

ECOLOGY AND SUSTAINABILITY Renewable Energy Centre Mithradham: A Model for Sustainable Development

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Introduction

Ecology and sustainability are probably the most often used words in all common platforms. The reason is that the misuse of nature and its gifts are detrimentally affecting the whole human race without any distinction. The entire eco-system has slipped in to a crisis due to the widespread misuse of science and technology for the so called human development. Environment that was a source of happiness for us and our fellow creatures has now degraded, bringing insurmountable sorrow in our lives. This is the result of our unbridled desire for pleasures and the apparent short and seemingly easy path of development that we have taken. Evolution cannot stop or go in the reverse direction. The next phase of our human evolution should consciously take a cleaner path if we are to overcome this crisis. The cleaner path is not always the easy but the better and safer path.

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The Collector and Hunter

The latest fossil found from central Africa puts the age of 'homo sapience' around 3.5 million years. Living in forests, he walked erect on two legs and handled basic tools. With his tools he dug roots. Climbing trees he collected fruits. Naturally, he was also a social being and lived in groups with kith and kin. Occasionally, he hunted for food in pack. Sure, he too had crises. Most of these sprang from attack of wild animals, lack of rain, scarcity of food, flooding of habitat and natural calamities. Gods or other worldly beings were responsible for pleasure and pain. Happiness in life depended on their whims and fancies. They had to be appeased through offerings and sacrifices. Religion and worship offered the much needed strength for the survival of the crises. Man made ecological crises was almost nil. The so called human wastes were manure and made the soil fertile. He with his group had to move from one place to another in search of food and water and sometimes landed near other nomadic groups searching to satisfy the same needs. Skirmishes and war broke out in these circumstances leading to injuries and rarely death. Some of the groups perished due to famine and plague. Except natural chaos everything was ecologically in order. This hunting stage was the most ecologically sound period of human history. Famine, war and plague were the dreaded calamities of the age.

The Farmer and Producer

Being creative, the adaptive man searched for solutions for his crises such as dwindling food resources in the forest. He thought of cultivating and taming animals. This was an important invention that changed the course of his history. He settled, built durable huts, fenced his territory and kept his privacy. But, this life style shift lead to a change in attitude in the minds of the people. Most of the resources that were common became private. Communication was no more spontaneous and had to be 'opened'. Salutations were the entry signals for communication and show of concern. Priority shifted from social to private security and safety. The farming communities evolved as a natural consequence to overcome the crises related to hunting nomadic groups. Problems which are the motivation for innovation persisted. Population increase demanded more food production putting stress on land and animals. But, fertile forest was in plenty. Groups moved to better arable land. Necessities gave birth to inventions of tools, herbs and other survival kits. This change

happened since only ten thousand years as per the available data. Side by side, 'originals' turned to aboriginals. Compared to the hunting period, the farming period is short. If we assume the hunting period to be one day, the farming period is less than three minutes. However, very important materials and tools were invented during this period. These were of course tools for hunting in the wild, farming and warding off enemies. Certain families thrived on tool production and had no or little time for farming. But tools were paid in food grains and animals. Using tools became a skill to be acquired. Experts started teaching and were also paid in grains and other valuables. Slowly, division of labour acquired unique status for each group. Uncertainty with regard to future still remained and pleasing Gods was important. Worship and sacrifices were the means to the end. Some took it as full time activity. Priests were busy with learning more and more on the nature of Gods so that proper worship could be done tailored to the character of each God. Sun God, Wind God, Rain God, Serpent God and numerous other gods had to be kept in good moods for prosperity, happiness and long life. The mediators between man and God were also paid in kind often as offerings for Gods. Farming period offered more spare time because, life could be programmed now. Naturally, serious discussions on meaning of life and death took place at least among the priests and teachers. Philosophy and theology evolved during this period. Ecological crises existed due to large settlements. Waste was still a natural resource if properly handled. With increase in population, demand for food, clothing and shelter raised, showing a corresponding increase in the production of tools and other services. All these activities lead to heaps of rejected waste which of course did not create great problem as most of the waste decayed and increased the fertility of the soil. Air, water and food almost remained pure except at certain locations of high production activities. Ecological crisis took its origin during this phase of human evolution. The crisis increased proportional to the population increase. The great demand for tools and resources lead to mechanization processes culminating in the invention of steam and fossil engines. These worked automatic giving birth to industries heralding an industrial period. Industrialization in its present form started during the beginning of the 20th century.

The Mass Producer and Consumer

In our one day human history scale, the industrial man is only 2.4 seconds old and is just born. Industrialization brought about unimaginable alterations in the life and activities of human beings. Small settlements of the farming period turned into townships centred on industrial activities. Accumulation of industries and supporting institutions that supplied resources to the industries including human resources in certain places expanded townships to cities. People who were involved in industrial production had wealth and purchasing power. Naturally, more and more people in the remote villages migrated to cities in search of jobs and acquiring skills for jobs. Many new services required for the large city population sprang up in cities making cities congested. Simple fences of farming families gave way to thick and tall walls increasing isolation. Due to the requirement of skilled personnel for industries, mass production was also needed in human resources opening up big educational institutions. Industrialization also demanded mobility of raw materials, human resources and finished products. Inventions of the petrol and diesel engines facilitated mobility. Unending desires for new products and experiences expanded the industry scene. The industrial Tsunami wave brought about destruction of many most valuable assets that man possessed. Valuables such as fresh air, fresh water and fresh food were lost. Hunting man has received his food, water and air freely. The farming man had to pay for food but water and air was free for him. The industrial man had to purchase food and water by giving hard earned money. Within a short time fresh air will be one of the most valuable commodities in the market. Industries and vehicles also produced high intensity of sound often beyond the audible limit introducing a new form of pollution, the sound pollution. The food and water produced through mechanical processes of new industries tasted different and was often polluted through preservatives, long transportation and storage period. But, adaptability came to man's rescue. However, cities were so congested to handle all the wastes especially the new packaging. Man now sits on the top of his own waste and pollutants he has made through many years. The increased use of fossil and nuclear fuels for production, distribution and mobility resulted in serious pollution of the environment. Although man has adapted in very short time to all the changes in spirit, his body required time to adapt and could not cope up with the fast deterioration of the environment. His agility

decreased in proportion to the time he spent on his office chairs. The most required purification and circulations processes retarded. His fine cells and internal systems broke at the limit of strain and manifested outwardly through new diseases.

The Speculator and Exploiter

Communication from isolated cubicles was now very essential for the multitude of activities of the industrial man. The IT revolution paved way for faster communication. But this introduced a new form of pollution namely radiation pollution. We are yet to experience the hazards of radiation pollution. The detrimental effects of radiation are much more horrible than all the other pollutions. The shift of attitudes is more detrimental than the industrial period. Speculations thrive worldwide. Easy life is the motto of the day. Societies and individual perish on this route.

Solution to Ecological Crisis is with You and Me!

Is there a solution to the ecological and related crises that we are in? Will human race succumb to these external and internal pollutions together with his fellow creatures? It all depends on the path man is prepared to choose. If he takes the same path he has left behind, he is sure to perish in short time. Man's adaptability has limits. The new road for his forward journey should be the path of sustainable development. Renewable energy resources should power his movement to the destination of sustainable development of his horizon. It is not an easy path but easier in reality to the polluting path. Patchwork on the road of development will not keep man fit for survival for long time.

Ecological crisis often starts from the tooth paste, soap, hair dye, shampoo, lipstick, powder, body spray, shaving cream and scores of other personal articles we use without ever realizing the negative consequences of the long term use of these polluting products advertised as items essential for our very existence. If all the Indians use one gram of tooth paste for brushing one time a day nearly one thousand three hundred tonnes of tooth paste is used per day in India alone. Think of the Sorbitol, sodium sulphate, potassium nitrate and numerous other chemicals that it contains polluting our water and soil resources each day for 100 years i.e. 36500 days. If each one of us use one 300 gm soap for bath during a period of one month the total amount of soap material in water in India per month is 390,000

tonnes. A mental calculation will lead us to a result 13,000 tonnes of soap waste to our pure water resources per day. One can easily calculate the tonnes of chemicals such as glycerine, Lauric acid, titanium dioxide, Sorbitol and a few others that go into the production of these that pollute our valuable natural resources. Just imagine a few items that we use in our family and our society. We are forced to accept these unnecessary items subconsciously as very essential. We presume that these will “wrap our bodies with creamier lather with alluring fragrance, leaving our skin noticeably softer and perfumed, like never before.” In reality, these hinder the natural ability of our normally attractive skin to protect us from innumerable outside bacterial attacks. I have only mentioned milder polluters of personal articles. Any sound brain can calculate the health effects due to major polluters such as fossil fuels, body sprays, pesticides. The Endosulfan tragedy is at our door steps. But we fail to learn. The industrial pollution to our originally transparent fresh river water is unimaginable. Take the case of Periyar river,¹ our drinking water resource. Studies reveal that the industries of Edayar-Eloor² area consume about 189 million litres water per day and discharge 75 percent of this as wastewater along with a variety of pollutants. The incursion of salinity upstream during the lean months has crippled many economic activities. Of course we can be ‘proud of’ our very colourful rivers which nobody else in the world posses.

Little actions can help a lot. A tree in neighbourhood can provide oxygen, water and food (edible fruit trees) for minimum 15 people. Environment is very important for our existence. Awareness and education are the first steps for activating human resources. Local educational institutions right from the primary level and local NGO’s are to be induced into the environmental education programmes. Green clubs shall be instituted at local levels and in campuses. Students, teachers and the public shall have an active role. Such clubs can be trained to observe and report the current environmental quality of the local resources and such grass root reports will eventually be brought to the notice of local administration. Young generation is more susceptible to accepting challenges and changes.

¹Periyar (meaning: *big river*) is a river flowing in the state Tamil Nadu & Kerala, India, with a length of 244 km in Kerala. It is one of the few perennial rivers in the region and provides drinking water for several major towns.

²In Greater Cochin, Kerala. This industrial belt has more than 240 industries.

More resources shall be spared to get educational institutions and students to actively participate in the programs.

Renewable Energy Centre, Mithradham

Mithradham (Sanskrit word meaning Sun Centre) is the first fully solar educational institution in India situated in Chunangamveli village near Aluva in the Kerala state. It is dedicated to the promotion of environment and renewable energy for sustainable development. The centre belongs to the Sacred Heart Province of the CMI congregation and is a pilot NGO initiative started in the year 2000. Mithradham is a member of the World Council for Renewable Energy (WCRE) and an institutional partner of the International Society for the Promotion of Environment and Renewable Energy (ISPERE). The various activities like international training programs and infrastructural developments are coordinated by Society for the Promotion of Development Oriented Projects registered in Stuttgart, Germany.

The Objectives of the centre are exemplary demonstration of successful renewable energy technologies in actual use, development of job-oriented courses, promotion of small scale industries, providing technical assistance, carrying out and testing of long term developmental strategies and development of an international network for sharing and supporting.

The technologies employed at the centre are 8 kw solar power station, solar street lights, solar water pump, solar articles, solar water heaters, solar dryers, solar concentrators, rain water harvesting systems, waste water treatment systems, wind generator, fuel cell and biogas plant.

The sustainable method demonstrated and promoted in Mithradham includes use of renewable energy, energy efficient gadgets, natural resource protection and ecological farming. The vision of Mithradham is propagated by conducting half day study tours for various groups, international training programmes in renewable energy technologies and national and international networking.

In 2011 Mithradham has started a peoples campaign known as "Suchithwa Bodhana Yajnam" with the dream of making Ernakulam district of Kerala a clean and green district in 15 years time. The target could be realised if all the organisations, associations, institutions, families and individuals of the district take up the job of

maintaining their neighbourhood clean and green. This can be achieved by a change of attitude among the public. The attitude change can be brought about only by social compulsion for which various institutions of the society should act as agents. The role of Mithradham and its associates namely the Rajagiri OUTREACH and the Sahrudaya Services and Charities, Kalamassery in this venture are to facilitate the facilitators to reach the grass root level. The institutional facilitators should support and monitor the project at this level for a visible change. Through the Yajnam, so far many organisations have taken up the cleanliness initiatives and slow but positive changes are now observed.

The Sustainability Concept of Mithradham

Mithradham has partially succeeded in its dream of demonstrating a sustainable living system in the modern world without rejecting the science and technology developments of the time. In its simplest form, the concept envisages energy sustainability, food sustainability and waste management for a group of thirty people. Energy sustainability is achieved by the use of renewable energy technologies mentioned above. The food items produced in the centre can theoretically sustain 30 people although the actual food habits of the local people are not fully satisfied with the produce from the 3 hectare land. Research and development is progressing in this direction. The waste management system cater to the management of waste of thirty people. This model now demonstrated for 30 people could also be adapted by an institution of 100 people or more and a house of 5 people. The concept is propagated through regular awareness programs, training programs and consultancy services.

Solutions to ecological crisis are inspiration, innovation and action at all levels combined with mental and spiritual maturity. It has to start from the individual, permeate in the family and spread to the society, solving the present ecological crisis. If Renewable Energy Centre Mithradham could be a spark to ignite a few fire places it has achieved its goal.