

A Qualitative Macroeconomic Approach of Energy Management and Sustainable Development

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Abstract

Sustainable development is a much debated and talked issue all across the globe. The nature of development in past few decades in particular and around last one century in general all over the world and across all the nations has been a cruel story of unprecedented destruction of earth's environment. The rampant exploitation of natural resources has been a serious cause of concern all over the world. This development which is marred by such serious repercussions can never be treated as development in its true sense. There has been a peculiar demographic transition of almost all nations on earth and this transition is so pronounced that it can be said in a narrow sense that entire globe has undergone a peculiar demographic transition. This demographic transition is characterised by the drift away from agrarian to industrial & manufacturing character of economies. The contribution of Agriculture sector to world's total income has systematically gone down over the years and that of manufacturing and service sector has gone up. This shifted emphasis towards manufacturing has resulted into rampant exploitation of natural resources.

The issue of sustainable development is quite contextual as it relates to the very existence of life on earth. It will not be unfair to say that in the past and even in the present, entire humanity has shifted towards sustainable destruction away from sustainable development. To foster sustainable development in true sense, multidisciplinary approach is most sought after. The logic is simple the destructive activities and stance of man has been so multi-facial and multidimensional that the remedy to it or in other words antidote to it lies in multidisciplinary actions and approach. The present paper by an author focuses on the issue of social relevance which is supposed to be the core bases of any course curriculum developed in academia. It is fundamental orientation around which academic curricula are developed. Education without social relevance is meaningless. However, author believes that with the issue of sustainable development ruling high on global scene, it is high time to not only materialise but also capitalise this social relevance in its true sense and converting it into social realisation. However, to achieve this sincere multidisciplinary approach will have to be attempted.

Key words: *Sustainable development, Social relevance, Social realisation, Demographic Transition*

I. Introduction

As a gold mine of natural resources, the Indian energy sector has been given priority in the planning phase at a comprehensive level and has been given a high priority in contributing to the development of public funds. The share has risen from 15% in the third five-year plan to 27% in the eleventh five-year plan. Despite continuous efforts, the growth of this sector has not been sufficient to quickly meet the demand for energy services in the human resource consumption sector. India's population and energy consumption are no problem at all, but misrepresentation and energy losses are a major problem for the energy sector or organization.

India has no talent as a major energy asset in response to vast geographical areas, population growth and more end-energy needs than ever before. Criteria for energy requirements Coal, oil and natural gas are the three most important commercial energy sources. Over the years there have been significant changes in energy supply and consumption patterns. Over the years there has been a remarkable change in energy supply and consumption patterns.

Nevertheless, it has almost been proven in India. The energy plan is not an integrated action of the public. Various management organizations that deal with various resources require and plan the energy supply after a period of several years without explaining the efficiency of the utilization, technological upgrading or the degree of maintenance of structural changes. Place. We know that there is a high causal relationship between energy and GDP. However, late but more efficient energy consumption in many developed countries has destabilized the link between economic growth and energy consumption. But at the global level only 37% of the primary energy is converted into constructive energy. That means that almost two-thirds of the total primary energy is lost. Energy efficiency can therefore be one of the main drivers for sustainable development around the world.

This has two characteristics: first, energy efficiency on the supply side, i.e. the efficiency of energy extraction after conversion and after the last distribution. Energy efficiency as end use (or demand side), which is another factor or a second factor, i.e. better utilization of final energy in different areas; Industry, service, agriculture, furniture, transportation and other fields.

Efficiency on the supply side was central to energy investments and R & D. Despite the fact that end-use efficiency is cheap for many, but often difficult to achieve, there are generally comparable practices. In a macroeconomic overview, the policy to improve energy efficiency and the reallocation of highly developed, environmentally friendly technology and low-carbon fuels creates two important benefits for the national financial system.

1. Stimulate economic development by reallocation of saved energy costs.
2. Reduce the environmental and social costs of previously invisible energy consumption in fuel market operations.

Achieving the two improvements in energy efficiency, the financially viable positive effects and the reduction of ecological vulnerabilities is called 'double dividend'. Through the planned growth process of the past decades, the nation has taken a big step or step to accelerate the production of large commercial energy. Coal is still an important source of commercial energy for indirect energy use through energy generation and direct energy consumption in industry or industry. As a result of the hard work in the exploration and expansion of hydrocarbons, there has been a remarkable development in the production of oil and natural gas.

But crude oil production has declined in recent years, but there are still many other sources of energy. The availability of hydroelectricity has increased considerably, with a record development of 82.71 TWh in 2004-15. The capacity of both the nuclear power plant and the generation of nuclear power plants have been added. Wind energy has developed considerably over the past six years.

Energy policy traditionally abuses the benefits of end-use efficiency in society, the environment and employment. Practical high economic efficiency depends on national industrialization, automotive driving ability, power, human capital and policy. However, the lack of knowledge, legal and administrative barriers and the market power of the energy sector may slow down the speed of awareness of discipline and technology-related disabilities. Governments and companies must be aware of innovations that can eliminate or minimize these complications. The surrounding costs of energy consumption can be protected by various factors, such as energy taxes, environmental legislation and greenhouse gas emissions trading.

There is also an important role to play in synchronizing international standards on the effectiveness of traded goods. A rapid development of demand can be a particularly favorable condition for innovation in developing countries, so that market reforms can also go beyond the development phase.

The overall tendency of the man's development over past century or so has been that of ruthless treatment to environment in order to fulfil his greed. There has been a prevalence of all round destructive approach towards environment. Industrial revolution paved way for mass production and growing consumerism all across the globe. The so called economy of scale further ignited the appetite of big companies to go for mass level production. The movement which was triggered by the developed nations of modern times has now engulfed the entire world in its grip.

There as a time when agriculture was the most dominant sector of economies of all nations across the globe. It will not be unfair to say that fundamentally, all nations on earth were agrarian in character. However, with the advent of industrial revolution and rise of manufacturing sector, the dominance of industries in nation's economy started to rise. The share of agriculture in the national income of various nations started to slip downwards. On the other hand the share of manufacturing sector and industrial sector started to rise. This tilt in favour of industrial activities and manufacturing sector has resulted in havoc to the environment. The voices are being raised all across the world to check this growing nuance as this kind of progress can never be termed as a true and sustainable friend of humanity.

The point raised by author in this paper is based on the simple logic that if this destruction to the environment is governed by multiple of forces, then the countering forces must also have multiple dimensions. Simply put it can be said that multi- disciplinary approach seems to be the most sought after approach to tackle this great problem faced by humanity in modern era. In a simple sense the essence of sustainable development is that the future generations may also reap and enjoy the benefits of development in present times. It remains to be seen that whether we are offering safe environment to our future generations or we are offering more of carbon dioxide and pollution to them in the name of so called industrial development in modern times. The paper makes an attempt to high light the importance of multi- disciplinary approach to counter the destructible stances of man towards his environment.

It is quite interesting to point out here that though social relevance is something which is supposed to be the part and parcel of any course curriculum taught in universities and colleges. It seems that either this aspect of social relevance is missing in the course curricula in its true spirits or we have failed to implement it properly thus costing us the problem of failing to realise sustainable development goal. It is high time to revive

this spirit in its true sense so that social relevance becomes dominant in its true sense in our course curriculum. If we achieve it, we will surely counter the forces acting against the goal of sustainable development and there are all strong possibilities that an effective multi- disciplinary strategy will emerge out of all this exercise which will help in addressing the issue of sustainable development in an amicable manner.

Objectives of the study:

The main objectives of the study are as follows:

1. To highlight the need to address the issue of sustainable development.
2. To visualise how the aspect of social relevance in course curriculum can lead to design a multidisciplinary approach to ensure sustainable development.

Hypotheses of the study:

The hypotheses of the study corresponding to above objectives are as follows. The nature of these hypotheses is declarative.

1. The rampant exploitation of natural resources has brought the issue of sustainable development as the most crucial issue facing humanity.
2. Multidisciplinary approach towards learning coupled with due weightage to social relevance in course curricula can help in developing effective strategy to counter the forces acting against sustainable development.

Methodology of the study:

The study is predominantly base on the secondary data. A thoughtful insight to the issue in question will be attempted. The plan will be as follows.

1. The relevance and gravity of the issue of sustainable development will be highlighted through secondary data related to various nations.
2. Reference to some leading studies conducted in this regard will also be included along with interpretation.
3. There after the aspect of social relevance in course curriculum will be elaborated based on various sources.
4. An attempt will be made to highlight the issue covered in point (iii) above in the context of its relevance with goal of achieving sustainable development.
5. A deliberation on acceptance and rejection of the hypotheses will be presented.
6. It will be followed by conclusion, suggestions and recommendations.

Sustainable Development, its relevance in present time:

It will not be unfair to say that the drifting away from agrarian character has resulted in some serious demerits of modern day development. It has been pointed out above that once all nations on the surface of earth were dominated by agriculture as the main profession of their inhabitants. By nature, the agriculture sector is less polluting in comparison to other mass level manufacturing business activities. If the issue of labour versus capital intensive industries is further included in the ongoing debate than a new dimension of great relevance for a developing country like India comes to fore. This is the issue of unemployment.

With more and more mechanisation of the industrial activities, there has been an inherent shift of activities from labour to capital intensive as far as the very basic nature of business is concerned. A little thought will reveal that not only the mechanisation has resulted in loss of employment; it has also resulted in more pollution and threat to environment. This issue becomes even more significant for a country like India which is the leading developing economy on the surface of earth on one and other hand it has her own unique socio-economic fabrics. More reliance on mechanisation and manufacturing has harmed India by two pronged manner. One by worsening the employment scenario and other is by polluting the environment.

Author raised one issue in one of his paper and the title itself says everything- "Developmental Economics needs an Environmental review"¹ Here the title itself speaks volumes of the significance of environmental concerns in developmental studies. At present we are living in an era where we cannot afford to overlook environmental issues while framing any developmental strategy for mankind. It can thus be said that Economics cannot be viewed in isolation with development as these two are two intricately related areas. Earlier studies in this area failed to consider environment as a vital consideration in framing various Developmental Theories. It was clearly due to the fact that pollution and similar problems had not touched destructive proportions and still they were within manageable limits. However, it is during last few decades that many experts have realised about the close linkage between environment and development. "In 1968, a group of about seventy five persons belonging to different strata of society from around the world founded the club of Rome.

It believed that possibilities of continuous growth have been exhausted and timely action is essential in order to avert a planetary collapse. It chose its initial theme "The Predicaments of mankind" in June 1990. It

commissioned the research by four MIT scientists led by 'Limits to Growth' in 1972². The second report entitled 'Beyond the Limits' was published in 1992 which gave fresh evidence as to how mankind has crossed beyond the limits⁶. 'Beyond the Limits' (1992) study considered global developments during 1970 to 1990 and this information was then utilized to update the earlier 'Limits to Growth' study. The nomenclature 'Beyond the Limits' was intentionally chosen by the authors to highlight the fact that humanity had already overshoot the limits of earth's support capacity. The significance and importance of this fact was so much that authors chose the title in tune with its theme, i.e. 'Beyond the Limits'.³

If we just consider the nomenclature of these two studies conducted in a span of around two decades, we can imagine the frightening state of affairs. The earlier study i.e. during 1972 to 1992, 'Limits to Growth' has transformed into 'Beyond the Limits' and the dream of achieving sustainable development has become a poor casualty. It means the things are now beyond the limits and if not soon reversed than the earth is surely on the path of destruction and may be life on earth will extinct soon. It will be more contextual here to understand the meaning of sustainable development so that appropriate strategies can be developed in this regards.

Sustainable development was first defined in the Brundtland Report: our common future (1987) as, "Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability of future generations to meet their own needs."⁴ To further highlight the severity of this issue here is an excerpt from one of the papers from author - It is not at all difficult to infer that in present circumstances we are far from even touching sustainable development. In fact we are approaching as well as acting on the policy of sustainable destruction. 'Limits to Growth' came as a firm reminder of this fact to humanity. Rather than taking lessons from it, humanity preferred to be shifted to 'Beyond the Limits'. All above discussion clearly suggests that the concept of development needs to be redefined keeping in mind immensely valuable considerations of environmental dignity and protection⁵.

Peculiar demographic transition of world's economies and its impact on sustainable development:

Around 100 to 150 years back, entire earth was characterised by nations with agriculture being their main occupation. World population was not as alarming as today and was within manageable limits. However, certain compelling forces cited above in the paper have resulted in sweeping structural transformations in world economy shifting it from agriculture to non-agricultural activities. "The share of agricultural sector in total product declined in all developed countries except Australia. In the case of Great Britain, it declined from 22 percent in 1841 to 5 percent in 1955; from 42 percent between 1872-82 to 9 percent in 1962 for France; from 49 percent in 1879 to 9 percent between 1939-48 for United States; and from 63 percent between 1887-82 to 14 percent in 1962 for Japan.

Thus by the end of the long periods the share of this sector in total product was less than 10 percent in the case of U.K., France, Germany, Netherlands and the USA, while it ranged between 10 to 26 percent in Denmark, Norway, Sweden, Italy, Canada, Australia, Japan and USSR. On the other hand, the share of industrial sector rose to more than 50 percent by the end of the long periods for Great Britain (56%), France (52%), Germany (52%), Netherlands (51%), Norway (53%), Sweden (55%), and the USSR (58%), while it ranged between 22 to 49 percent for Italy (22%), Australia (30%), United States (42%), Denmark (48%), Canada (48%) and Japan (49%)."⁶

Above statistics tells the story of spectacular rise in the share of manufacturing sector in the GDP of various nations. It has replaced agriculture which used to be traditional leading contributor to GDP of almost all nations in the world. It has been an across the globe phenomenon. In an attempt to produce goods in tune with the increasing demands of an increasing population, business firms have resorted to rampant manufacturing activities. This in turn has resulted in severe burden on environment. Traditional character of agriculture sector is that of eco-friendliness, if we discard the ill-effects like the ones brought about by 'Green revolution' in India due to excessive use of pesticides and chemical fertilizers.

It can be safely argued that growing pollution in all parts of the world is due to the unplanned and anti eco techniques of production being used. Thus we see that structural changes in world economy are contributing to both factors – rise in GDPs and rise in global pollution. Here is an alarming statistics – "For Mexico in 1986-90, it was found that the environmentally adjusted domestic product was 13 percent less than the conventionally measured net domestic product. The new accounting measures also showed that net investment – which conventional measures showed as positive, at 46 billion pesos was a negative 700 million pesos. Net savings, also assumed to be positive, was actually close to zero".⁷ It thus amply reflects from the ongoing discussion that manufacturing sector has played a lead role in systematically sidelining agriculture sector from world economy scene. The rampant exploitation of natural resources to suffice the needs of raw material for manufacturing sector has brought the world on the brink of disaster.

Course Curriculum- The spirit of social relevance needs to be transformed into social realisation to ensure sustainable development

Education and society are considered to be two intricately associated aspects of human beings. It is due to this intricate relation that social relevance occupies central focus while framing and developing any course curriculum. However, author is of the view point that social relevance seems missing in its true spirit considering the path towards which our societies are moving. After all, it is after getting educated and acquiring various skills one moves on to perform various activities in the society and if these activities are leading to sustainable destruction, there is something wrong with the social relevance aspect of the course curricula taught to them in universities and colleges. It is perhaps due to this fact that social realisation further goes wanting. By social realisation, here author is hinting towards the responsibility of the educated man towards his society and nation so that the goal of sustainable development can be achieved.

Here it is interesting to refer to the different meanings of "Curriculum" as given by UNESCO¹¹. According to it curriculum can be envisaged from different perspectives. What societies envisage as important teaching and learning constitutes the "intended" curriculum. Since it is usually presented in official documents, it may be also called the "written" and/or "official" curriculum. However, at classroom level this intended curriculum may be altered through a range of complex classroom interactions, and what is actually delivered can be considered the "implemented" curriculum. What learners really learn (i.e. what can be assessed and can be demonstrated as learning outcomes/learner competencies) constitutes the "achieved" or "learned" curriculum. In addition, curriculum theory points to a "hidden" curriculum (i.e. the unintended development of personal values and beliefs of learners, teachers and communities; unexpected impact of a curriculum; unforeseen aspects of a learning process). Those who develop the intended curriculum should have all these different dimensions of the curriculum in view.

While the "written" curriculum does not exhaust the meaning of curriculum, it is important because it represents the vision of the society. The "written" curriculum should therefore be expressed in comprehensive and user-friendly documents, such as curriculum frameworks; subject curricula/syllabuses, and in relevant and helpful learning materials, such as textbooks; teacher guides; assessment guides.

In some cases, people see the curriculum entirely in terms of the subjects that are taught, and as set out within the set of textbooks, and forget the wider goals of competencies and personal development. This is why a curriculum framework is important. It sets the subjects within this wider context, and shows how learning experiences within the subjects need to contribute to the attainment of the wider goals.

All these documents and the issues they refer to form a "curriculum system". Given their guiding function for education agents and stakeholders, clear, inspired and motivational curriculum documents and materials play an important role in ensuring education quality. The involvement of stakeholders (including and especially teachers), in the development of the written curriculum is of paramount importance for ensuring ownership and sustainability of curriculum processes. (Source: UNESCO)

It amply reflects from the above versions of curriculum as mentioned by UNESCO that it has lot to do with the society. The author presents his simple logic that as the forces of destruction leading to a challenge for ensuring sustainable development are multifarious and multidimensional. Therefore, it becomes self explanatory that the forces trying to establish and ensure sustainable development also need to be multifarious and multidimensional. It is only possible through multidisciplinary approach with the grass root restructuring of all course curricula truly embodying in it the spirit of social relevance which is the only way to guarantee social realisation of whatever is embodied in course curricula in the name of social relevance.

Economics of Stress in Economy and Sustainable Development:

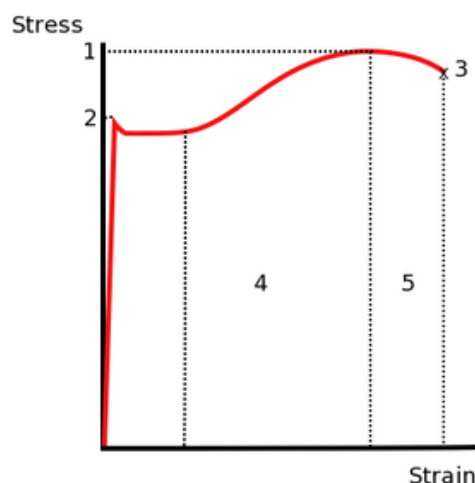
In this section of the paper, author is reproducing some excerpts from his own paper-

"Economics of Stress in Economy and Sustainable Development"⁸, It is often said that some amount of stress is needed to accomplish various tasks but the stress must be kept within manageable limits. This section of the paper provides some insights to develop effective strategies for sustainable development drawing inputs from some other work of the author. Economics teaches us how to select best option out of many alternatives available. Selection of one best option or group of options as the case may be is the fundamental instinct on which Economics functions. The growth of Economics as a discipline is a story of deliberations on ways and means to establish equilibrium between fulfilment of wants and desires and means to achieve it.

Most of the effort of Economics goes in establishing trade- off these two conflicting issues. Most optimum utilisation of resources is what Economics strives for. It has already been explained above that any attempt to utilize resource will require some amount of stress and if it can be effectively balanced by resistance developed or strain taken, the most optimum utilisation of resources can be achieved. To more clearly apprehend stress – strain tango following information taken from wiki books is being produced "Stress causes strain. Putting pressure on an object causes it to stretch. Strain is a measure of how much an object is being stretched. The formula for strain is:

$$\epsilon = \frac{L - l}{l} = \frac{\Delta l}{l}$$

Stress-Strain Graphs



Elastic Region

In this region (between the origin and point 2), the ratio between stress and strain (Young's modulus) is constant, meaning that the material is obeying Hooke's law, which states that a material is elastic (it will return to its original shape) if force is directly proportional to extension.

Plastic Region

In this region (between points 2 and 3), the rate at which extension is increasing is going up, and the material has passed the elastic limit. It will no longer return to its original shape. After point 1, the amount of stress decreases due to 'necking', so the cross-sectional area is going down. The material will 'give' and extend more under less force.

Fracture Point

At point 3, the material finally breaks/fractures and the curve ends⁹.

It logically appears from ongoing discussion that if we superimpose above graph of stress and strain of material, on stress and strain of Economics, the elastic region where the material returns to its original shape once the deforming force is removed is of vital concern. In other words, we can say that stress within elastic region is bearable. Once it crosses elastic region and enters plastic region it becomes capable of causing permanent distortion. The same can be said about chronic stress which may result in a person when he is persistently subjected to stress for a long period of time. A person may become 'use to' to some level of continual stress but this definitely damages that person. There is a natural tendency among human beings to ignore chronic stress until obvious chronic symptoms come to fore. The concept of stresses when applied to Economics is not just limited to human beings but extends to all resources at the disposal of an economy. We often read statements like "economy is in stress" in literature related to business. If economy can resist this stress or the strain taken by economy is sufficient enough to counter stress and things remain within elastic region, there is nothing to worry. Once it crosses elastic limit and enters plastic region an alarm is set because stress has assumed distorting capabilities. Somewhere down the line the approach seems to be matching with the concept of deductive reasoning where we move from a sum total to something particular. The sum total (or the premises) here happens to be entire earth (or even universe) as sustainable development is holistic in character but its dividends are distributed among all individuals on earth including man, animal and natural resources etc. Author once argued in one of his papers that going to extreme is an invitation to getting in stress so plan your extremes carefully. The same applies to economy be it national or global economy. The resources must be stressed keeping sustainability in mind. "I was told in class eight that silver is a better conductor of electricity than copper. The reason of not using silver wire for carrying electricity from one place to another puzzled me as a child then. Perhaps my view was restricted to scientific and technological angle and was lacking an economist's insight. It is not unfair to call today's business education a brain child of modern Economics which has strong flavour of western thinking and has been contributed immensely by the works of western thinkers and writers. In today's Business Education there is an overemphasis on maximisation of profit.

Business teacher guides his/her pupil every now and then to develop a tendency of maximising profit of their concerns. Profit comes after a process which incurs cost and effort. So, another way to express the same feeling as hidden in “maximise your profit” is to say “minimise your cost and efforts for same or more output” or in other words “optimise your efforts”. The frequent use of words like ‘optimum’ & ‘trade off’ etc are clear indication of western business education’s repeated plea for optimisation of efforts. Even though western business education has made the importance of optimisation of efforts amply clear by repeatedly pointing towards it but no clear ways are mentioned to achieve it.’¹⁰ Adopting Madhyam marga (middle path) seems an excellent remedy to address stress including stresses in economy.

Sustainable development and economic utilisation of natural resources:

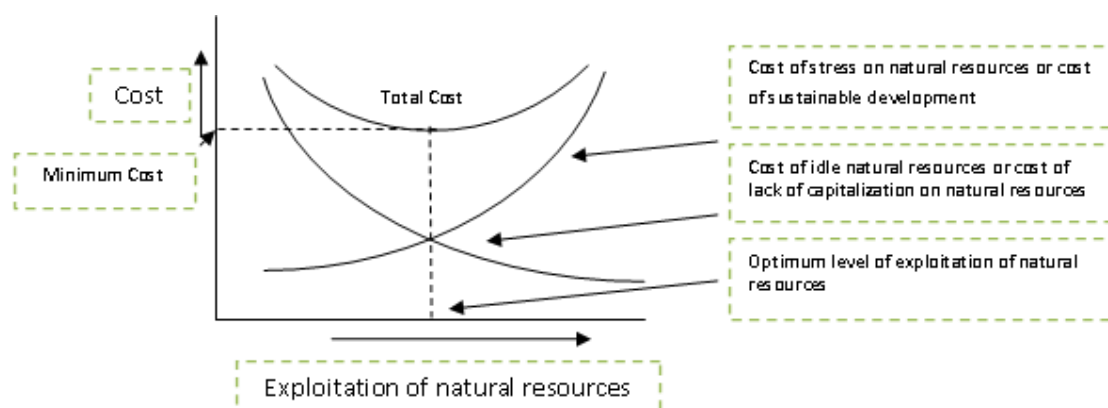


Fig (2) tries to explain the relationship between the cost of stress on natural resources or cost of sustainable development and cost of lack of capitalisation on natural resources. Excessive exploitation of natural resources mounts to increasing cost of sustainable development however we may feel complacent though for the time being only on capitalising on natural resources and adding to economic growth. Lower level of exploitation of natural resources portrays reverse picture. Cost of sustainable development is less but fear of failing to capitalise on natural resources is high. The point where cost of stress on natural resources and cost of idle natural resources balances each other is the most suitable to operate at.

II. Conclusion

Geographic distribution is very abundant. India has major drawbacks of population rupture in all sectors, industries, domestic consumption and other related consumption in the energy distribution sector, which is an important part of the economy. Fund emissions are spent on stratification of energy. Nevertheless, it has almost been proven in India. The energy plan is not an integrated action of the public. Various management organizations that deal with various resources require and plan the energy supply after a period of several years without explaining the efficiency of the utilization, technological upgrading or the degree of maintenance of structural changes. Place.

The deliberations put forward by the author in this study are more than enough to suggest that both the hypotheses of the study stand accepted. The first hypothesis of the study is- “The rampant exploitation of natural resources has brought the issue of sustainable development as the most crucial issue facing humanity”. It can be seen that the statistics regarding GDP composition of various nations of the world coupled with the peculiar demographic transition of national economies showing their drift away from agriculture to industrial and manufacturing sector clearly hints towards rampant and unplanned exploitation of natural resources. As far as the second hypothesis is concerned, it states that- “Multidisciplinary approach towards learning coupled with due weightage to social relevance in course curricula can help in developing effective strategy to counter the forces acting against sustainable development”. Here again we find that education and society are intricately related with each other and education rests on the course curricula we offer in our universities and colleges. Social relevance as an integral part of a course curriculum is the key to transform any course curricula into a useful asset for the society. The intricacy of society, course curricula and social relevance amply reflects from the various versions of the curriculum put forward by the UNESCO. Moreover, author has reasoned quite effectively that if destruction is coming from multitude of angles and reasons, the counter action must also have multifaceted orientation and the key to it is restoring to multidisciplinary approach. The second hypothesis of the study is also accepted.

III. Suggestions and Recommendations:

The suggestions from the study undertaken in this study emerge out of the deliberations based on the analogy between stress & strain relationship in material and that in the economy as discussed in the section 8.0 and 9.0 of the study. In the fig 2 we find that the point where cost of stress on natural resources and cost of idle natural resources balances each other is the most suitable to operate at. The strategy of Madhyam Marga (Mid path approach) seems appropriate as some stress or exploitation of natural resources is justified for the well being of human beings on earth, however, there is a limit to it. Man has unfortunately crossed that limit and we are moving away from sustainable development.

The recommendation from the study is that environmental concerns and sustainable development must be made core and fundamental building principles of any course curriculum. The efforts must be afoot so that social relevance is just not restricted as a written document or hidden agenda of course curricula but it transforms into social realisation also. At the same time all policy initiatives and measures of all governments in the world must consider environment related issues and sustainable development as their central focus. Multidisciplinary approach towards teaching, learning and research must be promoter with a true fervour of social relevance leading to sustainable development.

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