Building Harmony Between Man and Nature : Book Review of China Environmental Anthropology

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The fundamental law of sustainable development to human civilization relishes and revers nature, and even protects the environment. An important academic work in English, China Environmental Anthropology, published by North American Business Press, Seattle, WA, USA, 2018, has unearthed a deep understanding of the nature and environment and the related existing conditions. The authors, Wang Tianjin (Minzu University of China in Beijing, China), Tian Guang (Huaihua University in Hunan, China) and Ma Jianfu (Northern Minzu University in Yinchuan, China), are eminent scholars working on the aforesaid field. Amidst severe deterioration in the relationship between man and nature in the current times, the book is a solace for all researchers and academicians as it clearly reveals the causes of the contradictions thereby offering valuable inputs.

CONSTANT ADJUSTMENT TO CHANGE IN LAGGING ECONOMIC STRUCTURE

The book uses authoritative data, information and related case studies to illustrate that China, as a developing country, has explored and tried to manage the complex relationship between man and nature from various aspects. For instance, with the active involvement of administrative organs at all levels and the extensive participation of the masses, China has maintained territorial and ecological security, and boosted productivity and growth. However, because of a disproportionate industrial structure, chaotic organization, and management in some parts, China has worst type of environment crisis in the form of land degradation, desertification and ecological imbalance. History has repeatedly demonstrated that a nation must first carefully organize the mode of production at the right time to survive. It is the veritable need of the hour that the people must change the agricultural and animal husbandry production, creatively build the harmony between man and nature, and then achieve the maximum production capacity. Only in the new economic system, can the country achieve progress and prosperity.

In the past four decades since the onset of China's reform and opening-up process in 1978, the country has achieved rapid socio-economic development with a significantly high living standards of the people. Many old modes of production, such as the rigidly planned economy, have been been replaced by new economic systems, such as the market economy. It is, therefore, imperative to note herewith, as explained in the book, that China established four main functional zones and an optimized development zone in order to promote people's production to adapt to the natural environment in 2010（The State Council of China, 2010）.

The optimized development zone, set up on the Han-dominated east coast of China, aims at developing international trade, electronics and information technology industries. This critical development zone is located in the middle reaches of the Yangtze and Yellow Rivers in central China, where urban communities

and contiguous industrial parks have been set up. The construction process targets metallurgical, mechanical and automotive industries. By developing the main functional zones, China has reoriented its old lagging socio-economic structure. The coastal cities of Shanghai and Guangdong have witnessed large-scale agricultural modernization. Similarly, the automobile and machine tool manufacturing industries with solid capacity have emerged in Wuhan city in the middle reaches of the Yangtze River.

There has been state concern for prohibited development zone is located on the Qinghai-Tibet plateau, known as "the Earth's Third Pole, "where the main inhabitant population is Tibetan, Qiang ethnic groups etc. The Chinese government has not only extended support to Tibet's farmers and herders to lead a prosperous life, but also made efforts to maintain ecological balance on the plateau. Large areas of grasslands and forests on the Qinghai-Tibet plateau are well protected to have solid productive capacity through innovative socio-economic organizations. This is critical to the livelihoods and production of billions of people on the Indochina Peninsula and the Indian subcontinent.

It must be pointed out that China's agriculture and animal husbandry sectior still resort to methods that pollute the ecosystem in the country. Amongst these, deforestation and excessive grassland reclamation, low level or primitive farming etc. contribute largely to environmental pollution. Besides, as the world's most populous country, China consumes enormous amount of food daily. For example, as per Organization for Economic Co-operation and Development (OECD) data, China consumed more meat in 2018 than any other country globally, more than the United States and the 28 European countries combined. While the US had consumed an annual average of 100 million pigs over the past few decades, China had gone from 400 million pigs to a peak of 735 million during the same period. In the year 2020, Chinese people consumed 54.518 million tons of pork, which is nearly half of the world's pork production in 2020 (CCTV4 "National Memory" Program, 2021). This has added fuel to fire as far as the country's sensitive environment is concerned. China's economy is based on agriculture and animal husbandry, with large-scale pig and cattle farms spread across the country, supporting the country's most significant contribution to global pork production, besides vast production of beef and mutton. Numerous low-level and primitive giant or independent domestic pig, cattle,and sheep farms pollute rivers and lakes with livestock waste, the air with methane, and cause severe pollution associated with nitrates and ammonia.

It is important to note herewith that methane increased by artificial causes, which is a significant contributor to greenhouse gases, contributes to natural calamities such as droughts, hurricanes and floods. Scientific studies show that agricultural production is responsible for about 40 % of global methane emissions. Livestock is responsible for 32% of such emissions. Statistics also show that 50% of methane emissions in the EU come from agriculture, mainly livestock (Institute for Agriculture and Trade Policy, 2021).

This sorry state of affairs prompted the US and EU to announced a joint pledge On Sep. 17, 2021, to reduce methane emissions by 30% by 2030 (Goel, 2021). New public policies in the US and EU have been developed and implemented as well to decrease agricultural methane significantly. The managerial staffs regulate the overall control of livestock waste discharges properly. They have reallocated public funds to guide and support the equitable transition of farmers' operations towards biodiversity and agro-ecosystems. There is no doubt that the advanced technology and experience of industrialized countries are enlightening and must be emulated in developing countries.

MORE PROMPT ACTIONS TO COMBAT DESERTIFICATION

Desertification has been posing a serious challenge to the environment at present by creating a vicious circle that threatens the very survival of mankind. According to the United Nations, global land desertification in recent years is an expanding by 50,000-70,000 square kilometers per year, having turned 21 million hectares of productive land into desert. Almost 35 % of the world's landmass, 20 % of the population, and more than 100 countries are facing the threat of desertification. The direct economic losses in this regard are $423 trillion a year. Land desertification manifests social, economic, and cultural underdevelopment caused by both social and economic factors. Desertification changes the solar radiation albedo of the land surface, reduces vegetation and soil organic matter, lowers carbon storage capacity,

affects the carbon budget, and seriously exacerbates climate change. At the same time, climate change, in turn, could exacerbate land degradation in many different methods, reduce yields of wheat and corn, and trigger food shortages. The book under review has analysed a huge set of data and case studies to analyze the problem of desertification.

Some other scientific researches done in recent times reveals an even more worrying picture of the global environment. It is believed hat unscientific economic activity has accelerated the concentrations of well-mixed greenhouse gases on earth. Research data from traditional institutions indicate that: "since 2011 (as reported in IPCC AR5 WGI 2013), the concentrations of well-mixed greenhouse gas (GHG) have continued to increase in the atmosphere, reaching annual averages of 410 ppm (parts per million) for carbon dioxide (CO2), 1866 ppb (part per billion) for methane (CH4), and 332 ppb for nitrous oxide (N2O) in 2019." The result disrupts benign ecological cycles and makes abnormal warming of the earth's surface. "So Global surface temperature in the first two decades of the 21st century (2001-2020) was 0.99 [0.84-1.10] °C higher than 1850-1900.The global surface temperature was 1.09 [0.95 to 1.20] °C higher in 2011–2020 than 1850–1900, with larger increases overland (1.59 [1.34 to 1.83] °C) than over the ocean (0.88 [0.68 to 1.01] °C)" (Working Group I,2021). It resulted in extreme drought, increasing desertification and wildfires in many countries.

The phenomenon of desertification in China is worrying. China carries out a national monitoring survey of desertification and desertified land every five years. From 2013 through 2015, the central government invited more than 5,000 technicians to participate in the Fifth National Monitoring of Desertification and Desertified Land2009-2014 (FNMDDL), and provided opportunity for them to use remote sensing, geographic information, global positioning, and ground survey techniques. The findings show that, by 2014, China's desertification land was 2,611,593 km^2, accounting for 27.20 % of its landmass. Its desertified land was 1,721,175 km^2, accounting for 17.93 % of China's total land areas in 2014. The main reasons for ecological deterioration are disorderly economic behaviors such as over-reclamation and over-logging, overloading animal husbandry, over-utilization of water resources, etc. From 2009 to 2014, the cultivated land in desertified areas and sandy land had increased by 3.60% and 8.76%, respectively. The average overloading rate of livestock in China's counties of pastoral areas reached 20.6 percent in 2014 (Tu, Li, and Sun, 2016).

China's present environmental crisis has also been experienced in other developing countries around the world. Tesfahunegn, a professor at the College of Agriculture at Axum University in Ethiopia, recently conducted surveys on land degradation in the Dura sub-basin in the north of the country. He interviewed farmers, company workers, and residents in a small town. According to him, "significantly higher proportions of respondents perceived that deforestation (100%), followed by overgrazing (98%) and improper soil management (97%) are the main direct causes of degradation." He used the logistic regression model to show : "Attention should be given to such factors while formulation promising landscape management strategy that considers suitability and adaptability to local conditions" (Tesfahunegn, 2019). He concluded that deterioration of the natural environment is mainly due to human mismanagement.

The urgent and systematic restoration of human-damaged ecosystems is now a global challenge. The critical action is undoubtedly to change the ways of production formed in the old age of the big machine industry. The academic volume under review puts forward some meaningful suggestions, including training and improving rural farmers' scientific production skills, establishing an ecological farmland farming system, and implementing fenced animal husbandry on grassland, and so on.

CURBING ENVIRONMENTAL POLLUTION TO PROTECT PEOPLE'S HEALTH

Good health is the most precious thing in life, but environmental degradation has told upon good health in the recent times. It has led to a number of health hazards. Some researchers investigated the relationship of ambient PM2.5 exposure with cause-specific cardiovascular disease mortality in 565 477 men and women, aged 50 to 71 years, from the National Institutes of Health-AARP Diet and Health Study, between 1995 to 1996. The scientific methods they used mainly including the National Death Index, a mixed land-use regression (LUR) geostatistical model, and Multivariate Cox regression models. For instance, "each

increase of 10 lg/m^3 $PM_{2.5}$ (overall range, 2.9–28.0 lg/m^3) was associated, in fully adjusted models, with a 16% increase in mortality from ischemic heart disease [hazard ratio (H.R.) 1.16; 95% CI 1.09-1.22] and a 14% increase in mortality from stroke (HR 1.14; CI 1.02-1.27)." Those deaths increase with environmental pollution. Furthermore, the final numbers are startling. "During 7.5 x 106 person-years of follow up in investigating, 41 286 cardiovascular disease deaths, including 23 328 ischemic heart disease (IHD) and 5894 stroke deaths, were ascertained using the National Death Index" (Hayes, Lim, and Zhang et al.,2020).

Within the multicenter study "Effects of Low-Level Air Pollution: A Study in Europe (ELAPSE)," some researchers used Cox proportional hazards models with increasing levels of covariate adjustment to investigate the association of air pollution exposure with the incidence of stroke and coronary heart disease. They did a pooled analysis of individual data, six population-based cohort studies within ELAPSE, and 137148 participants from Sweden, Denmark, the Netherlands, and Germany (recruited 1992–2004). During a median follow-up of 17· two years (IQR 13·8 19·5), the researchers observed 6950 incident events of stroke and 10 071 incident events of coronary heart disease. Incidence of stroke was associated with $PM_{2·5}$ (hazard ratio 1·10 [95% CI 1·01 1·21] per 5 μg/m^3 increase), nitrogen dioxide (NO_2) (1·08 [1·04 1·12] per 10 μg/m^3 increase), and black carbon (1·06 [1·02 1·10] per 0·5 10^{-5}/m increase). In contrast, coronary heart disease incidence was only associated with NO_2 (1·04 [1·01 1·07]). Computer graphics also clearly show that concentration-response curves indicated no evidence of a threshold below which air pollutant concentrations are not harmful to cardiovascular health (Wolf, Hoffmann,and Andersen et al., 2021).

This book introduces cases of economic and legal measures taken by China to protect the ozone layer, reduce human diseases and preserve biodiversity. Such efforts to clean up the sky have had remarkable effects with continuing till now. Protecting the ozone layer can keep people from skin cancer and cataracts; reduce mass mortality of Marine plankton, fry, shrimp, crab larvae, and shellfish. Such efforts to clean up the skies have had remarkable effects.

Protecting the ozone layer can keep people from skin cancer and cataracts; reduce mass mortality of Marine plankton, fry, shrimp, crab larvae, and shellfish. China has long and earnestly implemented "the Vienna Convention for the Protection of the Ozone Layer," "the Montreal Protocol on Substances That Deplete the Ozone Layer," and related "the Kigali Amendment." From 1991 to 2021, the Chinese central government implemented a series of measures to comply with international conventions. The central government has established National Ozone Depleting Substances Import and Export Administration Office to exercise adequate supervision over the import and export of ozone-depleting substances (ODS). It has promulgated and implemented over 100 regulations and management policies, including "Regulations on the Control of Substances that Deplete the Ozone Layer," with total quantity control and quota licensing systems as the core of supervision. The government had implemented 31 unique reduction plans in chemical production, tobacco, and other industries and eliminated or replaced ODS in more than 1,000 enterprises. According to a notice issued by China's Ministry of Ecology and Environment in September 2021, the total volume of ODS 500 kiloton was eliminated nationwide in China over 30 years. They account for more than half of developing countries, which positively contribute to ozone layer protection and greenhouse gas reduction (Ruan, 2021). Two chapters of the book are devoted to health care with Chinese characteristics. One is the complete national medical insurance service, and the other is ethnic medical treatment such as traditional Chinese medicine, herbal medicine, Tibetan medicine, and health food and gourmet dishes to detoxify the bodies.

China still faces complex challenges in tackling environmental pollution. China's output of air conditioners fell 3.7 percent year-on-year from 219 million units in 2019 to 211 million units in 2020. China's production of rotating compressors was 214 million units in 2019 and 210 million units in 2020, down 1.9% year on year. Nevertheless, more than 80% of the world's rotary compressors are produced in China, and China's sales of rotary compressors account for about 70% of global sell (Intelligence Research Group, 2021). Both rotary refrigerations of air conditioners and compressors depend on refrigerant consumption. Freon is the main chemical component of refrigerants. The release of chlorofluorocarbon (CFCs) into the atmosphere can lead to a decline in ozone levels, causing severe ultraviolet ray damage to life on earth and taking a rise in temperatures in the lower stratosphere and troposphere. As the world's most significant manufacturing and saling country in air conditioners, China undertakes the responsibilities

of limiting and replacing Freon products through technological upgrading, capital investment, industrial transformation and unemployment of workers.

MORE CARBON SINK TRADING TO REDUCE GREENHOUSE GASES

The book under review introduces a unique compensation mechanism on the Qinghai-Tibet Plateau, which is of great theoretical and practical significance. The Tibetan and Qiang people, who have lived on the Qinghai-Tibet Plateau for generations, plant trees and grass on a large scale. Those vast forests and grasslands are the water sources of the Yangtze and Yellow Rivers, and the green vegetation absorbs carbon dioxide and produces fresh oxygen under photosynthesis, which reduces greenhouse gas emissions. That means river water and oxygen are products of abstract human labor. Hundreds of millions of people in the middle and lower reaches of the Yangtze and Yellow Rivers use water to live and produce, which means they enjoy the labor products of the Tibetan and Qiang ethnic groups. The exchange of equal value is the fundamental law of market economic prosperity, which must not be violated. Those rivers and oxygen must be given separate commodity status and traded in markets regulated by the Kyoto Protocol to the United Nations Framework Convention on Climate Change (or the Kyoto Protocol), known as international carbon sinks trading.

With the Kyoto Protocol officially came into effect in 2005, commercial trading of the global carbon emission rights has been carried out in tortuous exploration. Meanwhile, this kind of trading has gotten some better benefits. Market trading is a critical way to reduce greenhouse gases, mainly carbon dioxide equivalent emissions from artificial uses such as oil and coal. The United States, European Union and New Zealand have established national or regional carbon emission trading markets. The establishment of the compensation mechanism for the Qinghai-Tibet plateau is one of the many efforts that China has made.

China's efforts in carbon trading have produced some desirable results. In November 2011, China began trading carbon emission permits in seven municipalities and provinces like Beijing, Shanghai and Guangdong. By June 2021, the carbon market in the above seven cities and provinces had a cumulative quota trading volume of 480 million tons of carbon dioxide equivalent, with a turnover of about ￥11.4 billion yuan（$ 1.765 billion） (Chen, 2021). China's national carbon emission trading market officially went into operation on Jul. 16, 2021.

To be sure, China has a lot to do to reduce its carbon emissions. As the second-largest economy globally, China emits many greenhouse gases in product manufacturing and transportation. Therefore, it is natural for China to eliminate a large amount of carbon dioxide pollution in the environment. For example, the share of China's import and export, exports, and imports in the international trade market in 2019 was 11.9 %, 13.1 %, and 10.7%, respectively. In 2020, China's share in global trade increased by one percentage point on average from 2019 (Yabuli Chinese Entrepreneurs Forum, 2021). The bulk of these goods are shipped to North America and Europe, making it particularly urgent to reduce carbon emissions from shipping.

On Aug. 21, 2021, Chinese President Xi Jinping reaffirmed the solemn commitment to the international community by delivering a video statement to the General Debate of the 76th Session of the United Nations General Assembly from Beijing: "China will strive to achieve carbon peak by 2030 and carbon neutrality by 2060." President Xi also bluntly said： "It needs a strenuous effort" (Xi, 2021). It can be seen from several cases described in the book that the carbon trading channels are not smooth, enterprises do not have the willingness to participate in the trading, and the professional and technical personnel are lack. The failure of the market supervision mechanism is, to some degree, all of which are the obstacles to carbon sink trading in China.

Many facts show that reducing greenhouse gas emissions is an inherent need of social people, and economic production is an international, structured, and systematic trend. In particular, (1) it is impossible for minority countries to achieve, and (2) beyond single system components or partial carbon trading phenomena.

It should be noted that Europe's emissions trading system (ETS) is a demonstrative model in every respect. Among other market-based climate political alternatives, better functioning and benefits of the European emissions trading scheme (EU ETS) have attracted much attention. Although several ETS initiatives have been rolled out globally following the commitments of the Kyoto Protocol, EU ETS,which has been in operation since 2005, is considered by far the most critical carbon market (Ellerman, Marcantonini, and Zaklan, 2016). As environmental degradation poses a severe threat to human civilization, many positive actions have combat climate change. Chinese administrators, business, and academic circles have come to a conclusion that to achieve "carbon peak" and "carbon neutral" goals, a country must learn from the experience of other countries and join forces around the world to reduce carbon emissions. Therefore, the application experience of EU ETS in international shipping and other industries is a good example to emulate.

In toto, the book under review focuses on illustrating typical cases and profound lessons of coordination between human production and ecological cycle in China and the economic development experience of other countries. In one sentence, the book believes, the world is a piece, let us not covet it, but relish it for ever. It is undoubtably worth reading and a source of further reference and exploration by researchers, anthropologists, professionals, academicians and college students.

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