.

### *Resource Materials Exhibition*

An exhibition of relevant resource materials on alternatives was arranged at the conference venue with the help of CESDI (Centre for Environment and Sustainable Development India). Alter Media, World Wide Fund (India), and CEE (Centre for Environment Education) also exhibited their books and materials.

### *Seminar Statement*

In the plenary session Prof. Varghese George presented a draft statement on the seminar. After discussion and amendments, participants unanimously adopted the statement. In the statement, the participants strongly criticized the present model of development which is mechanistic, consumeristic and materialistic and stressed the need for a new eco-friendly appropriate technology that must be participatory and inclusive. The statement also pointed out the need for a new spirituality to rediscover the holistic perspective of life.

### *Evaluation and Valedictory Sessions*

The participants evaluated different aspects of the seminar in the evaluation session. Also they put up their suggestions regarding ECC's involvement in alternative activities in different fields.

Dr. Mithra G. Augustine delivered the valedictory address. Mr. George Cheriyan proposed the vote of thanks. The seminar came to an end at 4.30 p.m. on 15th October 1994.

16th October 1994

George Cheriyan
Asst. Director, ECC
(Programme in-charge)

# Address list of participants and Resource persons

## *Participants*

1. Mr. Abraham Kurian, Gangotri Suryanelli P.O. Munnar, Idikki District, Kerala 685 618.
2. Col. Abraham Thomas, 337, Wheeler Road, St. Thomas Town, Bangalore 560 084. Ph. 567005.
3. Mr. Balachandran V, C/o Punjab National Bank, Statue, Trivandrum 695 001, Kerala. Ph: 0471 77697.
4. Mr. Biju K.F., Alter Media, Utility Buildings, Nehru Bazar, Thrissur 680 001, Kerala. Ph: 29179.
5. Fr. Cherian Thazhamon, St. Paul's Catholic Church, P.O. Kumbanad (via) Tiruvalla - 689 547, Kerala. PP: 04737 4893.
6. Mr. Peter Celastine Gomez, Programme for Community, Organisation PCO Centre, Spencer Junction, Trivandrum 695 103, Kerala. Ph:0471 330408.
7. Prof. Mrs. Rachel Mathew,Kodumthara House, Eraviperoor P.O., Tiruvalla, Kerala. Ph: 04737 5194.
8. Mr. Rajan Jacob, Thoppil House, Kuttapuzha P.O., Tiruvalla 695 103, Kerala. Ph: 04736 23628.
9. Mr. Rajan Mathew, Programme Director (EDTP), KCC Office, 15, J.P. Nagar, Tiruvalla 689 107, Kerala. Ph: 04736 25327, R- 24635.
10. Mr. Ranjith Sathyaraj, Anila, Killur Post, D.K. 574 214, Karnataka.
11. Ms. Sarasu Thomas, 337, Wheeler road, St. Thomas Town, Bangalore 560 001. Ph: 567 005.
12. Ms. Sowmya M, 143 Kamala Mansion, Infantry Road, Bangalore 560 001. Ph: 571262.
13. Sr. Stella, Sangraha No. 40, 1st Block, Apparao Layout, Yernapalyam Road, Ramamurthi Nagar, Bangalore 560 016. Ph: 8512165.
14. Mr. Tarun Kumar Mahapatra, Chairman & Co/ordinator, SETUF MIG -15 - H.B. Colony, Lewis Road, Bhubaneshwar 751 002, Orissa. Ph: 400871.

15. Prof. Thomas Abraham C., Director, TPDP, 15/2, New 5, A.K. Nagar, Annamalai Chettiar Road, Sai Baba Mission P.O., Coimbatore 641 011, Tamil Nadu.

16. Prof. Varghese George, Kodumthara House, Eraviperoor P.O., Tiruvalla, Kerala. Ph: 04737 5194.

## *Special Invitees*

17. Mr. Om Prakash Bagaria, A-4, Whitefield Ville, Whitefield, Bangalore 560 066.

18. Mrs. Pushpa Bagaria, A-4, Whitefield Ville, Whitefield, Bangalore 560 066.

19. Mr. Henk Kok (Holland), C/o A-4 Whitefield Ville, Whitefield, Bangalore 560 066.

20. Mr. Reinhold Seide (Germany), C/o Prakruti, 123, Mahatma Gandhi Road, Opp. Bombay University, Fort, Bombay 400 023.

## *Resource Persons Cum Full Time Participants*

21. Dr. Partap C. Aggarwal, 51, Shama Apts., Prendergant Road, Secunderabad, A.P.

22. Mr. Kisan Goculdas Mehta, Prakruti, 123, Mahatma Gandhi Road, Opp. Bombay University, Fort, Bombay 400 023. Ph: R - 022 4149688, 0-274468, 274262.

23. Mr. Surendranath K.V., Mridula Bhavanam, Thirumala, Thiruvananthapuram 695 006, Kerala. Ph: 0471 340321.

24. Mr. J.E. David, Consultant, WWF India, DCNR, Kamala Mansion, 143, Infantry Road, Bangalore 560 001. Ph: 574685

25. Dr. G.M. Oza, INSONA, Oza Buildings, Salatwada, Baroda -390 001. Ph: 421009, 428703.

26. Mr. T.S. Ananthu, A-4, Whitefield Ville, Whitefield, Bangalore 560 066 Ph: 8453147.

27. Dr. (Mrs) Jyothi Ananthu, A-4, Whitefield Ville, Whitefield, Bangalore 560 066. Ph: 8453147.

*Resource Persons*

28. Dr. Vanaja Ramprasad, 839, 23rd Main, J.P. Nagar, IInd Stage, Bangalore 560 078. Ph: 6635963.
29. Prof. D.P. Sengupta, Chairman, Dept. of Electrical Engineering, Indian Institute of Science, Bangalore 560 012. Ph: 3341566, 3348444.
30. Dr. Shiridi Prasad, Community Health Cell, 326, 15h Main, 1st Block, Koramangala, Bangalore 560 024. Ph: 5531518.
31. Mr. Narayana Reddy, Farmer, Village Soruhanase, Varathur P.O. Bangalore 560 087.
32. Ms. Sophia Ten Broeck, Managing Trustee, East West School, 1, B.P. Wadia Road, Basavanagudi, Bangalore 560 004. Ph: 624841.

*ECC Staff*

33. Dr. Mithra G. Augustine, Director
34. Mr. George Cheriyan, Asst. Director

# About the Contributors

*Dr. Partap C. Aggarwal*

Well known environmental activist, former Professor of Cornell University and visiting Professor of Colgate University, Hamilton, New York; Ph.D in Anthropology, Specialisation in ethnography.

*Mr. K. V. Surendra Nath*

Former member of Kerala Legislative Assembly. Political, Social and environmental activist, Journalist.

*Dr. (Mrs) Jyothi Ananthu*

One of the trustees of Navadarshanam. Ph.D. in Sociology

*Mr. T. S. Ananthu*

One of the trustees of Navadarshanam. B. Tech in Elec. Engg.from IIT Madras and Masters from Stanford University.

*Mr. Kisan Goculdas Mehta*

Social and Environmental activist. President, Prakruti, Bombay.

*Dr. Shiridi Prasad Tekur*

Working in association with Community Health Cell, Bangalore. Specialisation in alternative health systems.

*Prof. D.P.Sengupta*

Chairman, Dept. of Electrical Engineering, Indian Institute of Science, Bangalore.

# Acknowledgement

Our sincere thanks to the resource persons who contributed papers in writing for this publication.

Ecumenical Christian Centre
16th October, 1994

George Cheriyan
Asst. Director.

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