

# SUSTAINABLE ENERGY DEVELOPMENT

## A GANDHIAN APPROACH

by

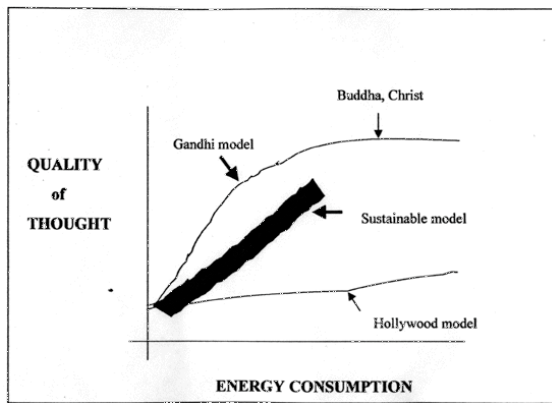
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### INTRODUCTION

1. Basis of all life is energy.
2. All of us who live in a developing country like India aspire to a certain quality of life. Sometimes it may be a wrong quality of life. However pressures to attain it have been exerted by increased global electronic communications.
3. With insufficient energy resources in India (per capita energy consumption of India is 6% that of U.S.A.), a U.S. or European type quality of life is untenable. There are guestimates that by the year 2025 with the increased rate of automobile consumption in India and China, major portion of world petroleum products will go to these countries. The big if is whether these countries will be able to afford them. Besides creating energy crisis, this will play havoc with world environment and create conditions for world conflict.
4. When there is a great gap between demand and supply of energy, there are possibilities of conflict and social strife. In coming years this gap will increase leading to worsening social situation in cities of India. Already the riots of 1984, 1992 etc. can be traced to the low quality of life in ghettos of big cities. The spark could be from any cause.
5. Quality of life is a function of  $\int E_c dt$  **and**  $E_{pc}/\text{capita}$  where  $\int E_c dt (E)$  is the cumulative energy consumption of the country and reflects the energy that was spent in development of its infrastructure.  $E_{pc}/\text{capita}$  is the present energy consumption per capita. For historical reasons  $E$  is not available. Hence it is difficult to reach U.S. or European quality of life even if  $E_{pc}/\text{capita}$  somehow by magic becomes available.
6. Since the life style in western countries is unattainable, hence we have to develop an alternative life style in India. Fig. below shows a possible lifestyle model.



7. The Gandhian energy model is difficult to achieve but we can strive for it. Gandhiji and Einstein showed that with very few needs and living a simple life they were able to produce highest quality of thought. That has also been the tradition of our great saints. Thus, [spirituality helps in sustainable development](#).
8. Hallmark of evolution of a system is its **size reduction; increase in energy usage efficiency; increase in complexity** and its punctuated equilibrium with its surroundings. Societies are like **Prigogine's dissipative structures** and depend on the quality and quantity of energy passing through them.
9. Following this approach we can think that the future of all societies will be **decentralized, high technology-dependent and rural-based**. India is already a decentralized and rural based society. Rather than going the way of megacity-based development model it is better to arrest this trend by introducing high technology systems in rural areas. Probably this was the dream village of Gandhiji.
10. Intelligent and smart machines with strong man/machine interaction may power the production systems of rural India. Gandhiji's vision was similar except he wanted the system to depend on human labour only. With availability of smart machines a similar thing can result where human muscle power will interact with very efficient machines to get high quality output (for e.g. muscle power can be used to charge batteries for home lighting via very efficient small generators). The inputs to these systems will be materials, energy and human intervention. Such smart and small scale manufacturing systems (**desktop manufacturing units**) may probably become available in another 10-15 years' time and may form the backbone of multipurpose factories in rural areas.
11. Sustainability is like a chair. Its four legs can be thought of as **4 E's**: Energy, Economic, Environmental and Equity. All of them have to be equal for comfortable sitting and interconnected to provide stability. Energy is primary because from it flow all the other activities. The base has to be of the right size. Too big a base will make the chair sag. Too small will make it unstable.
12. Dynamic systems require critical mass to grow. They grow until they become unstable and then collapse into smaller systems. These small systems then coalesce and again form a critical mass and the cycle continues.
13. For a sustainable Indian Society, [Taluka size seems to form a critical mass](#). Hence the focus should be on Taluka as a developmental model. With Taluka level decentralized energy sources in place (they could either be biomass based or any other renewable energy based) there are possibilities of this model forming a basis of decentralized high technology societies. NARI's work has shown that a Taluka has enough biomass (from food production) to produce all its

energy needs (electric, cooking, transport, etc.). Hence the Taluka model can form the basis of food and energy security for the country.

14. This model can create substantial wealth for the inhabitants of Taluka, which will lead to decentralization of economic and political power. This is the best bet against economic deprivation, corruption and unaccountable ruling elite. Development and democracy work best in decentralized power structure.

### **WHAT NEEDS TO BE DONE?**

1. Need for Taluka based energy and materials self-sufficient systems.
2. Need for high tech telecommunication systems for Taluka. Internet provides an example.
3. Need for people with education and money to stay in Taluka towns. They can form the nucleus of change.
4. Taluka based system should be independent of single leaders (e.g. Baba Amte, Anna Hazare, etc.). It should have its own economic dynamism. Then only will it have the genesis of becoming a truly sustainable society.
5. There is a need to get in place the right technologies in rural areas for economic growth. These technologies will have to be especially tailor-made for our conditions. The source could be from anywhere, pointing to a possibility of North-South dialogue. Also this will help us leapfrog into 21st century.
6. There is a need for people who have excelled in their respective fields to get into politics. Only with high caliber people getting into politics can a "critical mass" be developed which will help in producing conditions for better India. Gandhiji's independence movement depended mostly an excellent people from all occupations.

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