

Economics vs. ethics: Re-examining our values on nature, development, and existence

Amlan Majumder*

Abstract: In view of Arne Naess, if one shifts from being an observer of cultures to being a student of the history of ideas, one may trace a line of thinking that roughly suggests a movement from the ideal of ‘progress’ to that of ‘development’ and ‘economic growth’ and from these ideas to that of ‘sustainable development’. Some of us hope for a further step along this line, from sustainable development to ‘ecological development’ to long-range ‘ecosophical development’ – with an emphasis on the need for wisdom (*sophia*) as much as on the need for science and technology. Being a critic of her or his own observations, such an observer may realise the presence of anthropocentrism in those ideals which gets more keen and intense in this era of liberalisation, privatisation and globalisation. Are really such ideals anthropocentric? Are those getting influenced by the epistemology of reductionism? Does economics answer these questions? Before knowing these we need to resolve whether neo-classical economics is a positive body of thought. If it is, it should provide us with scientific value-free prediction on value. There won’t be any prejudice or biasness associated with it. There won’t be any imperfection too in practice, as long as market forces operate free. Why then the other part of the whole concerns about anthropocentrism ... reductionism, particularly in matters related to nature, development, and existence? Is there any role of ethics to play here, as it deals with the question of value too? Followers of ecosophical schools have deep concern about such matters, as they believe that the flourishing of human and nonhuman living beings has value in itself, and the value of nonhuman beings is independent of their usefulness to humans. It seems that such an ideal contradicts with the one which hails from market mechanism! Does it still leave any scope for economics and ethics to go together to address environmental crisis in days to come?

Key words: economics, environment, ethics, nature, sustainable development

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* Lecturer in Economics, Dinhata College, P. O. Dinhata, Dt. Cooch Behar, Pin. 736135, West Bengal (India)
Tel. +91-9232526777 / Cell. +91-9832469667, Email. amlan.majumder@gmail.com

Introduction

In view of Arne Naess, if one shifts from being an observer of cultures to being a student of the history of ideas, one may trace a line of thinking that roughly suggests a movement from the ideal of 'progress' to that of 'development' and 'economic growth' and from these ideas to that of 'sustainable development'. Some of us hope for a further step along this line, from sustainable development to 'ecological development' to long-range 'ecosophical development' – with an emphasis on the need for wisdom (sophia) as much as on the need for science and technology¹. Being a critic of her or his own observations, a person may realise the presence of anthropocentrism in those ideals which gets more keen and intense in this era of liberalisation, privatisation and globalisation. Does economics address these issues? Is there any role of ethics to play here, as it deals with the question of value too? These are some of the unanswered questions, which gave a new thought towards solution of today's environmental crisis. The present paper discusses all these issues, traces the development and expansion of ecosophical schools of thought, and finds solution to debates on the questions of nature, development, and existence.

Nature, environment, and anthropocentrism

When does an ideal become anthropocentric ... or, when does an human being ...? An ideal is anthropocentric if it perceives human being apart from environment and believes enhancement of human well-being with the use of non-human beings. Similarly, human beings are anthropocentric when they perceive themselves apart from and superior than environment and enhance their well-being at the cost of non-human beings. Does it mean that any action of human being or any perception of an ideal on the use of non-human beings is not anthropocentric as long as human beings are a part of environment? The answer is not so

¹ Naess, A. (1990). "Sustainable Development and Deep Ecology," in R.J. Engel and J.G. Engel, eds, *Ethics of Environment and Development: Global Challenge, International Response*, pp. 87-96. Tuscon, AZ: The University of Arizona Press.

simple. In the mainstream literature there are two ways of viewing damage to the environment². If we assume that humans are apart from environment then everything humans do damages the environment. If we assume humans are a part of environment then human actions are parts of the course of nature and not damaging the environment. However, both the views are not acceptable from moral point of view. Theoretically, the first view is based on the Cartesian concept of nature as 'environment' or 'resource'. In it the environment is surrounding of human beings, not their substance. On the contrary, in the Indian cosmology person and nature (*Purusha* and *Prakriti*) are a duality in unity. They are inseparable complements of one another in nature, in women and men³. Practically, according to the first, mere dependence on nature for food for survival or even killing a mosquito goes against environment. The second one is quite confusing, as it does not give any reference on threshold level or acceptable limit of environmental damage. If we look at the past, we find different examples in front of us, which give a clue on acceptable limit of environmental damage. It is believed that *Homo sapiens* were capable of promoting very rapid and extensive transformations in the natural environment. Recent researches have revealed that in Africa and in Southern Tasmania induced fires were a major agent of change between 60000 and 30000 years ago⁴. From this example, it will not be plausible to assume that *homo sapiens*, being a part of (or apart from) environment, exceeded natural threshold limit of damage (were anthropocentric). But sometimes human activities have pressed against and exceeded environmental limits. Perhaps the most ominous case of a population colliding against environmental limits occurred centuries ago on Easter Island, a small island in the South Pacific. When a boat load or two of Polynesian voyagers arrived on Easter Island, in the 5th or 6th century A. D., the island was heavily forested. Relying on its plentiful natural

² Bartlett, A. A. (1994). "Reflections on Sustainability, Population Growth, and the Environment," *Population and Environment*, 16 (1): 5-35.

³ Siva, V. (1988). *Staying Alive Women, Ecology and Survival in India*. New Delhi: Kali for Women.

⁴ Grove, R. H. (1995). *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860 (Studies in Environment and History)*. Cambridge: Cambridge University Press.

resources, the Polynesians created a unique civilisation, now famous for its enormous stone statues, and island's population grew as many as 9,000 people. With the population growth, however, came environmental degradation. Studies of fossilised pollen indicate that progressive clearing of the island's once lush palm forests stripped the island of its trees, fertile soils and wildlife by about 1500. The deforestation precipitated a decline in population. When Dutch seafarer Jacob Roggeveen came upon Easter Island in 1722, it was completely barren, its complex and highly organised civilisation was a memory, and its dwindling population of fewer than 3,000 was engaged in chronic warfare and cannibalism. The story itself resolves the debate that whether Polynesians or Easter Islanders were anthropocentric or not. However, the story not only draws our attention on the threshold level of environmental damage, but also an acceptable limit of the number of human beings in the interest of all living and non-living beings^{5, 6}.

The ideals of progress and growth were anthropocentric, as they did not look after the interest of non-human beings. It is often argued that even those ideals were not good for human beings. The ideals of growth emerged during the phase of industrialisation (in Europe) and their colonial expansion. The process of colonisation made the process of industrialisation easy for colonial rulers in one side, and reduced the pressure of population in the denominator in the other. For them, it in turn made huge possibility in the numerator and favourable condition in the denominator. As a result, growth (of economic activities) became a major point of discussion. It reached its extreme during the period of Mercantilism, which advocated overseas trade to increase nation's gold and silver stocks neglecting agriculture. It is to be noted that there were as many as 90 countries which were colonised by a handful of European nations. When these countries started becoming free around / after 1950s, the

⁵ Population Action International (PAI). (1993). *Challenging The Planet: Connections Between Population And The Environment*. Washington, DC: PAI.

⁶ This clue on the limit of human population sharply differs from early ideas and ideals on the question of population [such as the concept of optimum population of Confucius (551 BC - 479 BC), the concept of city state of Plato (427 BC - 347 BC) with 5040 citizens, or even Malthusian view].

concepts of ‘development’ and ‘underdevelopment’ emerged as there has been huge differences in per capita income between these newly formed independent countries and the colonial rulers. The principle of vicious circle of poverty, which completely neglects the facts of colonial exploitation, was applied to understand causes and consequences poverty and possible ways of shifting from the state of ‘underdevelopment’ to that of ‘development’. Interestingly, literature on development ethics defined underdevelopment not as a stage of development, rather as a negative development⁷. Development philosophers and other ethicists formulate ethical principles relevant to social change in poor countries, and they analyse and assess the moral dimensions of development theories and seek to resolve the moral quandaries lurking in development policies and practice⁸. Among the early activists and social critics, such as Mahatma Gandhi (beginning in the 1890s) in South Africa and India, Raúl Prébisch (beginning in the 1940s) in Latin America, and Frantz Fanon (in the 1960s) in Africa criticized colonialism and orthodox economic development. Since the early 1960s, American development scholar, critic, and development practitioner Denis Goulet—drawing inspiration from the work of Louis-Joseph Lebret and Albert Hirschman, Benjamin Higgins, and Gunnar Myrdal and American sociologist Peter Berger—pioneered what we now call ‘development ethics’ by arguing that development theory, policy, and practices should be subjected to ethical assessment. Both Goulet and Berger insisted that what was often called development was bad for human beings and that both ethics and development would benefit from interaction⁹.

The term ‘development’ is market oriented too. Ignoring alternative ways of achieving the same goal, it recognises the one with mere participation in market mechanism. For example, if a group of people grows one food cereal indigenously and consumes it after

⁷ Crocker, David A. 2007. “Goulet on Development Ethics and Non-elite Participation.” Paper presented at the International Conference on “Ideas Changing History” at the New School, New York, The United States, 17-20 September 2007.

⁸ Crocker, David A. 1991. “Toward Development Ethics,” *World Development*, 19 (5): 457-483.

⁹ David A. Crocker in *Development Ethics: Sources, Agreements, Controversies* (forthcoming).

processing at homes, the activity is not considered as a part of development process. However, if they purchase similar foodstuff (made of the same food cereal with similar nutritional value) from the market and consume it, the activity is considered as a part of development process. The difference between the two cases is that in the later people participate in the market economy and consume commodities produced for and distributed through market¹⁰. In the former, the group of people is perceived as poor, though they may not be subjects of misery as deprivation.

The ideal of sustainable development, very trickily which has been made environment friendly accommodating all the messages of previous ideals on progress, growth, and development, is anthropocentric. The term was first used at the time of Cocoyoc Declaration in 1970 and gain popularity through IUCN Reports of 1980, 1990¹¹ and WCED Report of 1987¹². The emphasis was rejuvenated with new vigour at the Rio conference in 1992. The term 'sustainable development' is used to communicate the idea that the process by which people satisfy their needs and improve their quality of life in the present should not compromise the ability of future generations to meet their own needs. Another idea that gains popularity in the 1980s was that of 'Limits'. In *The limits to growth*¹³, Club of Rome researchers built a simulation model, based on availability of resources and population trends, according to which falling standard of living and increasing levels of pollution would lead to a population collapse within 100 years. Though the term gain popularity initially, later on it was realised that the message of 'limits' was too terrible to be true and perhaps to offset or deflect the message of 'limits' the use of the term 'sustainable' became necessary¹⁴. To some, the term came from the concept of 'sustained yield' which had been used to describe agriculture or forestry when these enterprises were conducted in such a way that they could be

¹⁰ Vandana Siva discusses similar issues raised by an African writer in her book: '*Staying Alive Women, Ecology and Survival in India*'.

¹¹ IUCN. (1980 and 1990). *World Conservation Strategy: Living Resource Conservation for Sustainable development*. Gland: International Union for the Conservation of Nature and Natural Resources.

¹² WCED (World Commission on Environment and Development). (1987). *Our Common Future*. Oxford: Oxford University Press.

¹³ Meadows, D. H., Meadows, D. L. and Randerr, J. and Behrens, W. W. (1972). *The limits to growth: A Report for the Club of Rome's Project on the Predicament of Mankind*. New York: Universe Books.

¹⁴ Bartlett, A. A. (1994). "Reflections on Sustainability, Population Growth, and the Environment," *Population and Environment*, 16 (1): 5-35.

continued indefinitely, i.e., they could be sustained¹⁵. Later on this idea has been generalised for all economic activities as well as for GNP subject to environmental constraint. Though the World Conservation Strategy (WCS) did not define the term 'sustainable', it was used to mean the long term support of life on Earth. And 'development' is defined by WCS as the modification of the biosphere and the application of human, living and non-living resources to satisfy human needs and improve the quality of human life¹⁶.

Environmentalism and reductionism

The great expansion of European maritime travel and settlement which took place after about 1400 was associated with heavy deforestation, soil erosion and overall environmental degradation in the new colonies. In response to the threats they received, they started projects in small islands to control and manipulate nature applying the knowledge they acquired from medico botanical works in Sanskrit. After the successful completion of those projects they started executing similar projects on a larger scale in bigger colonies implementing various laws for protecting forests and wild lives¹⁷. This is the beginning of green imperialism and so called environmentalism. However, all these are to maintain a constant or increasing supply of timber for commercial purpose -- for rapid urbanisation. So in their model of development the value of forest has been reduced to that of a timber depot. These are nothing but practices of reductionism, a body of thought which reduces the capacity of human beings to evaluate others or other ways of knowing something¹⁸.

As an expression of reaction against environmentalism, feminist environmentalism (or ecofeminism) evolved, which is roughly a movement against reductionism in western development model. To them, the modern industrial culture, which has diffused in most of

¹⁵ *Ibid.*

¹⁶ WCED (World Commission on Environment and Development). (1987). *Our Common Future*. Oxford: Oxford University Press.

¹⁷ Grove, R. H. (1995). *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860 (Studies in Environment and History)*. Cambridge: Cambridge University Press.

¹⁸ Siva, V. (1988). *Staying Alive Women, Ecology and Survival in India*. New Delhi: Kali for Women.

the societies of the world, clearly put a demarcation between humans and environment as the latter could be exploited and manipulated for the enhancement of human welfare. Bacon (1561-1626), who is known as the father of modern science, advocated a patriarchal project conjugating masculine and scientific domination over nature, women and the non-west. The western development model, which was inspired by Bacon's philosophy, is also proved to be a masculine-project. The model has been executed in the countries of Asia, Africa and Latin America through colonisation of land, forest, river, and people. The culture associated with it equated women with nature as both have reproductive functions. And nature is perceived as being inferior to culture, which is thought of as being the domain of men¹⁹. According to Vrinda Dalmia, this phenomenon is symbolic or ideological and can be presented in an equation: women = child bearers = nature = the less valuable²⁰. As both women and nature are perceived as less valuable, parallel oppression of both goes together. This idea has been taken a step forward by Vandana Siva, as she adds material aspects with ideology. According to Siva, women in India and in the third world are dependent on nature for drawing sustenance for themselves, their families and societies. The destruction of nature thus becomes the destruction of women's sources for staying alive. As the earth is rapidly dying with all her forests, water and air – this, may be the beginning of their (women's) marginalisation, devaluation, displacement and ultimate dispensability²¹.

Ecosophy: from Gaia theory to Deep ecology

By ecosophy Arne Naess meant a philosophy of ecological harmony or equilibrium. A philosophy as a kind of sofa is openly normative, it contains both norms, rules, postulates, value priority announcements and hypothesis concerning the state of affairs in our universe.

¹⁹ *Ibid.*

²⁰ Dalmia, V. (1998). "Not Just 'Staying Alive'," *Journal Of Indian Council of Philosophical Research*, Vol. XV (3): 97-116.

²¹ Agarwal, B. (1990). *The Gender And Environment Debate: Lessons from India*. Paper presented at a conference on the Environment and Emerging Development issues, at the World Institute of Development Economics Research, Helsinki.

Wisdom is policy wisdom, prescription, not only scientific description and prediction. Ecosophical development envisages that the equal right to live and blossom is an intuitively clear and obvious value axiom. Its restriction to humans is an anthropocentrism with detrimental effects upon the life quality of humans themselves. The quality depends in part upon the deep pleasure and satisfaction we receive from close partnership with other forms of life. The attempt to ignore our dependence and to establish a master-slave role has contributed to the alienation of human beings from themselves²².

The term 'Deep Ecology' was first introduced by Arne Naess in the early 1970's when stressing the need to move beyond superficial responses to the social and ecological problems we face. He proposed that we ask 'deeper questions', looking at the 'how and why' of the way we live and seeing how this fits with our deeper beliefs, needs and values. Deep Ecology can also be seen as part of a much wider process of questioning of the basic assumptions in our society that is leading to a new way of looking at science, politics, economics, healthcare, education, spirituality and many other areas. Because this change in the way we see things is so wide ranging, it has been called a new 'worldview'. It applies this new worldview to our relationships with Earth. We move away from seeing ourselves as 'individuals', towards seeing ourselves as part of Earth. This can increase both our sense of belonging in life and our tendency to act for life. The central idea of deep ecology is that we are part of Earth, rather than apart and separate from it²³.

The revival of the Gaia theory of atmospheric chemist James Lovelock and evolutionary biologist Lynn Margulis, which view our Earth as a living organism, contributed to a great extent to the formation of deep ecology platform²⁴. The Gaia Hypothesis states that

²² Naess, A. (1973). "The Shallow and the Deep, Long-Range Ecology Movement A Summary," *Inquiry*, 16: 95-100.

²³ Chris Johnston, "Four Dimensions of Deep Ecology," available at: <http://groups.gaia.com/ecology/conversations/view/434325> (as accessed on 09 May 2009).

²⁴ Stephan Harding, "From Gaia Theory to Deep Ecology," available at: www.schumachercollege.org.uk/learning-resources/articles-by-college-staff (as accessed on 09 May 2009).

Earth is alive and that we are part of it. This is something many other cultures have known for centuries. This theory believes that a life-like quality emerges from the interactions of living beings with each other and with non-living parts of the planetary system (the rocks, atmosphere and oceans). There is a symphonic quality to this interconnectedness, a quality which communicates an unspeakable magnificence when we move to a forest or stand in the bank of river or in front of mountain. On the contrary, to the reductionist forest is nothing but a timber depot, river is nothing but a source of water, and mountain is nothing but a motionless mass, though each has a distinct bodies and interconnected with us. It is hypothesised in Gaia theory that not only does the Earth support individual living organisms and species, but that sum of all these organisms in the Earth's environment creates a system that is, in itself, alive. Living systems not only have a tendency to keep themselves in balance but also to adapt and evolve over time. Scientists have found that Earth also has these tendencies, with feedback mechanisms to 'keep in balance' the temperatures and oxygen levels in the atmosphere, just as our bodies maintain the temperature and oxygen levels in our blood. The Gaia theory takes this idea further and applies it to the whole planet. All life on/in Earth can be seen as a whole that is more than the sum of its parts. The whole is like a huge super-lifeform that we call 'Gaia' (after the name of the ancient Greek goddess of Earth). If we see ourselves as part of Gaia's 'web of life', then a Deep Ecology approach to spirituality might emphasise our relationship with this larger whole. We may look at life itself as sacred, and see the possibility of the larger force of life acting through us in our work for earth recovery. This can be an important source of inspiration when we face and respond to the problems of the world²⁵.

²⁵ Compiled from various works on Gaia hypothesis and Deep Ecology.

In contrast to these, the mere fight against pollution and resource depletion is considered as shallow ecology movement. The main objective of it is the health and affluence of people in the developed countries.

Economics Vs. Ethics

Scientists began to explore systematically the linkages between human activities and the environment through data collection and case studies in the 1960s. Although debate between optimistic and pessimistic views rested for more on speculation than on data, this argument has been extended to the availability of energy and minerals, the effect of rising environmental pollution, and so on. Environmentalists point to the finiteness of global resources, not only for raw materials but for the disposal of waste, and argue that population growth has already strained land, air, water and life's diversity. Population biologist Paul Ehrlich is one of them. With the publication of *The Population Bomb* in 1968, he did more than any man since Malthus to produce a general public awareness of the population crisis. He viewed people as not merely farmers, or water users, or energy consumers – each human being is the source of multiple and diverse environmental impacts, all of which are taken into account in a comprehensive analysis of population-environment connections^{26, 27}. In 1974 Paul Ehrlich and energy resource specialist John P Holdren invented a simple equation to derive in rough terms the interaction of environment, population, consumption and technology: $I = P \times A \times T$, where I = the environmental impact of an activity, P = population (size if a moment in time is at issue, growth if there is a change from one time to another), A = affluence, or the per capita resource consumption of that population, and T = the polluting influence of the particular technology the consumption involves. The equation tells us that at any level of development, human impact on environment is a function of population size, per

²⁶ Ehrlich, P. (1968). *The Population Bomb*. New York: A Sierra Club-Ballantine Book.

²⁷ Population Action International (PAI). (1993). *Challenging The Planet: Connections Between Population And The Environment*. Washington, DC: PAI.

capita consumption, and the environmental damage caused by the technology used to produce what is consumed. Following Malthusian track, this equation also envisages a doomsday; and initiates a debate on blaming responsibilities for it in between the developed and developing nations.

The optimists have suggested that population growth actually drives innovation. Temporary scarcities encourage human inventiveness in the search for alternatives, they argue, and more people mean more minds to tackle problems. Julian Simon wrote that the ultimate resource is people – skilled, spirited, and hopeful people – who will exert their wills and imaginations for their own benefit and so, inevitably, for the benefit of us all²⁸. This basic idea influenced the neo-classical economics to a great extent. However, does neo-classical economics address the issues of anthropocentrism and reductionism? Before knowing these we need to resolve whether neo-classical economics is a positive or normative body of thought²⁹. If it is a positive science, then we can say, at least roughly, that its purpose is to make value-free predictions on value, not to make normative judgments. There won't be any prejudice or biasness associated with it. There won't be any imperfection too in practice, as long as market forces operate free. As we are dealing with the question of maximising human welfare, and as it leaves a scope for applying mathematical tools, we may assume that neo-classical economics is a positive body of thought in this context.

We may assume a utility function of the form: $U = U$ (living non-human beings) and formulate a problem as follows:

maximise $U = U$ (living non-human beings),

subject to the budget constraint: M , where $M = \Sigma$ (price x quantity).

As there is no value priority system in the positive machineries of neo-classical economics, it has no problem with this utility function and if more and more people come up

²⁸ Simon, J. (1982). *The Ultimate Resource*. Princeton, N.J: Princeton University Press.

²⁹ Please see various works of Don Roper on this issue.

with this preference. However, neo-classical economics provides us with a solution, where value of a nonhuman life is equivalent to its price and the interest of nonhuman beings is taken care of by price mechanism. Price is market-determined – determined by availability (supply) and demand. A scarcity will lead to an increase in the price level, reduce consumption in the short run, and induce innovation and development of technologies in the long run³⁰. Though the solution provided in this model ultimately goes in favour of nonhuman beings, it has been criticised as the overall idea is anthropocentric. It looks at the interest of human beings only, and considers them as blind consumers who put nonhuman beings in their utility function as commodity or quantity. In this model, existence or survival of other life forms is nothing but their escape from the attainable set of commodities of human beings thanks to higher price of their lives³¹.

Economists also tried for a macroeconomic solution examining whether environmental Kuznets curve exists. Environmental Kuznets curve envisages an inverted U-shaped relationship between development, measured as income per capita, and various indicators of environmental quality, such that environmental quality first worsens and then improves with increasing income. The curve takes its name from Simon Kuznets, who hypothesised an inverted U-shaped curve for the relationship between income per capita and inequality of income distribution. However, existence of environmental Kuznets curve is not proven empirically³².

We will contrast the basic ideas of economics on the question of valuation of nature, as mentioned above, with those of deep ecology. The first four principles of deep ecology roughly define the periphery of the school of thought expressing a value priority system in

³⁰ Joly, C. L. (1994). "Four Theories of Population Change and the Environment," *Population and Environment*, 16 (1): 61-90.

³¹ Majumder, A. 2006. "Economics, ethics, and well-being of nonhuman beings," *International Journal of Environment and Development*, 3 (1): 45-54.

³² Schubert, R and Dietz, S. (2001). "Environmental Kuznets Curve, Biodiversity and Sustainability," ZEF – Discussion Papers on Development Policy, Number 40. Centre for Development Research, Bonn, Germany.

favour of nonhuman beings. The remaining four principles call for action. The principles are as follows^{33, 34}:

1. The flourishing of human and nonhuman living beings has value in itself. The value of nonhuman beings is independent of their usefulness to humans.
2. Richness and diversity of life forms contribute to the realisation of these values and are also values in themselves.
3. Humans have no right to reduce this richness and diversity except to satisfy vital human needs.
4. The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of nonhuman life requires such a decrease.
5. Present human interference with the nonhuman world is excessive, and the situation is rapidly worsening.
6. Policies must therefore be changed. These policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present.
7. The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between big and great.
8. Those who subscribe to the foregoing points have an obligation to directly or indirectly try to implement the necessary changes.

The first principle talks about intrinsic value of life, and it seems that the principle contradicts with the one which hails from market mechanism. Does it still leave any scope for economics and ethics to go together to address environmental crisis in days to come? Though the first

³³ Naess, A. (1990). "Sustainable Development and Deep Ecology," in R.J. Engel and J.G. Engel, eds, *Ethics of Environment and Development: Global Challenge, International Response*, Tuscon, AZ: The University of Arizona Press.

³⁴ Drengson, A. (1997). "An Ecophilosophy Approach, the Deep Ecology Movement, and Diverse Ecosophies," *The Trumpeter: Journal of Ecosophy*, 14 (3): 110-111.

principle of deep ecology is contradictory with the basic tenets of neo-classical economics, the third and fourth principles indirectly support it by recognising demand for nonhuman beings (to satisfy vital human needs), and need for a decreased size of nonhuman population. As human beings are to satisfy their vital needs, obviously there could be a market for nonhuman beings with free and fair role of the market forces. Moreover, though deep ecology recognises vital human needs and need for a decreased size of nonhuman population, being a normative body of thought it has not given any criterion to define the limit of vital human needs and fix a desirable size of nonhuman population. However, if we rely on market forces or on different bargaining solutions, price will give signal on availability or scarcity of resources. From such signals we can have an idea on the acceptable limit of vital human needs and look forward towards a desirable size of nonhuman population. If we look at the recently developed literature on value in ecological economics, we see various kinds of modelling on nature and man in an exchange economy based on game theoretic approach or bargaining solutions. Such models are based on the concepts of use value and exchange value. Though standard literature could not distinguish what human 'utility' and 'use' are, since humans are willing to pay for some-thing, it means they receive or increase utility. This idea postulates that as humans derive utility from nature, it can be evaluated in monetary terms. Exchange values are thought to provide appropriate solutions on the questions of evaluation of nature through fair operation of market. Standard literature theorises that nature-values must most prominently qualify as objective exchange values and, in particular, they must be empirically retrievable³⁵. It follows that we may allow market forces to satisfy vital human needs only in the narrow down, and rely on our wisdom in the other and upper part of the wider whole for a long-range ecosophical development. So, we can bring economics and ethics together to address today's environmental crisis.

³⁵ Nuppenau, E.-A. (2002). 'Towards a genuine exchange value of nature: interactions between humans and nature in a principal-agent-framework,' *Ecological Economics* 43: 33-47.