

THE COST-BENEFIT PRINCIPLE A BIOCENTRIC SENSE

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It is common place now, that the impetuous progress of science and technology, in the last 100 years, has been followed by unconditional industrialisation and over-consumption of goods, which together with over-population, deforestation and imprudent utilisation of fossil energy, have resulted in the devastation of the environment. As a consequence, the dramatic changes in the quality of air, due to CO₂, SO₂ and NO_x emissions, pollution of seas and oceans and land deterioration, due to the over-production of solid and plastic waste, have lead to a very dangerous situation.

World Considerations

Three years ago, at the 1992 Earth Summit in Rio de Janeiro, governments of sixteen countries signed the United Nations' Framework Convention on Climatic Change (FCCC). The Convention committed signatories, from the developed world, to control their emissions of greenhouse gases. Action has already begun. Since the Earth Summit in Rio, governments in the United States and the European Union, have tried to stimulate the issue.

The USA introduced a climate change action plan, that relies on volunteer efforts by industry, to reduce emissions to 1990 levels, by the year 2000. However, present projections indicate that the USA may not meet its objective nor maintain progress after the year 2000. In the European Union as well, member States have pledged themselves to limit emissions of CO₂ across the European Union by 2000. Some countries, such as England, claim they will meet this objective individually, but so far, there has not been agreement on sufficient measures to apply across the European Union to achieve this collective aim.

Estimates by the European Commission suggest that the goal of the year 2000 will be missed by approximately 5-8%, mainly due to increased emissions from the transport sector. No progress has been made on a proposal for a European Union-wide carbon/energy tax. Instead, individual countries are considering extending their existing energy excise tax systems.

Strategy for Environmental Protection

Clearly, reducing CO₂ emissions can only be achieved by switching to fewer carbon-intensive fuels and adopting energy conservation measures. The debate is over the speed with which governments wish to achieve results, the means they use and their consequences. For example, will carbon, or carbon/energy taxes be introduced and, if so, at what level.

To put things in perspective, studies and estimates from the World Resources Institute suggest that about 4% of man-made CO₂ arises from the manufacture and use of oil products. Most of this, 91%, comes from use by customers. Only 9% is produced directly from oil extraction, refining and marketing. Oil is likely to be with us for decades to come. Almost all studies suggest that gasoline, or diesel, powered vehicles will dominate transport in most markets at least until the year 2000. But, there will be continuous pressure on the industry to improve efficiency and develop renewable energy sources.

Considering the very probable outcome, of only partial conservation of energy and use of renewable energy sources, we should expect, at minimum a doubling of the annual CO₂ emissions in the atmosphere, by the year 2060. An increase of the annual increase rate of CO₂, which today is approximately 1%, to 2% reduces the doubling period of the emitted CO₂ from 70 to 35 years. The climatic significance of such an increase might be very severe, although our present knowledge is insufficient for a safe prevision of the dynamic biosphere processes. However, definite measures should be now be taken towards drastic reduction of coal emissions. An obvious measure is the promotion of the more efficient use of mineral combustibles, with suitable actions and methods.

Energy conservation and a more efficient use of energy is obviously a basic measure towards preservation of the environment. Other measures are, the replacement of the conventional "dirty" energy sources, with the renewable "clean" ones (wind, solar, ocean, etc.) and new technologies like co-generation, clean combustion and non-wasteful technologies. A technology which is developing towards the objective of reducing the combustion effects to the environment, is the method of co-generation, which utilises the remaining energy during the generation process of electric energy. Another investigation, which is encouraged, is the development of clean-coal technologies, with which emissions related to the formation of acid rain might be limited.

Biocentric education is the other basic factor. The adverse results on nature are due partly to ignorance because of the growing deficiency of public education, with relation to technological progress. The public becomes familiar with the use of new technical means very rapidly and this always precedes, by in large, the evolution of social discipline and maturity, which is necessary to absorb technological progress and avoid its unfavourable effects on the environment. Development of a new conscience and adoption of principles aiming at the preservation and restoration of the environment can only be met through large-scale education and culture. Respect for nature must be elevated to the level of an ideal, which should impregnate all aspects of human activities. A huge effort should start on an international scale in order to promote the idea of education on environmental issues.

Revision of the Cost-Benefit Factor

The application of production technologies to preserve the environment, will result in higher industrial costs and, subsequently, in reduced profits. This seems to be inevitable. The necessity of this measure is evident and can not be avoided. We can not help it, being a general requirement. Nevertheless, that kind of loss in business profit, is a gain for the environment. A gain, overcompensating the loss and making it equivalent to a profit at-large. Even, a partial restoration of the devastated environment would, ultimately, provide Society with much more.

The emerging dangers for humanity, necessitate the revision of some concepts and standards, to which we have become accustomed. Perseverance and improvement of the bio-environment, is tantamount to improvement of the quality of human life. It is obvious, from precedent thoughts, that technology and industry should have a major contribution, in the bio-centric turnabout of human activities. The concept of minimisation of production cost, for antagonistic or commercial purposes, at the expense of the environment, should be revised. The cost-benefit principle in the investment world, should be enlarged gradually in both directions, in order to accommodate the novel bilateral component. Social cost-benefit analysis is already applied on a national economy level. The notion of benefit, as representing the economic profit, in the conventional sense, must obtain a bio-centric character, and be extended to comprise the values stemming from improvement of the environment. For example, the limitation of emissions necessitates the installation of gas desulphurisation devices, as well as a selective catalytic reduction of NO_x. The resulting incremental cost, should be recognised and adopted as a justified balance of primary and vital significance. This is an issue of immense importance for humanity and for civilisation on earth.

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