Self-discipline as a Regulatory Instrument for Environmental Governance (EG) and Gandhian Approach

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The issue of Environmental Governance has become one of the greatly debated one, since the current economic thinking has not resolved it in a sustainable manner. The mainstream economics, i.e., neo-classical economics has been advocating market and thereby price system for efficient allocation of a resource. But in certain cases, especially in case of natural resources, market does not succeed. The other approach is Institutional approach that emphasises on the role of institutions for environmental governance. The limitations of these approaches have made a case for alternative approach. In the first section, the meaning of EG has been explained with the state of environmental governance today. A brief history of environmental concerns has also been discussed. In the second section, there is a discussion on the place of environmental issues, including governance, in neo-classical and institutional economics. The last section discusses Gandhian approach as an alternative to environmental governance leading towards sustainable development.

Section I

Environmental governance means rules, processes and behaviour that affect the way powers are exercised in the field of environmental policies, particularly as regards to openness, participation, accountability, effectiveness and coherence. The characteristics of EG are listed as under:

- Multilevel interactions among, but not limited to, state, market and civil society that interact with one another in formal or informal ways.

- Formulation and implementation of policies in response to environmental related demands and inputs in the society.
- Bounded by rules, procedures and widely accepted behaviour.
- Objective is to attain environmentally sustainable development.

What is the state of EG today? In spite of global environmental treaties, the state of EG is generally poor from local to national to international levels. The important factors responsible for not so good environmental governance are:

- Shifting of responsibility of natural resource decision making to its nearest base, i.e., decentralisation of power has not become reality. In real terms it can be translated as the local body becoming an agent to implement decisions made at the centre without any authority to make decision or grant monetary resources. It has remained a top-bottom approach.
- There have also been efforts to build regional institutions to manage ecosystem across national borders. Mekong River Commission, International Commission for Protection of the Rhine are some of the successful examples in watershed. But these efforts are few in numbers, with limited experiments and with power that often quite circumscribed so as not to infringe on national sovereignty.
- Many governments have adopted access to Information law that imposes obligations on the government to become more transparent. Environmental legislations also make more information available to the public. But these laws and legislations have not been very effective due to their half-heartedly implementation.
- Participatory approach has been accepted by many nations in identifying and incorporating public opinion while developing environmental projects and policies. But there is general weakness in implementing them.
- There is a failure in integrating environmental thinking in mainstream economic and development decisions. There is a continuous marginalisation of environment from key economic areas of trade and

finance. This failure at national level is also carried over at international levels.

- Current environmental agreements have arisen in ad hoc and uncoordinated fashion. The international institutions face daunting tasks in facilitating a global consensus, efficiently discharging their broad mandates and financing their activities.
- The global environmental governance structure is inadequate for the pollution and resource challenges the world faces today. The growing recognition that a number of serious pollution control and resource management issues are inherently transboundary in their scope makes the status quo unacceptable and the need for improved global environmental governance urgent.
- This fragmentation of responsibilities, funding, priorities, roles, actors, and geographic locales leads to responses that are less coherent, effective, and systematic than needed. The organisations, on which we depend, especially UNEP, have narrow mandates, small budgets, and limited support.

What are the environmental issues today? To understand the issues, a quick look on the environmental history is necessary. Kenneth Boulding has named planet earth as 'spaceship'. Natural elements like sunlight, air, water and atmosphere are integral parts of Mother Earth. The unbridled economic development, with the advent of Industrial Revolution, pursued by the human specie on the planet for last three and half centuries has made these amenities scarce and polluted. The question of environmental governance has been raised time and again in the context of natural resources and pollution. However, the issue of environmental governance is not new in the history of human civilisation. (Seneca and Taussing, 1979) The Roman historians had recorded stench and stink in the capital city of the Roman State. In Victorian England also, London and other industrialised towns suffered from air, noise and water pollution. In nineteenth century, Thames River passing through London was performing the

sink function of environment for most of the industrial and municipal waste. The city of London city recorded obnoxious stink and smoke. In economic literature, the sustainability of economic development has been raised time and again. For the classical economists, land, i.e., natural resources were the limiting factor of the economic growth. Robert Malthus put it most dramatically when he said that the population grew in geometric progression and the food production grew at arithmetic progression and therefore population would easily overtake the food production and humanity would slip into great misery. More than the mathematical precision Malthus was hinting at the diminishing returns in agriculture. (Iyengar, 200**?**) As a result, the classical economists predicted stagnant economy and economics was called 'dismal science'.

The industrial revolution proved the classical economists wrong. Rapid economic growth was recorded with the process of industrialisation. The amazing technical progress and the man made capital together with the natural resources use have resulted in continuously rising economic growth. The threat for the dooms day vanished from the horizon. Diminishing returns in agriculture were kept away by the technological progress. This process is known as transformation from soil economics to oil economics. The dependence on agriculture decreased as more and more labour gained employment in industries. Income and consumption increased at exponential rate. The transformation of economy and substantial increase in consumption led to increased demand for the natural resources for production as well as consumption. The size and status of natural resources like forests, water, minerals and most importantly fuel sources deteriorated at higher rate. Neither state nor the market paid any attention to regenerate or replace these resources. Besides the environment as a source in economic development, the demand for sink and environmental services has also increased. This situation of absolute scarcity of environmental services is a result of rapid economic growth. Committed environmentalists and ecologists, especially in the western world, expressed concern and doubted the ever lasting economic growth hypothesis of the neoclassical economists. The exhaustive nature of some of the natural resources and near zero rate of regeneration of

some of natural resources has become a cause of concern. The voice of dissent has always existed, but often remained unattended to. Until twentieth century the environmental problems were more or less local in nature. But the pace of economic growth and the technological progress (including the nuclear technology) during the post Second World War brought the issue of environment from local to global scenario. The continuing exploitation of natural resources and its increasing rate threatened the sustainability of development and thereby livelihood of human specie.

The first signal about gravity of environmental concerns was given by the Club of Rome, at Massachusetts Institute of Technology, in US. Its publication 'The Limits to Growth' in the early 1970s made a significant impression. It argued about the exhaustion of mineral wealth, especially fossil fuel within 150 years followed by severe crisis. The argument was countered by Julian Simon. In his book titled 'Ultimate Resource', he emphasised on the genius of human mind to resolve the problems and counter-argued that it has the capacity to overcome what in the present seem environmental constraints. The debate has not ended yet. In 1970 America celebrated 'Earth Day' on 22nd April to signify the trade off between environment and development. The environment summit on 5th June 1972 resulted in the establishment of United Nations Environmental Programme (UNEP)at Nairobi. In 1980 and 1983 'North South: A Programme for Survival', and 'Common Crisis' were published respectively. The general consensus has been to recognise and study mutual dependence of human specie and natural environment and to study the links among economic and social development and environmental protection. It has been also accepted that since the environmental problems are global in nature, the world should arrive at a global vision and common principles for moving towards sustainable development. The famous Brundtland report followed in 1987. The word Sustainable Development gained currency after its publication 'Our Common Future'. The World Development Report of 1992 was centred on Environment. The world saw two global conferences: One at Rio-de-Janeiro in 1992 and the other at Johannesburg in 2002. All these efforts have culminated in a number of agreements at global level

but there is no universal consensus about their implementation. Meanwhile intensive and indiscriminate use of natural resources for anthropocentric activities has threatened the survival of all living species.

Although there is unanimity regarding the graveness of environmental problems, there exist differences about the causes of environmental degradation. The blame game has begun. The developed countries blame the rapid population growth and poverty in developing countries for environmental degradation and the developing countries blame the existing pattern of consumption in developed countries. Let us first consider the argument put forth by the developed countries. It has been argued that since the poor people with low income depend upon natural resources significantly, the ultimate outcome would be destruction of these resources. The rapid growth of population would make this process even faster. The answer to the problem, according to many, is faster economic growth. The hypothesis of inverted U-shaped Environmental Kuznets Curve describes the relationship between pollution level and economic growth. In the initial period, both the variables increase simultaneously. After peak in pollution, it starts declining with growth. The hypothesis of EKC has been supported by many scholars. W. Beckerman's (1992) hypothesis states that: The strong correlation between incomes, and the extent to which environmental protection measures are adopted, demonstrates that in long run, the surest way to improve your environment is to become rich. Panayotou has discussed, in his article, the relationship between economic growth and environment extensively. He has provided theoretical explanation of empirical models. To make matters complete in this regard, Porter's thesis of protection in international trade based on environmental standards imposed by rich over poor further push down the development prospects of the poor. This argument blames the poor of the world for environmental degradation.

At same time, a number of scholars disagree with this proposition. They have argued that it is the rich in developed and developing countries, and not the poor, who are responsible for the existing state of environment. The pattern of consumption of rich in developed countries and the demonstration effect of neo-

rich in developing countries are to blame for environmental degradation. The empirical studies in India, Peru, and Brazil suggest that poor do not necessarily destroy the environment. (For detailed analysis see Iyengar, 2003) On the contrary, environment plays a crucial role in the lives of the poor. Natural resources are the main sources of their livelihood and welfare. The decline in size and status of natural resources worsen their chances of well-being. As a result, the poor would use the scarce resource at a faster pace, speeding the vicious circle of resource depletion and raising questions about inter and intra generation sustainability.

The World Commission on Environment and Development, (Brundtland Commission) 1987 defined sustainable development simply as - *Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.* In more detail, the commission said, *sustainable development is a process of change in which exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.* The human specie needs to respect nature with all humility and follow a path of development for the humanity that is mutually nourishing and supporting that is ***samposhit*** (Iyengar, 200?) The issue of environmental governance, therefore, should be understood in the context of Sustainable Development. The process should integrate the three pillars: of development: environment, economic and social. The process should thus be part of the broader framework and goal towards a strengthened International Sustainable Development Governance.

After this brief history of environmental debate, the major issues can be listed as follows.

- Preservation and Conservation of Environmental Resources: Sustainable development is concerned with intra-generation and inter-generation distribution. There exists a trade-off between present consumption and future consumption. The issue is deciding about discount rate. In

developing countries, scarcity of capital and high incidence of poverty make it difficult to have a low discount rate.

- Valuation of Environmental Damages: Determination of monetary value of environmental damages is difficult. Scientific linkage between economic activity and environmental impact rarely exists. Economic value of a resource includes only use value. Market fails in many cases.
- Natural Resource Accounting: Environmental costs of an economic activity should be taken into consideration, while calculating national income. The NRS should be introduced for the developmental programmes, especially in the environmentally fragile areas.
- Trade and Environment: The issue is related to internal as well as international trade. Trade policy has a definite impact on the environment. Internal trade involves issues like clean technology, promotion of environmental friendly products, whereas international rage involves issue like whether free trade is beneficial to the economy or not.. Impact of global treaties on the economy can also be discussed.
- Climate Change: In recent years climate change has become synonymous to global warming. But the climate has more variables than just the temperature. The debate around climate change often has climatologists accusing the economists of being ignorant of climate science and economists accusing the climatologists of being ignorant of economic science. In this regard, the Stern Review on the Economics of Climate Change (2006) discusses the effect of climate change and global warming on the world economy. Its main conclusions are that one percent of global gross domestic product per annum is required to be invested in order to avoid the worst effects of climate change, and that failure to do so could risk global GDP being up to twenty percent lower than it otherwise might be. In June 2008 Stern increased the estimate to 2% of GNP to account for faster than expected climate change. There has been a debate among economists regarding the choice of discount rate. The other criticism is

regarding the necessity of deep emission cuts everywhere to stop or significantly slow down global warming.

- Property Rights: The problem of governance arises, in many cases, because of ill-defined property rights. Degradation of Gaucher or village tank is examples of such externalities.

All, but last, environmental issues are mainly related to industrial activities and resulting pollution. The last issue is a problem of natural resource degradation. The current urgency of discussion about governance has its origin in the fact that our traditional institutions, i.e., market and state have kept pace neither with the changing world around us nor with the expectations of citizens. A thoughtful analysis must inform political decisions if we are to design a system that is agile enough to address evolving needs and relevant enough to be viewed as legitimate in the eyes of the world's citizens.

Section II

Environmental governance at global level has been based on a set of norms that can be characterized by "liberal environmentalism." The process of liberalisation, privatisation and globalisation of the economies of different nations started in the last decade of the twentieth century. The 1992 Rio Earth Summit helped the process of institutionalising these norms that protect environmental on the promotion and maintenance of a liberal economic order. The mainstream or neoclassical economics is centred on market and its transactions. It is based on the individual utility theory, where the individual is rational and is interested in utility maximisation. Since individual utility function is independent, the additive theorem suggests that the social utility would be maximum when individual utility becomes maximum. The price mechanism is supreme and all activities are reduced in transaction form. If environmental and social activities fail to be reduced in the transaction form, which generally is the case, they are ignored in the market model.

Neoclassical economics has recognised this failure of the market mechanism, when true environmental values are not taken into consideration. The development of Environmental Economics was the result of this failure. Market failure is a situation when market prices fail to reflect the true cost of a commodity or a service. Hanley and others (1997) have explained it in case of Imperfect Market Structure, Public Good and Externality.

The neo-classical economic theory assumes perfectly competitive market, lack of transaction cost and well-defined property rights. In the real world, the competitive conditions vary and generally one finds the oligopolistic market structure. Neoclassical economists argue that since in oligopolistic market, the total production in the economy is less than in perfectly competitive market, natural resources would be saved. In reality, each firm would like to grab large market share that leads to over-exploitation of natural resources. The experience world over has shown that the type of production system and technology in use lead to generate more pollution and loss of natural resources.

Another kind of market failure occurs in the case of public good. A pure public good is available to all and one person's consumption does not reduce another person's consumption (Samuelson, 1954). It is characterised by non-rivalry and non-excludability. The problem of Free Riding is common in such cases. A free rider is someone who conceals his preferences for the good in order to enjoy the benefits without paying for it. In market theory, the firm would not have any motive to provide such good even though it is beneficial to the individual and the society. Similar is the case for Common Property Resource. A resource is said to be in common domain if it possess the characteristic of non-excludability. The Tragedy of Commons (Hardin, 1967) arises in case of such good. In such a situation, for efficient allocation of resource, Coase suggests to assign, enforce and distribute well defined property rights in a perfectly competitive market. But this solution is based upon rationality assumption. Many a times, people go quite long distance to conserve the resource or specie which they may never see or use. Also in real world not all the conditions for well defined property rights apply. The example can be the status of indigenous people who generally do not have

any say in enforcing property rights for the rain forest or some exotic specie that affect their livelihood significantly. The neoclassical solution in such a case would not be feasible to protection of resource or specie.

Externality is the classic case of market failure. If the consumption or production activities of one individual or firm affect another person's utility or firm's production function so that the conditions of Pareto optimal resource allocation are violated, an externality exists (Hanley and others, 1997). In neoclassical economics the damage that occurs from negative externality will translate into efficiency loss and it is a market failure. In such circumstances, the solution with the neoclassical economists is internalising the externality. Since environmental economics, by internalising externality, treats pollution as a bad and uses the existing framework for analysis, it once again fails to include all non-economic characteristics.

Environmental Governance in Neo-classical Economics

In neo-classical economics, environmental policy measures range from Command and Control instruments to Market Based Instruments (MBIs). It deals with the environment by analysing the threats of scarcity and pollution. The methods developed are: optimising in case of natural resources and assigning property rights on pollution in order to incorporate them in price system and in decision process under the market mechanism. The pure market solutions to environmental governance are price rationing and quantity rationing. In either case, it is assumed that through adjustments in market the social optimum level of pollution can be achieved. There is a gradual tilt in favour of MBIs (Shankar, 2001). The reasons he gave are (a) alleged superiority of MBIs in achieving environmental goals at lesser cost compared to CAC instruments (b) enormous information requirement for the design and enforcement of CAC instruments (c) demise of central planning and (d) adoption of outward oriented policies by many developing countries to reap the benefits of globalisation. Tintenberg (1997) has

also supported the economic incentive approach to achieve environmental goals more flexibly and at a lower cost than traditional regulatory approach.

Environmental charges are widely used instrument for environment and natural resource policy. A pure environmental charge is Pigovian charge. According to Pigou, the marginal social cost of pollution equals the marginal damage to pollution. Some of the examples of environmental taxation that are designed to discourage environmentally degrading behaviour included emission charges, fuel taxes, and congestion charges

Tradable permits can be considered as the principle alternative to taxes as an efficient mechanism for pollution. Under a tradable permits system, the maximum volume is set on resource use and allocated among users such that the sum of the user allocations is equal to the maximum. Since users are free to trade their allocated amounts among themselves as long as the maximum is not violated, this approach tends either to allow the environmental goal to be reached at a lower cost than more traditional policies. Examples of the use of this approach to control resource use include individual transferable quotas in fisheries and tradable energy certificates for energy production. Carbon trading is one such example. Carbon credits are a key component of national and international emissions trading schemes that have been implemented to mitigate global warming. They provide a way to reduce greenhouse effect emissions on an industrial scale by capping total annual emissions and letting the market assign a monetary value to any shortfall through trading. Credits can be exchanged between businesses or bought and sold in international markets at the prevailing market price. Credits can be used to finance carbon reduction schemes between trading partners and around the world.

Under a deposit-refund scheme the purchaser of a product pays a deposit on the container or the product. This deposit is refunded when the product or container is returned to a designated collection canter. The key feature to this approach is that it provides an incentive for the consumer to return the item (as opposed to

simply throwing it away) and it has no negative budgetary impact on the public sector. Deposit-refund systems are used for such diverse items as soft drink bottles or cans, waste oil.

Liability law requires someone who causes an injurious outcome (such as an to pay for the clean-up and to compensate those who were injured by the action. By forcing the party that caused the damage to bear all of the costs of that damage, liability law removes the externality and the biased decision-making that results from it. In principle, parties engaged in an activity that poses an environmental risk are encouraged to take all cost-justified levels of precaution. Examples of the application of liability law include the 1989 Exxon-Valdez oil spill in Prince William Sound, Alaska, and the 1984 industrial disaster in Bhopal, India.

Setting Standards is another instrument to EG. It is also known as Command and Control Policy where the authority decides ambient/emission/technology standards for pollution control and the firm failing to achieve is fined.

Neo-classical environmental economics aims at getting price rights, assuming that better information on external cost would lead to more efficient use of scarce environmental resources (Paavola and Adger, 200?) It presents an upper limit on society's ability to solve the environmental problems by the strict coercion to enforce environmental regulations, as Hardin (1968) had suggested. However, it so often happens the political will may not exist for required coercive power for the fear of loosing power. In absence of stick, the approach chooses the carrot, i.e., inducing an individual or a firm to follow desired environmental policy. In addition to lack of political will, the coercive policy fails to work as consequences of weak penalties, imperfect information, and high transaction cost. .

Shankar (2001) has given a detailed description, preconditions and evaluation of the economic instruments. He has compared the Standards and Charges, Standards and Permits, Strict Liability and Performance Bonds, Deposit Refund System, Output/Input Tax, Fiscal Incentives and Long Run Marginal Social Costs based Prices. Instrument choice becomes an important issue especially in

developing countries as political will is not strong enough to implement any of the above mentioned instruments and that would be reflected in ineffectiveness of the instruments. Sterner (2003) has given an exhaustive outline in this regard.
Keeping in view the welfare maximisation perspective of neo-classical economics, choice has to be made among alternative policy measures like effluent fees, subsidies, standards and tradable permits. With the assumption of full information, any of the instruments could be used equally effectively to internalise the externality. In the absence of the assumption the efficacy of the instruments differs.

To determine the value of an environmental quality or service, the technique used in environmental economics is known as environmental valuation. Various methods of environmental economics like Contingent Valuation Method (CVM). Travel Cost Method) TCM) and the Hedonistic Price Method (HPM) are used for environmental valuation. But the methods have several limitations. Willingness to Pay and Willingness to Accept Compensation values often differ. Values can be distorted by market imperfections. Since one is not able to understand the biosphere, one cannot determine the true value of the environmental quality. If the issue is related to intergeneration, which is often the case, the choice of adequate discount rate becomes critical. There is no unanimity between the economist and the environmentalist for the choice of discount rate. Economist would opt for a higher discount rate, the ecologist would prefer a low rate for projects influencing environmental resources. In neoclassical economics, specie has value only if it generates economic or calculable environmental benefits. Since environmental economics takes into account only those environmental aspects for which are calculable and mathematically abstractable. It ignores more important complex, incalculable aspects of human-environment-economic relationship.

The other school of thought in economics is the Institutional thought. It is on the cutting age of the social science. Institutions have been crucial force in resolving real world environmental issues. Environmental governance is best understood in institutional economics as the establishment, reaffirmation or change of institutions to resolve conflicts over environmental resources. It also explains that the choice of these institutions is a matter of social justice rather than of efficiency. Institutions are defined as systems of rights, rules and decision making processes. According to the traditional institutional thought the causes and consequences of prevalent economical structures are the organisations, institutions, preferences, values etc. Institutions play a role in causing and solving the problems arise from human-environment interactions. The rules of the games depend upon the existing institutional framework. These can be reflected by the resource allocation decisions, division of labour and remunerations to the factors of production, thereby deciding the production, income and its distribution systems. It rejects the neoclassical utilitarian approach and emphasises the social and historical context in which economic structures arise. The social and economic life must be understood within the ecological system. The institutional approach has the holistic conception of the economy. In this regard, Ecological Economics deals with the two-way links between ecological and economic systems. The three roles that environment plays in the economy, i.e., source, sink and services are important to understand the resilience capacity of an ecosystem and also the tolerance of economy to ecological changes. Like the choice of discount rate, there is a difference between ecologist's perspective and economist's perspective in their approach to environmental problems. While the ecologist takes a holistic view considering all living organisms, the economist, trained in a utilitarian framework, takes an anthropocentric view to the problem (Iyengar, 2004). The Ecological Economist, thus, tries to bring together the disciplines of economics and ecology while analysing the issue and providing its solution. The theory of co-evolution includes the natural and the societal worlds to evolve in synergy. It has been developed within ecological economics and founded on evolutionary economics that focuses on changes in history, society,

ethics and technology and their impact on institutions over time. Among them, technological changes are very important as they influence the resource use significantly, hence economy-ecology relationship. The social system is developed over time taking into consideration the ecological base. In fact, all the systems are interrelated with each other, making the institutional thought holistic. It tries to develop those institutional and behavioural changes that support sustainability at societal level.

Neoclassical economists relate sustainability, i.e., weak sustainability, with purely economic growth and have argued that there exists no challenge against constantly incremental economic growth. They measure growth in increasing Gross Domestic Product (GDP). However, evidence world over has show that increasing GDP does not necessarily mean increase in social welfare. Institutional economists, on the other hand, have accepted the importance of strong sustainability where stock of natural capital to be maintained and kept intact over the years. That makes human-made capital and natural capital complementary to each other. The strong sustainability argument is also concerned with inter and intra generational ecocentric justice. It discards the consumer sovereignty and individual rationality assumptions. It tries to internalise the environmental values into decision making process of individual and firm, thereby examining the rise of environmental concern in society.

The important question is: how to raise environmental concern? Institutional economics find the solution in change in social morality. It requires institutions, social relations and understanding of natural system to be changed. For such change, the approach seeks development of necessary regulating instruments, judiciary and other institutions that help in changing human behaviour from anthropocentric to ecocentric. It also takes into consideration analysis of power relations within the society and its impact. It calls for a policy-oriented perspective where the issue of interdependence of economics and ecosystem is addressed. Economic and societal behaviour occur in the wider ecological biosphere. In Institutional Economics, the analysis of economic changes is impossible without simultaneously analysing the changes in ecology. Changes in economy, society

and ecology are dynamically interrelated in nature; hence the issue of governance cannot be understood only in economic terms.

Environmental Governance in Institutional Economics

Institutions influence social practice, assign role to the participants and govern interactions among them through property regimes. Environmental and resource regimes can be considered as a special kind of regimes. Olson's Theory of Collective Action (1971) states that 'Unless the number of individuals in a group is quite small, or unless there is coercion or some other special devise to make individuals act in their common interest, rational, self interested individuals will not act to achieve their common or group interests.' According to him, despite the free riding problem, voluntary groups can provide collective goods in a wide variety of areas including education, labour unions, and natural resources. (Singh, 1994) The governance issue in Institutional Economics has explained by Ostrom in a detailed manner. Ostrom's solution is based on theoretical as well as empirical research especially in the case of Common Property Resources like irrigation, fisheries and pastures. The theoretical foundation is provided by the Game Theory where rules of the games are decided and observed by the group. The pessimism of Hardin in the Tragedy of the Commons is replaced by Ostrom's designing principles where she lays down a set of rules for a successful irrigation management. According to Thomas (2008), Ostrom has laid down the foundation for a theory of environmental governance by combining theory, experiments and field research. Her solution includes elements like bounded rationality, altruism and social capital. Communities have shown in the past and increasingly today that they can collaborate for long-term resource management. The term social capital captures the idea that social bonds and norms are critical for sustainability. Where social capital is high in formalized groups, people have the confidence to invest in collective activities, knowing that others will do so too. Some 0.4 to 0.5 million groups have been established since the early 1990s for watershed, forest, irrigation, pest, wildlife, fishery, and microfinance management. These offer a route to sustainable management and governance of common

resources. Successful governance, in Institutional Economics, needs a number of conditions to be satisfied. They are as follows. Information provision, conflict resolution, rule compliance, provision of infrastructure and ready to accept the change. Young (1997) notes that a complete understanding of forms and functions of the local level institutions is necessary to effectively implement the environmental governance policies because the compatibility of top-down and bottom-up institutional arrangements are necessary,

Thus, the issue of environmental governance is handled differently by the neoclassical economists and the ecological economists. The economists take the route of economic assessment and valuation of natural resources (in case of market failure) and the possible solutions to rationalise the human ecology interface. However this does not help in determining the critical minimum safe standards and the policies for its governance. The entire effort is like shooting in the dark, as environmental outcomes are uncertain. The governance issue in institutional economics is not treated separately. The ecological economists' concern is about the mitigation and adaptation strategies. There is no separate space for preventive strategy. It is considered to be a part of mitigation strategy. Besides Ostrom's pioneering work in CPRs, a number of scholars have worked for CPR regimes like Jodha (1982, 1985, 1996), Bromley, Berkes, Gibbs (Berkes, 1989) and Pastakia (2008). But it should be noted that not much work has been done in the area of general environmental governance. It should be interesting to note that the neo-classical solutions are more or less relaxed to the pollution issue. Since the neo-classical economics is mainly concerned with industrialisation and marketisation as well as production processes, quantum of waste and waste disposal become central issues to resolve. The mainstream economics has not dealt with the issue of distribution. The institutional approach is more concerned with the management of natural resources. It tries to establish such institutions that can manage the scarce and degrading resource sustainably. The rules of the games should be devised in the manner that they are observed by each player and free riding should be minimised.

Both the approaches seem to have concern for the poor and marginalized section of the society. The intergenerational equity argument of sustainable development supports the programme for poverty removal and livelihoods guarantee for disadvantaged section of the society in the current generation. The neoclassical economics also presents a case based on the potential of ever growing science and technology. The role of state is accordingly tailored. In the institutional economics, there is a space for the equitable distribution. But in neither approach, individual behaviour is questioned. The much-discussed distinction between growth and development has been never an issue for discussion. The third section tries to understand the behaviour of individual and its consequences on the environment and environmental governance.

Section III

It is recognised by many scholars based on a number of empirical research that since the rich tend to exploit the nature substantially, their actions have to be governed. The taste and preferences of a rich consumer will have to be reformed and limits to his wants will have to be introduced in the society in order to contain the perpetually increasing consumption of material goods and services. It is difficult to achieve environmental governance in the absence of regulation of human wants to its basic minimum. As far as the effectiveness of two alternatives of the present era, i.e., market and state control, is concerned, experience has shown that despite the concerns regarding environmental issues, they cannot be tackled in a sustainable manner either in the market fundamental environment or in the communist or social democratic welfare state environment. The exploitation of nature by rich in unbridled fashion needs to be restricted. Market based environmental governance policies like Pollution Permits, Environmental tax and subsidy have not been able to check the consumption pattern of the rich. The standards and liability law of the state have also not been entirely successful. These two approaches work in purely economic domain. The normative issue of ethics is absent in this analysis. It is associated with the demand side. The utility maximisation approach in mainstream economics is

based the assumption of unlimited and ever increasing wants of the consumer. To curtail the perpetually rising consumption on the part of the consumer, his tastes and preferences need to be changed in such a manner that he not only limits his demand for material goods, but also limited goods in limited quantity and gets maximum satisfaction. In fact, the quantity and quality basket of individual consumption should be made more restrictive. In this science and technology era, the scope for luxury expansion is enormous. But this scope needs to be guided first towards satisfying basic needs of the world poor rather than creating spurious demand for the rich. The decline in world poverty ratio, but large number of poor in absolute terms is a cause for concern. The resource requirement for their poverty alleviation is substantially high. Gandhi had argued that the world has enough to satisfy everybody's need, but not for even one person's greed. The aspiration to reach the living standards of rich of the developed nations by world population is impossible task, as the world has a limited stock of natural resources. Does any alternative exist for sustainable development through individual demand regulation? The answer lies in disciplining an individual regarding his wants.

Gandhi's approach to individual behaviour was based on the ethical premises. The three schools of ethics define issue of human behaviour regarding choice differently. Consequentialism emphasises on the consequences of the choice of an agent on the world as a whole to determine the righteousness of a choice. Utilitarianism, used mainly in economic context, emphasises the consequences of the action of an agent on utilities of human beings, in terms of pleasure/happiness/preference. The deontological theories see the rightness of an action as being intrinsic to the action itself. (Dasgupta, 1996) Gandhi had criticised the Utilitarian theory on two grounds. One, he did not believed in the greatest good for the greatest number of people. For him, the concern should be for all rather than the greatest number of people. Second, welfare is not the function of only material prosperity; it should also include ethical aspects. One cannot ignore miseries of a few people and concentrate on increasing pleasure

of many to maximise aggregate satisfaction. In this sense Gandhi was a deontologist who believed that certain moral ends are so important they must be treated like non-negotiable and cannot be compromised.

The central assumption, as we have seen earlier, in the neoclassical economics is about the consumer sovereignty. It is assumed that wants of an economic man will continue to grow and they are insatiable. In the institutional economics, the criticisms are based on its attempts to correct the negative attributes of market society through understanding and changes in social norms, its lack of consideration of operation of socio-economic system as a whole and impossibility of strong sustainability within capitalist system. In this context, one may introduce Gandhian approach as the third alternative for environmental governance. Mahatma Gandhi thought and introduced the idea of regulating the human action by influencing human nature at the beginning of the development process itself. It should be interesting to understand the human nature in Gandhian thought. Gandhi makes a clear distinction between man and that he calls “the brute’. His man is not economic, but he is moral. He never separated ethics from economics. The distinction between need and want is also important in Gandhian approach. The satisfaction of need is a necessary condition for a human being to be alive and to perform to their dharma, but it is not sufficient. These needs are very few and limited in range and number. They require categories of goods and not specific products. These needs are basic wants. The wants, other than the basic wants, are not essential for human wee-being and they tend to change with time and are conspicuous in nature. Gandhian moral human being, besides the need to survive, i.e., food and shelter; also has a need to exercise her capacity to care for others. The ultimate goal of man in Gandhian thought is quest for Truth that Gandhi called the God. His idea of human nature consists of ‘need to perfect oneself through love and social action’ (Lutz, 1985). The by-product of which would not be self-interest, but self-suffering. The two central pillars of Gandhian though, viz., Truth and Ahimsa determine the nature of human. The truly rational human being, armed with Truth and Ahimsa, would not be guided by the purely economic considerations, but by the conscience or inner voice. This is the key to

moral growth and self-actualisation. Gandhi's idea of human nature has its origin in Ruskin's 'Unto This Last' that suggests that 'socially meaningful individual action cannot be deduced from utilitarian principles and balances of expediency, but by balance of justice'. Lutz (1985) has outlined the debate that has taken place over the years, from Mill to Sen, in his article where he had discussed the Human Nature in Gandhian Economic thought.

Gandhian doctrine of non-possession also helps one to understand individual self-discipline. It was one of the key *Vrats* that Gandhi had proposed for individual self-development. Gandhi has written as 'this principle is really a part of non-stealing. Just as one does not deceive, so one must not possess anything which one does not really need. … In observing this principle, one is led to progressive simplification of one's life." (As quoted in Haq, 1995) As against the economists who believe in insatiable propensity for conspicuous consumption as a prerequisite of economic growth, Gandhi believed that possession of good and not want or demand beyond the limits to need, is a form of theft and, hence, immoral. Instead of maximisation of wants, his economic thought was minimising of wants and consumption. Haq called this doctrine as positive in nature as it requires a voluntary reduction in wants and not by coercion. It implies that individual should limit her needs and spends the rest for the welfare of others. It is interesting to note that where as needs need not have to be created, demand needs. As Sethi (1978) puts it as 'Gandhi's call for cutting down demands and his principle of non-possession were designed both to crest a quick rate of growth and full-employment, less on the basis of individual profit incentives and more on the basis of joint efforts and community advantage'.

Gandhiji suggested a consumption pattern and behaviour for the affording classes that was to be moderated by ascetic and paternalistic values. Raval has termed this as the 'Gandhi Effect'. The individual preference function has to be impacted by this. In positive economics, there is absolutely no scope for introducing this constraint and then maximising utility. Income is accepted as the main constraint. Gandhiji had categorical suggestions for preferences. In a

particular context (in his case the freedom struggle), the individual preference for 'Swadeshi' – the home made, was extremely important.

Gandhiji's concern about the type of economic development model was thus relevant then and relevant now. In a labour surplus economy, technology and industry have to be one supporting production for masses rather than mass production. Gandhiji had not anticipated the western type of industrialisation even in the 1930s when the population was around 350 million. In the September 14, 1934 issue of *Harijan* he wrote, "We can never industrialise India, unless of course, we reduce our population from 350 millions to 35 millions or hit upon markets wider than our own and dependent on us"

It would result into reduction in income and wealth disparities in desirably non-violent manner as contrary to the state's violent power. Diwan (1995) defines non-possession as possession by all. It also implies voluntary poverty that can be achieved by institutional arrangements. It is based on the principle of equality, i.e., exploiationless no-violent sustainable society. For him, the issue is not of maximisation, but 'enough' consumption. The high rate of savings, resulting from limited consumption, would translate into high investment and high output. With limits to private wants, public consumption would increase. Ultimately, it would create a society where there is 'private poverty and public affluence'. Rao makes several points of distinction between neoclassical concept of consumption and Gandhian concept. The neoclassical consumption concept centres on budget constrained insatiability of wants. The aim of life becomes to satisfy the more and more multiple wants. Individual utility functions are independent and social utility function is maximised through the maximisation of each individual's utility functions. Gandhian moral human being refutes all these assumptions of neoclassical economic man.

Dasgupta has introduced ethical preference to explain the Gandhian concept of Limitation of Wants. Ethical preference is individual preference that is 'modified by reflection, corrected by knowledge and experience and regulated by ethical principle.' He makes distinction among desire, satisfaction, happiness and welfare. All kinds of happiness do not necessarily increase welfare. Consumption

of drugs or liquor may provide short-term happiness, but they cannot increase human welfare. Similarly, satisfaction of desires makes human being greedier instead of making him stable. Multiplying daily wants makes an individual 'erosive of contentment, personal autonomy, self-respect and peace of mind'. For Gandhi, contentment was happiness. It should be very clear at this point that Gandhi was never in favour of a poor to be content by his poverty. He emphasised on every human being's right to live In Young India, he wrote 'Every one must have balanced diet, decent house to live in, facilities for education of one's children and adequate relief.'

Gandhi believed in the formulation of individual preference not in the terms of the good, but in terms of the characteristics of the good in question. Hence, when one talks about food, what are more important than the taste and packaging are the nutritive content, its digestibility and ease of cooking. He preferred *gur* to sugar, white rice to brown rice etc. He believed that with education, individual tastes and preferences could be changed in the right direction.

The road to self-discipline goes via Gandhi. Gandhi had shown a way for individual welfare maximisation by changing the very definition of welfare. In Gandhian way of thinking ethics takes the centre stage in environmental governance. The sustainable development also has significant ethical undertone. Gandhi believed that as man does not have control over the future consequences of his actions, he should control his actions in present. Hence, he was in favour of determining a set of feasible actions rather than analysing and trying to predict about the consequences that were uncertain and perhaps often unpredictable. He rediscovered and devised a set of individual action that he called *yam-niyam.* Yam-niyam, in Indian culture, is a set of rules that an individual should pursue for the betterment of present life and *moksha*. Gandhi renames them as *Ekadash Vrats*, i.e., eleven vows. They are Truth, Non-violence, Chastity, Control of the Palate, Non-stealing, Non-possession, Fearlessness, Removal of Untouchability, Bread Labour, Respect to all Religions and Swadeshi. These vows regulate individual behaviour, making her self-disciplined and thereby helping immensely in individual self-improvement. If one

thinks them in the context of environmental governance, they help in limiting individual desire for using more and more goods and services, thereby restricting the demand for consumption and saving the scarce natural resources. It should be interesting to understand that a self-disciplined individual in a society would lead to sustainable development path more effectively than the society imposing discipline on the individuals. Similar to mainstream economics, Gandhian economic thought also places individual to the centre stage, but the difference is fundamental. Gandhian individual would, by her voluntary actions, lead to a better environmental governance than the coercive powers used by any institution.

The production side in Gandhian approach is equally important. Gandhi believes not in mass production but production by masses. He advocated and promoted decentralised production system. Gandhiji had visualised the tendency of western civilisation that made economic transactions complicated and then used technology to simplify them. In 'Hind Swaraj', he had made the mention of this tendency and expressed his strong rejection of such civilisation. He believed that the village level self-sufficiency could be achieved by providing maximum opportunities to simple techniques of production at the local level. His preference for simple system in place of complicated system is expressed in his views regarding excessive use of machine that displaces labour. His Swadeshi argument, in this context, is: 'A Votary of Swadeshi will carefully study his environment, and try to help his neighbour wherever possible, by giving preference to local manufacturers, even if they are of an inferior grade or dearer in price than things manufactured elsewhere. It is sinful for me to eat American wheat and let my neighbour, the grain dealer, starve for want of customers.' His emphasis on Khadi and other cottage industries follows the same line of argument. Decentralised production is preferred not only because it generates opportunities of employment and provides livelihood support to masses, but also as it generates less externality in terms of non-economic costs. The production process is less resource-energy intensive and creates less waste than the

modern mechanised production process In other words it is non-violent non-exploitative system of production. For a labour surplus country like India, Gandhian decentralisation production process seems more relevant and sustainable.

The other Gandhian concept related to production side is of Trusteeship. It reflects in the payment made to labour. Unlike mechanised production system with minimum wage rate to labour, Gandhi prescribed labour intensive technology with respectable wage rate to labour by which she can have a decent standard of living. The trustee would keep in mind not the marginal product of labour alone, but the societal marginal product which would be inherently higher than the former. The positive externality generated in the process would be beneficial to society as a whole. In environmental context, it would be not produce environmental bads, but would be sustainable in nature.

If one examines the environmental issues fecund India; the solution may lie in Gandhian approach. The approach inherently included he governance aspect. Decentralised production system with critical minimum assistance from machine (capital) would generate less externality and less wastage. A Swadeshi minded individual with control over wants would not demand more than justified and would save the natural resources and energy in the world. The life style of an individual following *ekadash vrats* would be sustainable from societal point of view. A self-disciplined individual behaviour is the key to betterment of society and environment. It creates conducive social environment for effective environmental governance. A non-violent society where non-possession and non-stealing exist along with voluntary poverty and practise over palate would be a sustainable society. Environmental governance is all about influencing individual behaviour in a predictable manner so that the society could achieve sustainable development. It tries to control individual actions so that the consequences and outcomes of these actions can also be controlled. Gandhi, by his *ekadash vrats*, had prescribed to control individual action. In other words, he wanted to change the life-style of individual. As Iyengar has rightly puts it ‘It is in this context that lifestyle will have to be necessarily brought on the agenda of

sustainable development debate.' There is a need to address this issue in new light and Gandhian approach may be one of the sustainable solutions.

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