I J A B E R, Vol. 14, No. 12, (2016): 8713-8726

TECHNOLOGY FOR THE DEVELOPING NATIONS: A RATIONAL APPROACH

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Abstract: *Despite the amazing scientific and industrial development bringing fortune to many in the developed countries, nearly three fourth of the world population living mostly in the third world nation is struggling very hard against the multifaceted socioeconomic problems characterised by poor standard of living, low energy consumption per capita, mass illiteracy, poor medical facilities, ever increasing socio-economic disparities and social backwardness. But is it not a shocking disclosure to the ardent supporter of modern technology that majority of scientific and industrial development are prodigiously enjoyed by just a meagre percentage of urban population while the long cherished desire of basic amenities still remain a dream to a large population, living especially in rural area of third world? Obviously there are sufficient reasons to call for change in basic philosophy and working of technology to properly fulfil the requirement of the common masses as well, that is development of welfare technology. Blind imitation of stereotyped and sophisticated technology of west could not substantially deliver the desired socioeconomic benefits to the society and have been rather found to be responsible for accentuating the disparity further. Hence, it is imperative to develop appropriate or welfare technology compatible with socioeconomic priority of our own society. The judicious application of principles of modern science and technology in annexation with environment conservation and human understanding serve as the basic idea of welfare technology. In this paper, attempts have been made to rationalise the philosophy of technology which is appropriate to the third world and which may leads to the welfare of society.*

Keywords: *Welfare Technology, Technology Transfer, Recycled Technology, Environment Conservation and Sustainable Development*

1. INTRODUCTION

Undoubtedly, the engineers and technologist constitute the most indispensable unit of the development system but the present technology has not been able to meet the challenge of time specially in case of the developing nations which comprises of nearly three-fourth of world population. The third world is struggling very hard against the multifaceted problems characterised by poor standard of living, low energy consumption, mass illiteracy, socioeconomics disparities and

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sluggish rate of scientific and industrial development (1). Why is it so? Whereas, the United States of America is dazzling with all sorts of scientific and industrial achievement, the people in Ethiopia are still languishing for want of even basic amenities of life such as food, clothes and dwellings. Why such an ocean deep difference? Is it not shocking and surprising?

In fact, one can't feel satisfied with such sad state of affairs. It is a blatant blow on humanity. Under these conditions science and technology can't afford to remain a silent spectator to such depressing situation. Instead, we have to be in constant quest of light in these devastating spell of darkness to stop further degradation and shattering of human society. In fact U. Thant's (2) observation "Applied Science can be the most powerful force in the world for raising living standard if action can be taken to harness it for that purpose and the government and the people of the world can find the means and the will" made in Geneva conference in 1963 is as relevant today as the was some four decades back. Really we have not been able to eliminate the socio-economics disparities so far, although many countries have registered tremendous increase in Gross National Product (GNP) due to impact of emerging technologies. In fact, increase in GNP is important, but high growth rates do not always guarantee the easing of urgent social and human problems. Indeed in many countries high growth rates have been accompanied by increasing unemployment. Hence the technology probably needs some sort of modification to better fit with the prevailing circumstances.

After going into critical analysis of existing social conditions, it has been experienced that the modern technology has at length produced some symptoms of human devaluation, rise in crime, drug addiction, vandalism, mental-breakdown, war and disharmony, rebellion, terrorism and international tension at the cost of place and permanence of the people for whom it has been developed (1). Of course, apparently we are better placed physically with regards to some luxurious items. Naturally, there could be a long debate on merits and demerits of modern technology but the constant alarm of nuclear war and environment pollution have unmasked the hollowness of so-called development and everyone today has to agree that something must be done quickly to save environment and the life on earth. Needless to say that modern sophisticated technology has provided us with physical pleasure at the cost of mental disharmony. What has to be done then? We cannot abandon the technologies altogether because it is an admitted fact that science and technology have brought about revolution in whole of the world. As a matter of fact, by means of planned development schemes we have been also able to become self-sufficient in food production, (in India) and to some extent gained control over diseases by providing medical facilities and there by reduced the death rates.

Industrial development are quite fantastic and some affluent people lead more comfortable life than before but the targets of socioeconomics achievement have

not yet been fulfilled rather it has gone from bad to worse. The wide gap between rich and poor has further widened and the benefits of industrial development are mostly enjoyed by a handful of urban population. There is vast difference between the standard of living of superpowers and that of Asian-African counties. Whereas the superpowers have climbed up the crest, many Asian-African nations are still languishing in darkness for want of basics amenities like food, clothes drinking water facilities, education and health programme. It was never so disappointing and demoralising before a peculiar sight of imbalance; one country booming with all sort of technological advancements and the other facing crisis for mere existence a real tragedy indeed. One can't just tolerate this sad state of affairs to continue indefinitely in name of scientific development or Darwinian's survival of the fittest.

Application of major changes in technology, therefore, is an obvious indication and we cannot afford to remain a silent spectator to the whole episode rather without wasting away time any further, must discover and invent technology which would be more dynamics, flexible and rational in approach than the existing technology. This need is much more emphasized today than ever in the past due to dangerous complexities arising out of application of modern technology. A farsighted technology should be called for to cater for the present comforts as well as guarantee for future existence of man.

2. RECYCLED TECHNOLOGY

In recent years, researchers (3) have placed a high emphasis on forest preservation and rational use of forestry and agriculture residues. Hence, due to harmful effects of deforestation, it is important to search for alternative resources.

Recycled Technology is the utilisation of local materials and waste products generated from various sources. Utilization of the waste after using the prime product is the main objective of recycle technology which tries to explore and investigate the process for utilization of the waste product for meeting the acute material and energy shortage being faced now a days. Evidently, this technology has a quite wide spectrum and will consist of all kinds of technology from most sophisticated down to endogenous technology and knowledge of chemical, agricultural, mechanical and metallurgical process will be required. Of course, there are number of activities where the recycling process is an integral part of manufacturing set up and yet there are million and thousands of activities which are still not developed but forces us for exploration, investigation and new application of recycle technologies. It will simultaneously solve the problem of disposal and apply effective pollution control creating stability of ecosystem in addition to meeting energy and material shortage.

The recycle technology will open up new horizon optimised by enhancing the gross domestic product and gross national product for the prospective world

civilization. Indigenous knowledge, based on our long and rich tradition, can be further developed and harnessed for the purpose of wealth and employment generation. Innovative systems to document, protect, evaluate and to learn from India's rich heritage of traditional knowledge of the natural resources of land, water and bio-diversity will be strengthened and enlarged. Development of technologies that add value to India's indigenous resources and which provide holistic and optimal solutions that are suited to Indian social-cultural-economic ethos should be developed. A concerted plan to intensify research on traditional systems of technology, so as to contribute to eco-friendly fundamental advances in different sectors and leading to commercialization of effective products should be undertaken; appropriate norms of validation and standardization should be enforced. This technology, if promoted and infused into the lives of all societies, will fulfil our aim of keeping the environment intact and improve it for civilization to survive. Welfare technology calls for developing technology that produces sustainable products from an available, sustainable, renewable and abundant supply of resources.

2.1. Banana Technology as an Alternative to Wood

Banana is the second most important fruit crop in India after mango. Its year round availability, affordability, varietal range, taste, nutritive and medicinal value makes it the favourite fruit among all classes of people. As it is a giant grass and not a tree so less deforestation. Hussain et al. (4) explains that the raw bunch of banana gets matured earlier by 30-45 days and yield is increased by 15-30% and 58-60% of water is saved on irrigation, weed is less, cost on intercultural operations is saved and water soluble fertilizers can be applied.

In the fields of banana, when fruits are harvesting, the banana stems are cut off and let it down nearby fields because each banana plant cannot be used for the next harvest. A report (3) by the National Horticulture Board elucidates that the Banana stem which is currently wasted after harvesting fruits is good cellulosic source and contains very low content of lignin. This waste is also causes environmental pollution. The chemical composition of banana stem shows that banana stems which wasted, is a good raw material for Pulp and paper making industry. The pulping of banana tree residue with NaOH requires minimum heating conditions. Thus, the utilization of waste banana stem helps us to save our forest and decrease environmental issues.

The use of banana trunk as alternative to wood is another fine example in this category. Banana tree trunks, which are sustainable, renewable and abundant, are currently viewed as a problematic waste stream with no other economically-viable use. Each banana plant in a plantation is nearly identical in size and shape, making them ideal for use as a raw material input. This unique technology converts the waste trunk of the banana palm into alternatives to forest wood products to be used in the paper, packaging, furniture, building, construction and other industries.

Papyrus Australia (5) has developed a patented technology (Papyrus technology process) that produces sustainable products (Papyrus technology products) from an available, sustainable, renewable and abundant fibre supply. The Papyrus technology converts the waste trunk of the banana palm into alternatives to forest wood products to be used in the paper, packaging, furniture, building, construction and other industries.

Not only this, the banana technology process has a lower cost structure than traditional wood-based processes because the natural structure of the banana tree trunk permits the use of an optimized production process, significantly simpler than wood-based processes. Banana technology panel products can substitute existing wood-based panels including particleboard, medium density fiber board (MDF), hardboard and insulating board.

The technology also meets all the criteria required to be an environmentally-sustainable manufacturing process with significant benefits when compared to traditional timber-based fibre production.

2.2. Flyash Utilization and Disposal

Fly ash is one of the naturally-occurring products from the coal combustion process. It consists primarily of silica, alumina and iron. Coal-fired power plants using pulverized coal or lignite as fuel generate large quantities of fly-ash as a by-product. With the hike in establishment of several super thermal power plants with large capacity, the amount of generation of ash from them is becoming even larger which is possessing serious environmental problems. The ash generated from the power plants is disposed off in the neighbourhood as a waste material. Taking the ecological problems into consideration, the safe disposal and effective utilisation of fly-ash has been identified by various government and private agencies.

Indian Institute of Technology Kanpur has pioneered research regarding flyash disposal and utilisation. Sinha (6) explains that although the scope for use of ash in concrete, brick making, soil-stabilization treatment and other applications has been well recognized, only a small quantity of the total ash produced in India is currently utilized in such applications. As explained (6) large scale use of ash as a fill material can be applied where (a) flyash replaces another material and is therefore in direct competition with that material, (b) flyash itself is used by the power generating company producing the flyash to improve the economics of the overall disposal of surplus flyash; and (c) at some additional cost, flyash disposal is combined with the rehabilitation and reclamation of land areas desecrated by other operations.

Flyash fills can be used as structural fills for low lying areas. It can help in the construction of the playgrounds, gardens, car parks etc. The environmental aspects of ash disposal aim at minimizing air and water pollution. Directly related to these

concerns is the additional environmental goal of aesthetically enhancing ash disposal facilities. Flyash the by-product of thermal plants if unused appropriately can pose high risk to ecology in form of air pollution and water pollution.

However, most of these environment problems can be minimized by incorporating engineering measures using this economical pro-technology in the design of ash ponds and continuous monitoring of surface and groundwater water systems. Electro static precipitators are essentially fabricated with the thermal power station in order to minimise environmental pollution. Flyash –lime-gypsum bricks (FAL-G Bricks), Flyash –Cement-Sand brick (FCS Bricks), Flyash-Sand-Lime Bricks (FSL) need no coal for burning have full strength thus great saving in cost and control on pollution. FAL-G Bricks are outstanding alternative to burn claybricks being normally used. (6)

Other uses are Flyash as partial cement replacement in concrete and mortar, sinstered flyash lightweight aggregate, Flyash concrete as wood substitute as being resistant to termite, fungus and ecofriendly, flyash in emulsion and paints.

2.4. Technology for Sugar Industries

The sugarcane which is the principal raw material is first crushed in crusher operated by steam engines. The steam engines are operated by the steam produced by either burning coal or wood in the beginning only. But as the process proceeds, the crushed waste which contains no sugar cane juice is called bagasse. Bagasse serves the purpose of fuel and wood and any other fuel is no longer needed making the cost of manufacturing quite low. If instead of bagasse, conventional fuels are burnt to operate the steam engine, the cost of sugar produced may increase many times more. (7) It is also encouraging to note that all of the bagasse are not utilised for steam engine operation but some quantities of it remains unutilised which serves as a very important waste product. It may be used to generate electricity, of course, of comparatively small capacity. Bagasse can also be used as a fuel for running a factory. If after being utilised for factory purpose, some more quantity of bagasse is available, it can be nicely used in paper and card board industries. In this way, bagasse instead of creating problems of disposal, offers opportunities to become raw material for another industry and thus should be fully utilised. Fortunately, we find utilisation of bagasse in form of registers and papers begin sold in market. In this way, it saves cutting of trees also for manufacturing paper.

Another important waste product available from the sugar industries are molasses which are about 5% of cane crushed. Molasses have found wide range of uses in distilleries for making alcohol. Molasses can be nicely used as a nutritious cattle feed in combination with other agricultural waste like husk etc.

Press-mud which is obtained during the process of filtration of sugar cane juice through pressure filters may be utilised as manure in the field. Press mud

can be utilised for the production of mineral wool for thermal insulation and for the extraction of wax which may be used in the manufacture carbon paper, polish etc.

2.5. Biogas Plant Technology

A rough statistics reveals that there are some 20-crore animals in our country and everyday nearly 2 million tons of cow dung is available to us. Nearly more than one third is utilised as cake for fuel which hardly serves 10% energy requirement, on the other hand if 60% of the cow dung available is fed to Bio-gas plant, and utilised as a fuel, it can solve the problems of fuel for at least 6-8 crores people which will definitely check the rate of cutting the trees for fuel purpose. For the conservation and balance of ecosystem, it is desirable that atleast one third of the land is forest but we have already crossed the danger limit by reducing the percentage of forest to less than 20%.

The Biogas plant (or gober gas plant) is an outstanding achievement in this context. As we know, the cow-dung can be burnt for cooking purpose as a fuel and is also well known as established wonderful manure. The Bio-gas plant finds suitable answer for these two purposes simultaneously, firstly by allowing the cow dung to ferment in the absence of air in Biogas plant and thus produce gas that burns with a beautiful blue flame and without any odour. After its fuel energy has been extracted, the slurry from the Biogas plant may be used as a very good organic manure which is superior in quality than a chemical fertilizer. They may be utilised to light the houses and conventional oil or electricity may be saved so that they can be used in any other industrial installation. In addition to rendering the environment pollution free, it imparts self–sufficiency in energy requirement of village where every family keeps cattle. To increase its efficiency, water hyacinth, agricultural waste, animal waste, weeds, aquatic waste, forest litter are added in the biogas plant.

The ponds and tank of north Bihar are fully covered with jalkumbhi or water hyacinth a free occurring and fast growing hydrophytes which has been found to increase the methane production if mixed with cow dung in biogas plant.

2.6. Bamboo Technology

National Horticulture Mission (3) recognises agricultural structures such as green houses, grain and vegetable dryers, cattle shelters, grain silos as essential for improving the competitiveness of Indian agriculture and ensuring food security.

The Indian Institute of Technology Delhi (IITD) (8) highlights the importance of agricultural innovations which are imperative to give impetus to rural industry in order to suffice the home demands and globalization. The objective is to build capacity to undertake basic and strategic research in frontier areas of agricultural

sciences to meet challenges in technology development in the immediate and predictable future.

Bamboo has many advantages as a construction material: it is a rapidly renewable sustainable resource and has mechanical properties similar to timber. Worldwide, there is a growing interest in the development of bamboo products as a sustainable, cost-effective and ecologically responsible alternative construction material. Partially due to the faster growth rate, and therefore harvest cycle, bamboo forests have up to four times the carbon density per hectare of spruce forests over the long term (9). Bamboo is found in rapidly developing areas of the world where often timber resources are limited (8). While the potential of bamboo is promising, more widespread development and use of bamboo is hampered by the lack of engineering data for mechanical properties and appropriate building codes (10) and (11).

Establishment of bamboo as a modern building material can trigger a sustainable growth for the rural economy and also help ease global warming by reduction of the use of cement and steel.

2.7. Rice-husk Technology

Global production of rice, the majority of which is grown in Asia, is approximately 550 million tonnes/year. The milling of rice generates a waste material-the husk surrounding the rice grain. This is generated at a rate of about 20% of the weight of the product rice, or some 110 million tonnes per year globally. The discharge of the husk all over the world causes a serious environmental problem. This agricultural waste however has a significant calorific value and contains between 15 and 20% of mineral matter the majority of which is amorphous silica. With an innovative technology these favourable characteristics of rice husk will be used for solving the environmental problems and at the same time producing electricity and high value industrial products. (12)

Using this technology, the Husk Power Systems (13) designs, installs and operates biomass-based power plants. Each plant uses proprietary gasification technology to convert abundant agricultural residue (procured from local farmers) into electricity, which is then distributed to rural households and micro-enterprises through a micro-grid system – providing a better quality, cheaper way to meet their need for energy. HPS creates an ecosystem around each plant by providing income generation opportunities to local farmers and entrepreneurs. (13) Additionally, it creates employment through its livelihood programmes such as the incense stick manufacturing program which largely employs women. This enables sustainable development within the communities HPS serves. Since 2008, HPS has successfully installed more than 80 plants in Bihar, providing electricity to over 200,000 people across 300 villages and hamlets. (14)

3. TECHNOLOGY TRANSFER

The engineering education should be systematically updated with inclusion of the concept of appropriate technology or welfare technology development and technology transfer programme. As a step to make it dynamic, engineering colleges should be encouraged to launch Mass Technical Literacy Programme (MTLP) to promote rural development and mass awareness towards identification of socioeconomic priorities generating welfare technology by including these concepts in curriculum.

In this paper, a suitable Technical Education-Socio-Economics system interaction model has been proposed to suggest rational steps to fulfil the basics needs of even the poorest of the poor. Most probably, this would be the most ethical way to solve the problems of hunger, poverty, mass illiteracy and unemployment.

From what has been discussed above, it is clear that developing nation should prepare its technology policy which imports paramount importance to its available human and mineral resource, in addition to fixing socio-economic target and preserving the culture. To achieve these targets, Sinha et al. (15) suggests that the policies on technical education should emphasise on the quadruplet function of furnishing technical knowledge, carrying on research and development activities, implementing transfer of technology programme and monitoring feedback from the socio-economical system as explained in the proposed model of technical education-socio-economic system interaction. The model is mainly subdivided into three sections viz.

i) Technical Education
ii) Research and Development cum Appropriate Technology Development Centre
iii) Socio-Economic System

Technical Education consists of three main components, Educational Management, Teaching Institution and Finance

Education Management receives policy input as feedback from socio-economic system. The developing nation must identify their requirements and decide their socio-economic priorities by themselves considering optimum utilisation of nature and human resource. After a nation-wide debate in which all sections of people interested in development participate, a national policy should be formulated to serve as a guideline for educational management. The main objective of the technical education should be creation of an ethos that produces manpower with sufficient technical ability and character to national development. The educational management has to be operated by planners, managers, sociologist and technologist of high eminence to suggest directives to teaching institution in light of national

policy. They have to see that the true goals of technical education are satisfactorily archived through optimal utilisation of resource in men and materials. They have to control the activities of R and D centres also and ask them to develop appropriate technology.

As regards to financing, the developing nations are highly handicapped especially in technical education. In order to improve the financial lag, the users of technical manpower should be asked to pay a case of their profits to support technical education. A part of the financial requirement may be met with sponsored project from various industries which would eventually benefit the quality of production. Recently in its national education policy, Government of India recommended for raising the quantum of fees to be collected from student as partial fulfilment of financial requirement.

The teaching institutes are responsible for imparting training to students, conducting researches, providing continuing education to teacher, and engineers and launching some specialised technical services to society in form of Mass Technical Literacy Programme (MTLP). The technical institute of excellence like Indian Institute of technology in India, and few other institutes well equipped with sophisticated instrument should dedicate to the development of advance technology as per prospective needs of society. Industrial consultancy centres should be setup at this institute to promote interaction with industries.

4. WELFARE TECHNOLOGY DEVELOPMENT CENTRE

It has to display a vital role in contributing to the progress of nation. It has technical manpower, the feedback from socio-economic system and instructions from educational management as inputs. It is responsible for development of appropriate technology to be transmitted to socio-economic system, increasing industrial producing efficient system design, providing technical know-how to various organisations, transferring technology to actual workplaces and monitor responses for further improvement. Judicious utilisation of modern science and technologies in annexation with environment conservation and human understanding serves as the basic ideals of Welfare Technology. For the third world, the Welfare Technology has to be labour oriented, less capital intensive, and should promote utilisation of locally available materials and manpower so that socio-economic disparities are minimised and quality of life is upgraded. Probably this world be the most ethical way to solve not only the problems of hunger, poverty, unemployment and illiteracy but also stop the rapid degeneration of human values. With the impact of co-called accomplished modern technology, the human values have crumbled which could be witnessed by social-intrigue, mass-oppression, hatred, war, violence, drug-addiction and a completely broken languishing culture. For carrying out development programme uniformly throughout the nations as far as practicable, the whole nation should be divided into smaller regions or district

of state because a big nation (such as India) is not necessarily of the right size for economic development to benefit those whose need is the greatest. If the development policy is concerned with the nation as a whole and regional or district approach is ignored, then the development will generally concentrate in the metropolitan areas and rural areas shall remain neglected. A sense of awareness for development of a welfare technology should be spread to increase the nation productivity.

To make the curriculum more effective, Mass Technical Literacy Programme (MTLP) should be launched in which the students should be encouraged to actively participate. Under MTLP, the students under the guidance of the teacher will make trips to areas nearby and popularise the scientific and technological development among the villagers and provide technical assistance to local problems. Even nowadays in certain parts of developing nation, people are under severe grip of superstition and have accepted poverty as the ultimate destiny. Apart from removing psychosis of poverty –equilibrium, the students can very easily illustrate some simple technical aspects of safe drinking water, fire-proof mud-houses and bio-gas generation etc. In turn the students will realize the socio-economics priorities and significance of need based researches. The active participation in MTLP should find a prominent mention and made compulsory in the certificates to make engineering education relevant and in the most general context.

Thus, the functions of WTD centre are many folds and it has to devise suitable ways and means in creation of large number of cheap work-places in the area. It has to develop new production methods so that they are readily adopted by people of the area. In the crusade against poverty, it may work as a great saviour because here man is at the centre of development endeavour and the most unprivileged man become an urgent focus. Some selected topics for WTD centre in case of agricultural countries like India may be:-

(i) Cement like material from agro-wastes

(ii) Production of rice-bran oil

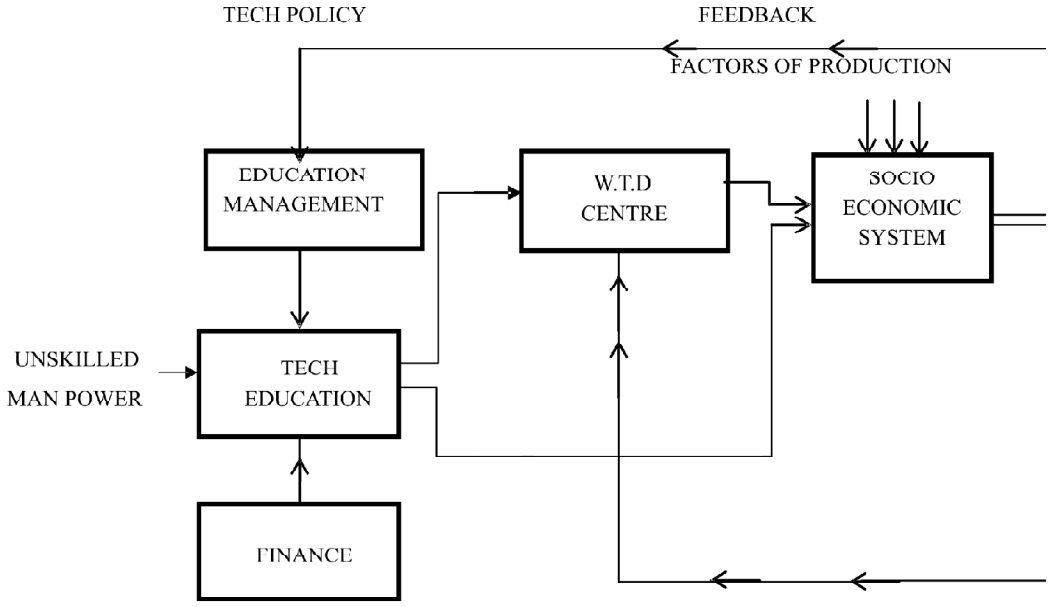
(iii) Harnessing non-conventional energy electrical energy from municipal garbage.

(iv) Paper from industrial waste and agro-waste

(v) Bricks from fly ash (a thermal power waste)

If the WTD centre is sometimes handicapped is solving a technical problem, it may be communicate to a higher level of research centre for doing the needful. If no such facility is available within a particular developing nation, it may be communicated to developed countries where the solution exits. This would encourage global understanding on technology and improve universal brotherhood, which is the ultimate aim of humanity. Sinha et al. (15) explains that the term socio-economic system has been used in a very vast sense and comprise

of urban, rural, industrial, business and other activities responsible for growth of the country and also includes some abstract elements like social-values, culture equality and dignity that enrich the quality of human life. The various inputs to the system are land capital, energy, labour, technical man-power form teaching institutions and a comparatively new element Welfare Technology. The output may be characterised by increase in Gross Nation Product (GNP).



Technical Education- Socio-economic system interaction model Welfare Technology Development Centre (W.T.D)

Welfare technology functions in complete harmony with social and cultural environments and tries to provide opportunities for creating large number of work places for employment. By essentially preserving the culture heritages and dignity of human values, this concept of Welfare technology attempts to minimise the socio-economic disparities. With the impact of scientific advancements in the world and emergence of appropriate technology new needs may be generated which will function as feedbacks to WTD centre. By means of Technical Education and socio-economic system interaction model as shown in figure, attempts have been made to emphasise the creation of Welfare technology Development Centre in large numbers to accelerate the progress of the third world. The model is self-explanatory.

5. CONCLUSION

From what has been disused in the preceding pages, it is evident that in order to fight against the multifaceted socio-economic problem characterized by poor

standard of living, low energy consumption, mass-illiteracy, poor medical facilities, ever increasing socio-economic disparities, social backward which has resulted in aggravating the world wise social unrest, conflict and confusion, hatred and violence, war and rebellion, terrorism and tension, mental breakdown and drug addiction, the philosophy of technology must be rationalised and upgraded and that is the concept of welfare technology. Since it established fact that imitating stereotype technology could hardly bring about desired benefits and so the technology needed for the people of third world must be quite different in basic approach to generate rational solution to the multi-angled problems. It should identify the socio-economic priorities, utilise local material resource and human resource without disturbing the environment equilibrium both socially and biologically. The judicious application of principles of modern science and technology in annexation with, environment conversation and human understanding serve as the basic ideals of Welfare Technology. For the third world, in particular, the Welfare Technology has to be more labour oriented, less capital intensive and should promote utilisation of locally available material and manpower so that socio-economic disparities are minimised and quality of life is upgraded. Thus, the welfare technology has to identify the social needs and should pay proper regard to human welfare and environment stability together. Probably this would be one of the most ethical ways to solve not only the problem of hunger, unemployment and illiteracy but also should tend to retard the rapid degeneration of human values. Today the third world, if not the whole, stands in the greatest need of Welfare Technology.

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