A Study on the Strategies of Eco-civilization Construction

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Abstract: During the primitive civilization and the agricultural civilization, human beings had limited understanding of nature, while the industrial civilization has created unprecedented material wealth and great convenience, the natural resources and ecological environment have been depleted and damaged. This paper illustrates that eco-civilization is the integral product of material, spiritual and regulation achievement; it's the cultural and ethical manifestation of the harmonic co-existence of human and nature, balanced development, sustainable prosperity. The major characteristics of eco-civilization are studied in this paper; the essence of eco-civilization is to pursue the harmonic co-existence between human and nature and the goal of which is to realize the all-rounded, harmonic and sustainable development of human society. At last, the strategies to construct eco-civilization in China are explained, such as construction of ecological government, establishment and improvement of the laws and regulations to protect the ecological environment, developing ecological and circular economy, utilizing the traditional eco-ethics culture and nurturing the sense of eco-citizen, etc.

Keywords: *Eco-civilization, Eco-culture, Sustainable development, Circular economy, Ecological man*

1. Introduction

The evolution of civilization: Civilization is a matter of practice, a social quality, and a summation of the material and spiritual wealth human being has achieved while transforming the world. It symbolizes the level human society has developed and reflects the brilliant achievement of human being. The evolution of human civilization is a slow and tortuous process from low level to high level, from simple to complex, which has formed a sequence of alternative rise and fall at different level.

The primitive civilization and agricultural civilization—man succumbed to and utilized nature preliminarily: Human civilization emerged after the Stone Age when human began production, which is usually called primitive or hunting culture. Because of limited population and small demand for resources, daily necessities mainly relied on the land and renewable resource production. In the absence of chemicals, natural forces can restore the natural resources consumed in simple production. The civilization of this historical period was primitive and low-level, enslaved by nature, human being was a slave of nature, totally submitted to its power and was unable to change it.

The development of agriculture solved the survival crisis of the primitive human, the use of iron tools greatly increased the efficiency of the exploration of natural resources, enhanced the ability of human transforming the natural environment, and achieved a transition of civilization for the first time in human history—agricultural civilization. At this stage the production activities of human being are mainly in agriculture, fisheries and livestock, supplemented by the handicrafts industry and commerce. Due to limited mining capacity, the usage of non-renewable resources is small, very little waste was produced by human activities, and the impact on the natural environment was small as well. Renewable resources can be restored and balanced naturally; it was basically a pattern of completely circular flow in which the economic activity matches the laws of natural ecosystems.

Throughout the period of the primitive civilization and the agriculture civilization, the knowledge of human being about nature stayed at a very low level, and the social productivity, science and technology developed slowly; the economic activities of human being were essentially a process to directly use and enhance nature; the development of natural resources was local, superficial, and did not cause environmental problems. However, although agricultural civilization maintained the ecological balance of nature to quite an extent, it was only an ecological balance at a level of underdeveloped economy and low living standard, not an ideal one people pursue and praise (Hongwei, 2004).

Industrial civilization – human’s plundering of nature: In the early 19th century, the widely use of steam engine greatly promoted the development of capital-intensive industry, and the subsequent emergence of internal combustion engine and electric technology launched the second industrial revolution. Human being began to shift from the agricultural civilization to the industrial civilization. In the late 20th century, the electronic, information, biological and microelectronic technologies triggered the third industrial revolution, which led to the rapid rise of knowledge-intensive industries. The unprecedented capability of creation and production of modern industrial system created the unprecedented material wealth, great convenience and social prosperity, and in the mean time it also consumed and destructed continuously natural resources and the survival environment it depends on. The material flow of modern industry is "resources - products - waste", a basic characteristic of a linear flow pattern, which is often called "throughput economy". "Massive production, massive consumption, and massive waste output" is the basic characteristic of this industrial system.

The essence of the environmental pollution and ecological destruction caused by the industrial civilization is the retention or depletion of the resource metabolism in time and space. Obviously the biggest source of ecological damage is industrial activities. It is caused by the shortage of natural resources and the incapacity to digest and absorb the waste due to the economical activities of human being. As Professor Dajian (2008) pointed out, people used to worry about resource depletion or the problem of "source", while in fact, the most critical constraint on economic growth and human survival and development is the capacity to absorb environmental waste that is the "sink" problem. Because the earth is competitive and non-exclusive, at present, the scale of material wealth and the huge amount of waste are close to or exceed the bearing capacity of the natural ecosystem. The earth becomes more and more crowded, and the world is "over crowded" (Daly, 2004), which is a threat to human survival and sustainable development, and to some extent, is anti-human and anti-nature.

Eco-civilization – the harmony between man and nature: "Eco" in Greek means residence or habitat, the original meaning of which is "home of organism". However nowadays "eco" means the relationship among organisms, and the relationship among organisms and all the biotic environmental factors. Ecosystem is the cradle of all living things, including humans, and a provider of a wide range of human necessities and services. It supports the survival of all lives on Earth, and is the foundation for the survival and economical development of human society. It has the highest value which is irreplaceable (Westman, 1977). It has become increasingly clear that the only way to solve the growing problem of resources and the environment lies in building the ecological civilization, and implementing the development strategy to make the economy ecological. This includes from the prevention at the source to the control of the whole process, changing the way of production and living to demand endlessly from nature, moving toward the direction of recycling natural resources, developing renewable resources, restoring the natural ecology and expanding the environmental capacity. We need to control human activities within a range the ecosystem can withstand, by doing so mankind not only enjoys the rich achievement of industrial civilization, but also lives by the natural ecological services primitive civilization offers, and strives to maintain a "harmonious stable state" of ecological civilization for the earth.

Ecological civilization focuses on improving the relationship and ending the confrontation, separation, mutual exclusion and conflict between man and nature; resolving the clashes between man and nature, the clashes between man and its society centered around the "economic interests" and brought about by the conventional anthropocentrism, and promoting the constant progress of the material production and spiritual life of human being.

2. The features of eco-civilization

Eco-civilization means that the natural ecological environment is proactively protected when human being transforms nature, and the relationship between man and nature is improved and optimized. The summation of the material, spiritual and system achievements to build a good ecological environment is the expansion and extension of human social civilization into the natural environment on which the survival of human being depends. Eco-civilization requires that moral concepts, values and responsibility of ecology be implemented in every aspect of economy, politics, culture and society in order to achieve a comprehensive, coordinated and sustainable scientific development among nature, people and society. Eco-civilization demands the establishment of cultural values which meet the requirements of the ecological laws of nature, the concept of sustainable development and the concept of green consumption under the premise of self satisfaction without compromising the natural environment. Chuanhao (2010)

pointed it out that, from a philosophical point of view, eco-civilization is a more advanced civilization which is above the material, spiritual and political civilization.

Eco-civilization pursues the harmonious development between man and nature: Achieving the harmonious development between man and nature is the most basic feature of eco-civilization, the basic premise of sustainable development of human society, and also the fundamental interest of mankind. Eco-civilization is centered on the interaction between man and nature, puts nature as the foundation of human survival and development, and emphasizes on that the common evolution of man and nature, not just to measure the relationship between man and nature through the scale of human interest, but also to respect the right and recognize the value of nature. It also advocates that production activities should be conducted to best suit the natural status, so that the relationship between mankind and nature becomes more harmonious and unified.

Eco-civilization is an organic system of rich connotation: Eco-civilization is one of the greatest consensuses of our time. It has permeated into the political arena, promoting environmental justice and the establishment of ecological laws; it has permeated into the economic arena, changing the traditional model of economic development to achieve sustainable development; it has permeated into the culture arena, promoting ecological aesthetics and ecological culture; it has permeated into the social arena, promoting green consumption and environmental friendly living. In addition, eco-civilization is also related to the spiritual achievements such as social values, philosophy, ethics, view of nature, etc.

The goal of eco-civilization is to achieve a comprehensive, coordinated and sustainable development of human society: Eco-civilization maintains that nature, people and society are an indivisible organic unity. It takes the whole nature as the material cornerstone and spiritual source of the development of human society, and converts the relationship between man and nature into the internal relationship of social development. The harmonious development of people, nature and society reflects the values of eco-civilization, reflects a high degree of uniformity of the economic sustainability, ecological sustainability and social sustainability.

3. The strategies of eco-civilization construction

Eco-civilization contains many aspects, such as political civilization, spiritual civilization, material civilization, and economic industrial civilization etc. The construction of eco-civilization contains things from multi-level and multi-perspective, which includes not only the establishment of the ecological viewpoint of administration, ecological values, the promotion of ecological ethics and cultural heritage, but also the production methods of energy conservation, waste reduction, the construction of a resource-conservative society, and the development of a recycle-typed economical growth with eco-industry playing the leading role, achieving the transformation from "economic man" to "ecological man" etc.

Construction of Eco-government: Eco-government can be called green government, environment-conservative government or environment-friendly government. It indicates a government whose ideology is to achieve the harmony between man and nature, whose basic goal is to follow the natural ecological laws and promote the balance of the ecological systems, and who can implement this idea through the administrative activities, practice eco-conscious governance in its management, and actively explore the basic demand and path for the harmonious coexistence of man and nature (Fuyan, 2009). The ecological government leans towards the ideology of governance of harmonic co-existence and ecological priorities. The government administration pursues the harmony between man and nature, obeys the idea of the high priority of ecology, and is an important assurance for the construction of ecological civilization; the green GDP administration evaluation system should be adopted to evaluate the government, which will help the government stick to a goal of value with high-prioritized ecology. Whenever there is a conflict among the economic, social and ecological effectiveness, the government should advocate the high priority of ecology and protect the ecological interests.

Improve the laws and regulations of ecological reservation: The legal system is the most binding one among various systems and it has the mandatory power to protect the ecological environment. The starting point of establishing a legal system for eco-civilization is, in according to the requirement for sustainable development, to coordinate, regulate all sorts of social relations originated from the process to establish a circular-typed society, including those to regulate and coordinate people to correctly deal with

nature, resources, environment and development. German "Waste Disposal Law" was first set up in 1972 which, at that time, focused on the ending treatment of waste emissions; then it was revised in 1986 and renamed as "Waste Control and Waste Disposal Law", and the trend changed from "how to deal with waste" to "how to avoid the generation of waste". The Chinese environmental legislation started in the 70s of the last century, especially under the influence of the global implementation of cleaner production, "The Clean Production Promotion Law of the People's Republic of China" came into effect in 2002, and in January 2009 the "Circular Economy Promotion Law of the People's Republic of China" was formally implemented.

In particular, different industries and local governments can develop additional specific enforcement provisions according to the practical needs and the special circumstances of local economy, culture etc. To enhance its operability, to forcefully protect the harmonious and sustainable development of natural ecology, economy, society, and to develop and initiate laws in the ecology direction. To protect the wild grassland, the government of the Inner Mongolia Autonomous Region promulgated the "Inner Mongolia grassland management practices for collecting and buying wild plants" in March 2009. This regulation clearly states that "No business or individual can illegally acquire grassland wild plants or destroy their habitat, and the collection of grassland wild plants on deserted, satirized, eroded or eco-fragile zones of grasslands is prohibited."

Developing industry ecology and circular economy: The traditional linear industries led to dwindling resources or even resource exhaustion, as well as worse pollution, it is a short-sighted unsustainable developing mode of the economy. Industry ecology is to realize the harmonious development between economy and environment by planning industrial systems imitating material cycle in the natural ecological system. The eco-industry coordinates distinct enterprises and industries and integrates them into optimized industrial ecology chains which establish the "resources - products - renewable resources" of the recycle economy mode. In the eco-industrial system, enterprises rely on regional coexistence and cooperation, the efficient use of resources to transfer a traditional liner production line into a feedback circular mode, from a separating mode into an integrated circular mode between industry and environment.

A successful application of the circular economy in practice is the establishment of Eco-Industrial Park (EIP). By the end of December 2008, the Chinese State Department of Environmental Protection approved 27 national eco-demonstration areas. The Guigang National Eco-industrial (sugar) Demonstration Area in Guangxi is an instance of eco-industrial parks which is developed relatively completely. The park has five systems, with sugar land and sugar production as the core component. The five systems are closely related, and a relatively complete closed system is established via the exchange and connection of by-products, waste, energy, the environmental pollution is reduced to the minimum level (Zhao-Hua, 2010).

Sugar cane system. It provides sugar cane to the park to assure sufficient supply of raw materials to the manufacture system. Sugar production system. It produces regular refined sugar and organic sugar with high additional value via the transformation of new sugar-making technology. Alcohol system. It utilizes a by-product of sugar production - molasses to produce ethanol and other products. Paper production system. It uses a by-product of sugar production - biogases to produce high quality tissue paper and stationary paper etc. Integrated heat and electric system. It produces certain amount of electricity and steam using some by-products of sugar production.

Playing a positive role of traditional eco-cultures: From a philosophical perspective, ecology does not refer to human ecology, but to the state of all living creatures. Life is not isolated from nature, nor is it above nature, but within nature. Thus, ecology does not focus on the subjects of lives, but focuses on the interaction among the forms of lives. The so-called eco-culture is the generalization of people's attitude and behavior towards the interaction between man and nature, which contains values and ideals, spiritual beliefs, customs, arts, behaviors and so on. Traditional Chinese culture contains a wealth of eco-civilization ideas, and is very important to ecological protection. Confucianism, from the practical needs of production and life, presented the ecological view of "harmony" and ethical view of life, such as "respect for life, universal love of all things", Taoism's "all things exist in one, learn from nature" is an ecological view to achieve the spiritual level of "world and I coexist, and all things and I are in one". All these are conducive to the general public's awareness of ecological civilization. The Buddhist idea of "Buddha-nature's unity" as an ecological view of nature, "all things are equal" as an ethical view and the "mercy always in heart" as the ecological view of practice is conducive for people to adjust their mind, to protect the diversity of biological

species and to construct today's ecological civilization. People who are in belief of Shamanism in north China believe that humans should treat nature and all creatures with respect, live in harmony with all kinds of different organisms. This ecological idea no doubt regulates the behavior of human & promotes environmental protection of nature and ecological harmony.

Civilization thrives while ecology does, and civilization withers with ecology. The core value of the eco-culture is that man should live in harmony & equality with nature, and all species should co-exist with renewable resources, which is fundamentally in consistency with the ecological ideologies of traditional culture. Ecological crisis is the greatest of mankind's survival, and the crisis was mainly due to human misconduct when people's ethical culture has erred. Therefore, the ecological crisis is essentially an ethical crisis of faith and it is a cultural crisis. The history and social development of society is in fact the history of the relationship between humans and the natural environment. People bound by their culture, norms, have constantly adjusted their behavior and the relationship between man and nature, protected the natural ecological environment, maintained national cohesion, and promoted harmonic sustainable development in the country.

Cultivate citizens' ecological awareness to achieve the transition from "economic man" to "ecological man": Human behavior is a major factor for ecological and environmental degradation; human ecological awareness and environmental responsibility play the key role in the process of building eco-civilization. Citizens' awareness is worth a thousand provisions, the cultivation of "eco-citizens" is necessary for the ecological environment to develop in the right way. The nurturing of the sense of ecological citizens, the commitment to citizens' environmental responsibility and the establishment of citizens' self-motivated behavior code is a fundamental way to solve the ecological problems, so cultivating citizens' modern ecological awareness, and strive to establish the transition from the "economic man" to "ecological man" is very important (As in table 1.).

Table 1: The comparison of "economic man" and "ecological man"

Category	Economic man	Ecological man
Status of man	Anthropocentrism	Man is an equal partner of the natural system
Viewpoint of system	The economic system is self-reliant	The economic system is a sub system of the natural ecological system
Idea of development	Massive-scaled production, rapid growth and Mechanism	Sustainable and harmonic development, the law of ecology
Goal	Pursue the growth of industrial civilization, maximize economical benefits and unlimited increase of material wealth	Pursue welfare of Eco-civilization, economical, social and natural harmonic and controllable growth
Values	The value is the human labor in the commodity, denying the value of the ecological environment and natural resources	Environment and natural resources are scarce resources for human to create wealth
Environmental conservation	Ending treatment, high investment, no return of favor for the environment	Clean production, recycle process, low-input, positive return of favor for environment
Waste management	Emissions to the environment, pollution externalization management	In-system resource, internalization of pollution control
Consumption model	Material and spiritual needs, encouragement of high consumption and promotion of economic growth	Material, spiritual and ecological needs, ecology, being green, moderate and sustainable consumption
Benefits measurement	Economic benefits	Economic, ecological and social benefits
View of happiness	Emphasis on meeting the material desires, the disparity of personal wealth accumulation	A society of conservation to meet basic material and spiritual needs, to build a harmonious existence

4. Conclusion

Eco-civilization departs from the values of traditional "anthropocentrism", promotes love of nature, protection of nature, and respect of nature, man and nature coexist in harmony. Eco-civilization requires people to have balanced and harmonic "holistic thinking" to replace the "one-way thinking" of industrial civilization for pure economic interests, to respect the laws of nature, to develop circular economy, and to take the realization of sustainable development as the key concept of development. Eco-civilization is a systematic concept, which has a significant impact on changing people's view of nature, society, values, and consumption attitudes; it represents the trend of human civilization development.

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