

ECOLOGICAL CIVILIZATION IN THE PEOPLE'S REPUBLIC OF CHINA: VALUES, ACTION, AND FUTURE NEEDS

Arthur Hanson

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CONTENTS

BOXES	iv
ACKNOWLEDGMENTS	v
ABSTRACT	vi
ABBREVIATIONS	vii
I. OVERVIEW	1
II. NEED FOR TRANSFORMATIVE ACTION: GLOBALLY, NATIONALLY, AND LOCALLY	2
III. SIGNIFICANCE OF SUSTAINABLE DEVELOPMENT AND ECOLOGICAL CIVILIZATION LANGUAGE	3
IV. TRANSITION CHALLENGES AND OPPORTUNITIES	5
A. Avoiding Progress Traps	7
B. Accelerating the Peaking of High Consumption, Emissions, and Ecological Damage	7
C. Seeking Synergies and Integrated Transition Solutions for an Ecological Civilization	8
D. Building Public Understanding, Participation, and Transition Direct Benefits	9
E. Finding Optimal Transition Sequencing	9
V. ECOLOGICAL CIVILIZATION AS A CATALYST FOR REFORM AND PROGRESS	9
VI. LEVERAGE POTENTIAL OF ECOLOGICAL CIVILIZATION INITIATIVES	12
A. Rural Vitalization	12
B. Low Carbon Cities and Towns	13
C. Innovation-Driven Development	14
VII. ECOLOGICAL CIVILIZATION BEYOND THE PEOPLE’S REPUBLIC OF CHINA	15
A. Regional and Global Ecological Civilization Action	16
B. Promoting Ecological Civilization at Regional and Global Levels	16
VIII. CONCLUSIONS	18
A. Integrated Approaches	18
B. Alignment with Overall Structural Reform	19
C. Accelerated Pace of Action	19
D. Adaptive Planning and Management	19
E. Broad Participation in Ecological Civilization Construction	20
F. International Ecological Civilization—Sustainable Development Cooperation	20
REFERENCES	22

BOXES

1	Nine Planetary Boundaries	2
2	Eight Priorities for Eco-Civilization Implementation	6
3	The People's Republic of China's Commitment to Global Ecological Sustainability	16

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ABSTRACT

Ecological civilization is being used by the People's Republic of China (PRC) to provide a coherent conceptual framework for adjustments to development that meets 21st century challenges. It differs from sustainable development in the emphasis placed on political and cultural factors, as well as on defining new relationships between people and nature that would permit living well, and within the eco-environmental bounds of planet Earth. This paper profiles the language and characteristics of ecological civilization as it is currently conceived, especially in relation to improvements in pollution reduction, circular economy, low-carbon economy, green development, and other guiding thoughts. Consideration is given to the areas of finance, law, institutional strengthening, and technological innovation. Each of these areas has already influenced ecological civilization decisions during the 12th and 13th Five-Year Plans (FYP), and highlights some of the needs for the medium-term and beyond, especially to 2035 when ecological civilization in basic form is expected to be fully in place for the PRC's modernization. Getting there will require addressing many challenges and innovative mechanisms to align ecological civilization with the PRC's economic and other structural reforms. It will require changes in employment strategy, innovation-driven development approaches, and other matters to ensure adequate transitions. At the same time, new opportunities will emerge and it is particularly important to link these with major national policies including rural vitalization, low-carbon economy in cities, green development, science, technology, and innovation. Ecological civilization can thrive if there are good partnerships, enhanced public participation, and full engagement of enterprises.

While ecological civilization is sometimes described as sustainable development with Chinese characteristics, it will benefit through inputs from outside, and will have value in many of the PRC's international activities including meeting the United Nations 2030 Sustainable Development Goals, creating green supply chains, greening of the Belt and Road Initiative, and accelerating efforts to achieve goals related to climate change and other global environment concerns. The ecological civilization concept places emphasis on safeguarding ecological services and natural resource protection and improvements. Several conclusions highlight what are needed in the immediate and longer-term future to make ecological civilization successful and transformative in its impact within the PRC, internationally, and even globally.

Keywords: ecological civilization, sustainable development, the People's Republic of China, climate change, low carbon, environment, ecosystem, biodiversity, rural vitalization, urban green development.

ABBREVIATIONS

ADB	Asian Development Bank
BRI	Belt and Road Initiative
FYP	Five-year plan
IT	Information technology
PRC	People's Republic of China
UN	United Nations
UNSDG	United Nations Sustainable Development Goals
YREB	Yangtze River Economic Belt

I. OVERVIEW

Ecological civilization is a set of values and development concepts enshrined in the Constitution of the People's Republic of China (PRC) in 2018, and now a key driver in the country's transition to high quality development for the "New Era" (Pan 2018). It is simultaneously a philosophy, vision, and compass for a green and prosperous future. In an unprecedented fashion, this phrase links the primacy of ecological factors to other development elements. People rely on a healthy planet for their economic and social progress. Globally, these relationships are threatened and the situation is worsening. The PRC and other countries seek transformative action to address their own as well as regional and global ecological/environmental deterioration and its impacts. Internationally, such efforts have increasingly been undertaken under the banner of sustainable development. For the most part, ecological civilization has been a "Made in PRC" endeavor but with global implications.

Since 2007, the PRC has taken various steps to gradually put in place a comprehensive five-in-one approach to problem-solving based on protecting and enhancing natural capital—a plan that is potentially capable of establishing ecological integrity at many levels from local to global. Putting nature first is a fundamental distinction between ecological civilization and the PRC's intense focus for the past 40 years on high gross domestic product (GDP) growth. The new ecological civilization approach is also intended to abide by the PRC central government pledge of "Putting People First" by opening up new quality of life options based on a moderately prosperous lifestyle and living within ecological limits.

As the PRC moves toward the medium-term and beyond, to address 2035 and 2050 modernization and prosperity aspirations—ecological civilization can be expected to play a significant role. This effort began to take hold in the 12th and 13th FYPs, not only within the PRC but also in some of the country's international relations, for example, with the United Nations Environment Programme (UNEP) and at the UN General Assembly.

The global community is struggling with climate change, health of the oceans, biodiversity and ecosystem conservation, and integrated sustainable development goals. No country can succeed in fully addressing today's global ecological and environmental crises on its own. The magnitude of the problems currently exceeds our combined efforts to deal effectively with the situation. The UN and many international organizations and scientific bodies have signaled that time is running out for timely, integrated solutions to problems such as climate change and other global ecological problems. We need accelerated progress throughout the world during the decade ahead in order to avoid very high costs later. The PRC's sustainable development and ecological civilization experience is already of strong interest beyond its own borders.

This paper explores three aspects of ecological civilization: (i) its significance as a concept; (ii) challenges for applying it widely as a catalyst for reform and progress within the PRC; and (iii) strategic opportunities for its use in transformative change toward a new relationship between people and nature to guide future development in the PRC. In addition, it explores the potential value and roles of ecological civilization beyond the PRC.

II. NEED FOR TRANSFORMATIVE ACTION: GLOBALLY, NATIONALLY, AND LOCALLY

A key matter is staying within “Nine Planetary Boundaries” in order to safeguard life support systems. This perspective demands “development bounded within a stable and resilient planet”. In other words, we must recognize the primacy of ecological considerations in decision-making.

Box 1. Nine Planetary Boundaries

1. Climate Change*
2. Ocean Acidification
3. Stratospheric Ozone Depletion
4. Atmospheric Aerosol Loading
5. Biogeochemical Cycles (Nitrogen and Phosphorus inputs to the Biosphere and Oceans)*
6. Global Freshwater Use
7. Land System Change
8. Biodiversity Loss*
9. Chemical Pollutants including novel entities such as plastics.

* = Boundaries likely already transgressed according to various scientific examinations.

Source: Stockholm Resilience Center. The Nine Planetary Boundaries. <https://www.stockholmresilience.org/research/planetary-boundaries/planetary-boundaries/about-the-research/the-nine-planetary-boundaries.html>

Ecological footprint (Global Footprint Network) is another way of examining trends about the health of planet Earth. This analysis suggests we are already using more of the world’s ecological resources than we can regenerate. It suggests an urgent need for “One Planet Prosperity”. However, the trend of ecological footprint is in fact currently moving in the other direction. We continue to live beyond our planet’s means of supply, with great disparities in distribution of wealth and availability of natural resources.

Since 2012–2015, the global search to find new paths for sustainability has focused on the United Nations 2030 Sustainable Development Goals (UNSDG 2030). The latest scientific assessment (UN 2019) suggests transformative change in the relationship of people and nature is urgently needed, and is possible to implement between 2020 and 2030. There are various entry points suggested for enhanced action.

Four levers consistently emerge as essential to achieving ecologically and environmentally sound development transformations: (i) governance model shifts including legal reform; (ii) economy and investment decision-making that fully acknowledges the primacy of living within ecological limits; (iii) participation of individuals (poor and rich) along with collective action to meet the essential needs of all people; and (iv) innovation, especially for the application of science and technology advances.

Meeting national and local sustainability needs is, of course, the foundation upon which success at regional and global levels can be built. There are many examples of success in addressing specific sustainability issues in both developing and industrial nations. However, no country’s efforts have been successful in fully achieving comprehensive sustainable development strategies. While there is much talk of integrated goals (especially for the UNSDG 2030), actual progress is still far too limited. International trade and investment fail to adequately address the range of serious impacts arising

from globalization. Enterprises can and do play a significant role in contributing improved solutions for sustainable development. However, far too often the business sector falls short, or does not have the enabling conditions needed to make a full contribution.

The PRC demonstrated to the world its domestic capabilities for reducing poverty in its commitment to the Millennium Development Goals (UNDP 2015). In 2020, achievement of poverty eradication and a moderately well-off society will be celebrated. But over this same time period, “unstable, unbalanced and ultimately unsustainable development” patterns became serious problems. The “War on Pollution” is an example where focused attention since 2014 is changing the curve toward better development outcomes. Recent analysis suggests a welcome decoupling is taking place between economic growth and environmental impacts for at least some pollutants (Lu et al 2019). Another is the emerging strategy of integrated planning for protection and enhancement of ecological services through innovation involving eco-compensation that provides rural employment as well as ecological safety guarantees in river basins and coastal areas.

III. SIGNIFICANCE OF SUSTAINABLE DEVELOPMENT AND ECOLOGICAL CIVILIZATION LANGUAGE

Globally, the language of environment and development has shifted as various conditions have worsened. While “environmental crisis”, has been in common use for decades, we now hear about “global environmental emergency”.¹ A “planet on fire”, “dying oceans”, and “environmental refugees”. We speak of the Anthropocene, the stage where human actions have global and local widespread ecological, geologic and other effects (Lewis and Maslin 2018). Language about how to tackle specific types of environmental problems can be equally dramatic.

Globally, over the last 15 years, a very significant effort has been made to transform our thinking and therefore our language about nature and economy relationships in particular; for example, the need to recognize the socio-economic value of ecological services.² Numerous examples exist of scenarios for global sustainability transitions, with varying approaches and insights.³

Language matters for many reasons. There is an inherent understanding of *nature* that crosses boundaries of nations and societies, religion and culture. It is embedded in our lives as forces that we appreciate, respect and fear. Much has been made about the need to *live in harmony with nature* and of the dangers of efforts to control, dominate, or otherwise interfere with nature. Often these points are made to contrast views of Eastern and Western civilizations or to contrast ecological Marxianism and capitalism viewpoints.

¹ This language is particularly applied to climate change, biodiversity, and to oceans. See various speeches and reports by UN Secretary General António Guterres: e.g., on oceans, <https://news.un.org/en/story/2018/06/1011811>; and on climate change, <https://news.un.org/en/story/2019/06/1041582>

² The Economics of Ecosystems and Biodiversity. <http://www.teebweb.org>

³ An interesting examination of four major global sustainability scenarios is provided by G. Feola and S. Jaworska. 2018. One Transition, Many Transitions? A Corpus-Based Study of Societal Sustainability Transition Discourses in Four Civil Society's Proposals. *Sustainability Science*. 14. pp. 1643-1656. <https://link.springer.com/content/pdf/10.1007%2Fs11625-018-0631-9.pdf>

The struggle to identify imaginaries, aspirational models, and operational approaches of universal value and acceptance can be a controversial matter when considering environment and development. Sustainable development has been influential in international negotiations of all sorts in the period since the famous 1987 Brundtland Report set the stage for the 1992 Rio Earth Summit. The framework of principles, global conventions and action plans from that time has guided environment and development action right up to the present, including the UNSDG 2030. However, sustainable development has come under considerable revisionist thinking, and in some circles, heavy criticism. It is seen by some as an impossible mission, too malleable or vague, or, for others, too closely aligned to ideologies they do not support. The value is certainly that “broad acceptance of sustainable development provides an essential normative framework setting out basic criteria” (Cheever and Dernbach 2015) on decisions regarding development. Sustainable development has been embraced by a wide array of multilateral organizations, business and civil society elements as well as governments of all political stripes.

Why then has it been deemed desirable or necessary to introduce new language or concepts such as ecological civilization?⁴ And why in the PRC, a country that has embraced sustainable development, and contributed substantially to its implementation internationally over the decades since the term first became globally and nationally important? (Yi 2012). The State Council *Agenda 21 White Paper on China’s Population, Environment and Development in the 21st Century*⁵ was at the time considered as one of the most comprehensive of all national sustainable development initiatives. In recent times, the PRC has developed a national implementation plan addressing how it will meet its own SDG 2030 and other sustainable development efforts such as the 2015 Paris Agreement on climate change.

What makes ecological civilization different, perhaps even unique, from existing dialogues and actions for sustainable development? As explained in official Party and PRC State Council guidance, ecological civilization introduces two additional major elements to the existing environmental, economic and social components of sustainable development. These elements are politics and culture. They make for a much more complex approach than the usual sustainable development triangle, including the political role of central authority and leadership, more comprehensive planning and accountability, and differentiated approaches based on cultural considerations. This is described as the five-in-one approach. It is not necessarily an integrated approach; more likely it should be considered as a balancing effort that at times genuinely will provide for a filtering that places nature first. An important example is the effort to extensive ecological redlining restrictions in sensitive Yangtze River areas, and to stop further large dam construction. The Yangtze River Economic Belt (YREB) has been considered a major policy shift towards ecological civilization (Groff 2018).

Perhaps it takes a 5,000 year-old civilization to credibly introduce a new one to the world. The PRC draws upon ancient philosophy for ecological civilization. This includes beliefs about *people living in harmony with nature* as explained by Taoism founder, Lao Tze and others such as Zhuangzi and Xianlin Ji. These philosopher-writers placed emphasis on deep value systems and human dependence on nature. By contrast, many other historical transitions in the world have featured situations where people “conquered nature”, especially during the evolution of agricultural to industrial civilizations. Ecological civilization fits among the creative ideas of post-industrial and post-modern situations.

⁴ The *ecological civilization* phrase was introduced into agricultural discussions in the Soviet Union and the PRC in the 1980s, and more comprehensively in a US academic book published in 1995 (R. Morrison. 1995. *Ecological Democracy*. Boston: South End Press.) https://en.wikipedia.org/wiki/Ecological_civilization

⁵ A Plan of Action for the PRC Agenda 21 was produced in 2007 by the National Development and Reform Commission (NDRC). http://en.ndrc.gov.cn/newsrelease/200702/t20070205_115702.html

Of course, in earlier times as well as in more modern technologically progressive times in the PRC, severe overuse of ecosystems has taken place. *Retreat of the Elephants* (Elvin 2006) documents ecological destruction in the PRC over a time frame of some 3,000 years. Right up to the present day, maintaining ecological integrity has been a struggle. What is different now and for the future is that the technical skills are available to address even some of the most difficult ecological and environmental situations. Funds, managerial skills and political resolve to deal with ecological restoration, environmental protection, and green development are now available.

There is a realization by the central government of the PRC that public expectations for a higher quality of life are widespread; that environmental risks can exact a heavy toll, especially from climate change, pests and diseases, or poor industrial, mining and infrastructure decisions. Also, that ecological services likely will have to double or triple to safeguard the PRC's economic growth, its ecosystems, infrastructure and the health of people and communities. The country's varied geography and ecology, plus its rich biodiversity and varied patterns of agricultural and water use, and regional urban-rural disparities all contribute to the complexity of creating a PRC ecological civilization. All these features contribute to the rationale that at its core ecological civilization is sustainable development with Chinese characteristics.

IV. TRANSITION CHALLENGES AND OPPORTUNITIES

PRC President Xi Jinping has indicated that “the construction of ecological civilization is a great plan for the sustainable development of the Chinese nation”.⁶ With such sweeping scope, ecological civilization will have to address changes for virtually all sectors and be transformative in action. Thus, it must be long-term but with demonstration of rapid results and clear milestones. It must be inspiring and therefore has been closely linked to the 2050 goal of an environmentally sound “Beautiful PRC”, and the 2035 target to have the basic framework of ecological civilization in place for a “Modern” PRC.

Many transitions must take place in order to support and fully achieve the transformative change for ecological civilization. Some were spelled out in a 2015 Communist Party of China (CPC) and State Council Opinion Paper⁷ and amplified in a September 2015 guidance document on the PRC's *Ecological Civilization Construction Action Plan*.⁸ The process of preparing these seminal documents was undertaken by the Central Leading Group on Financial and Economic Affairs and was a breakthrough in providing an integrated approach. There were eight key priority topics identified (see Box 2). These two documents provided robust guidance for the 13th FYP and are still highly relevant to the future of ecological civilization in the PRC.

⁶ 19th CPC National Congress.

⁷ See CPC Central Committee and PRC State Council. 2015. *Integrated Reform Plan for Promoting Ecological Progress*. http://english.www.gov.cn/policies/latest_releases/2015/09/22/content_281475195492066.htm

⁸ See CPC Central Committee and PRC State Council. 2015. *Opinions of the CPC Central Committee and the State Council on Further Promoting the Development of Ecological Civilization*. https://environmental-partnership.org/wp-content/uploads/download-folder/Eco-Guidelines_rev_Eng.pdf.

Box 2. Eight Priorities for Eco-Civilization Implementation

1. Spatial planning and development
2. Technological innovation and structural adjustment
3. Land, water and other natural resource sustainable uses
4. Ecological and environmental protection
5. Regulatory systems for ecological civilization
6. Monitoring and supervision
7. Public participation
8. Organization and implementation

Source: Adapted from Policy Research Centre for Environment and Economy and United Nations Environment Programme. 2016. *Green is Gold: The Strategy and Actions of China's Ecological Civilization*. https://reliefweb.int/sites/reliefweb.int/files/resources/greenisgold_en_20160519.pdf

Domestic actions for green development, green finance, green economy, circular economy, low-carbon economy, ecological redlining, ecological restoration and construction, green urbanization, climate change mitigation and adaptation, sustainable development, and the “War on Pollution” are prominent examples of shifts and investments toward ecological civilization already well underway during the 12th and, especially, the 13th FYP.⁹ Sectors such as transportation, water, energy, mining, industry, tourism, parks and nature reserves, public health, and education, have created national, provincial, and local ecological civilization goals and plans.

Ecological civilization will be particularly significant over the next two mid-term planning periods (each 15 years) since difficult transformative action is still needed if the goal of becoming a modern society is to be met by 2035 and fully developed by 2050.

The coming five-year (2021–2025) is a pivotal time period since it bridges the startup phase for recent ecological civilization initiatives and the new directions needed for 2020–2035. It represents the most opportune period to consolidate ecological progress in the transition to better performance on sustainable production and consumption; improved environmental and ecologically-based spatial planning and design for both urban and rural areas; industrial ecology based on no-waste advanced circular economy; green transportation; and emphasis on green amenities including national parks and recreational areas that will improve citizen and community health and well-being throughout the country. And, of course, success also will be measured by progress in the “War on Pollution”.

These challenges can be addressed by shifts in attitudes, training, and education; by improved incentive systems including changes in taxation, subsidies, and market-based cap-and-trade emission reduction systems; by seeking highly functional green supply chains; by adaptive planning and management systems; plus strengthened efforts to build financial, institutional, legal, and innovation systems compatible with ecological civilization needs.

The PRC government has indicated that by 2035 ecological civilization is to be in place as the essential basis for a modern PRC. This will require a strong emphasis on enhancing natural capital, improving

⁹ These and other topics related to the “greening of PRC” are explored in the many reports of CCICED, and many other PRC and international sources. See <http://www.cciced.net/cciceden/> and <https://www.sfu.ca/china-council/council-documents/council-documents1.html>

social and human capital, and taking full advantage of the many gains potentially available from improved spatial planning, innovative green technologies, and from the transition to a service economy. A medium-term plan can help by smoothing and accelerating the pace of transition for meeting various 2035 goals. It will require making strategic choices based on backcasting, scenario development, and modeling for ecological civilization. Also needed will be a strengthened adaptive planning and management approach based on a comprehensive and integrated ecological civilization analysis of all major development initiatives.

Experience elsewhere in the world suggests that old polluting and other damaging ways of development die hard. How can we exit from environmentally costly situations without destroying social cohesion? How can we build a national ecological civilization employment strategy, with options appropriate for the various regions of the PRC? How can we ensure the adoption of environmentally-sound lifestyles and expanding citizen participation in defining and refining the pathways to the PRC's greening? How can we address the need for synergies in solving complex problems such as pollution control and climate change mitigation? These complex questions need to be carefully considered during the preparation of the medium-term plan. They need to draw upon experience elsewhere, for example from the European Union and Nordic countries, and from large land area countries such as Australia, Canada, the Russian Federation, and the US. They can also take into account the experience of many pilot efforts on ecological civilization and related topics in the PRC.

Transitions are always difficult and require careful management, often with mid-course corrections. Transitions regarding environment will be paired with economic and social reforms, and with many other transitions, for example, urbanization and, internationally, with the PRC's changing roles in the world. The notes below highlight some important matters that could derail ecological civilization, or if well handled, perhaps expedite progress.

A. Avoiding Progress Traps

The term “progress traps” has been applied where the interaction between resource availability, environmental degradation, and the pursuit of progress through human ingenuity ends up causing problems that eventually damage or collapse a society or civilization. The shifts from agricultural to industrial and now to modern or post-modern civilizations can be considered from this perspective. The path to a progress trap is when “those in positions of authority are unwilling to make changes necessary for survival.” They can be related to reliance on technology without a willingness to fully address impacts, taking short-term approaches to what are long-term problems, vulnerability to takeover by vested interests, overspecialization in solutions, and, in an age of globalization, of underestimating the difficulty of overcoming governance shortcomings. As we see today, even when there is widespread concern for global climate change, a number of these factors cumulatively threaten the sustainable development applications of the Paris Agreement.

B. Accelerating the Peaking of High Consumption, Emissions and Ecological Damage

Accelerating the pace of achieving desirable environmental and development outcomes is essential. At the start, it can be costly, especially when the societal benefits are mainly longer-term. Peaking early is an important signal, since it builds credibility that solutions are possible; that a country, sector, or sustainability initiative is contributing to a larger goal; and that later stages of transition may be easier to implement since deleterious tipping points can be avoided, and the experience gained can lead to innovation and yield efficiencies.

Perception is important in tackling major problems such as those that relate to environmental quality and risk. At a national or lower level, an important political matter is whether authorities are perceived as leaders or laggards. If progress is perceived to be rapid, for example on reduction of environmental risks, citizens may be more willing to tolerate various transitional costs. Internationally, the PRC's image as an environmentally responsible global citizen and leader will depend in part if it is able to demonstrate direct values to developing countries, and to the global community, perhaps by early achievement of its own goals. This will buy precious environmental space for the decades ahead, plus direct economic benefits in the emerging green economy of the PRC and others. It should be noted that the benefits of this transition are not restricted to the low-carbon economy, but also to many aspects of ocean, freshwater and terrestrial ecological services, and to agriculture and other resource uses, and of course to industrial innovation.

C. Seeking Synergies and Integrated Transition Solutions for an Ecological Civilization

Seeking synergies goes to the heart of both sustainable development and ecological civilization. There are obvious advantages to be gained by treating air pollution and greenhouse gas emissions together. Protecting natural areas will help biodiversity conservation as well as provide ecological services of value to urban settlements and water supplies. Finding synergies is a means to reduce costs while getting better returns on ecological civilization investments. Addressing development synergies can also be a means of improving legal frameworks, financial incentives, and institutional arrangements.

There are various good cases already in place within the PRC, for example in electricity generation and transmission systems, and in the development of a national parks system. There remain many challenges throughout the PRC where potential sustainable development and ecological civilization opportunities are being missed. One is the ongoing struggle to improve groundwater quality and conservation. It is a vital part of human and ecosystem health improvement as well as protection from desertification. Another is the synergy possible between the designation and management of marine-protected areas and fish stock restoration. Ideally, synergies between climate change mitigation and adaptation and biodiversity conservation efforts should be one of the bedrocks for rural renewal, and taken into account in various initiatives including many new jobs and better ecological protection. Ecological redlining and very sophisticated functional zoning can help beyond the remarkable efforts so far undertaken.

Integrated strategies are essential, with important efforts such as the Yangtze River Economic Belt (YREB) already well advanced. They are large-scale experiments for sustainability transitions. They require adaptive planning and management in order to get optimized results. Also needed is financial continuity, testing of new models, and rigorous assessment with indicators that are likely to be quite different from past sectoral or single-track analysis. The PRC's recent efforts to create natural resource account systems, and to strengthen accountability on the part of officials will need further strengthening to meet the needs of ecological civilization.

The extensive efforts of existing ecological civilization provincial pilot efforts demonstrate how leadership and investment over a 15-year transition can be transformative. Two examples are: (i) the five-system approach for an ecological civilization transition followed in Zhejiang Province (an eco-economic system with a circular economy as the core, safeguarding system for natural resource sustainable utilization, ecological environmental system with beautiful mountains and rivers, population ecosystem in harmony between mankind and nature, and a scientific highly efficient capability support and guarantee system); and (ii) the modernization transition in Guizhou Province based on education, high tech industrial development, and the protection and enhancement of ecological and cultural assets. The transition provided a new economy and poverty elimination as well as safeguards for the environment.

D. Building Public Understanding, Participation, and Transition Direct Benefits

The PRC's ecological civilization has been promoted as a top-level effort. That has been very helpful since the signals have been strong, clear and quite consistent in terms of the main guidelines. However, the need for the full participation of people, communities and enterprises is necessary to successfully transition from some existing, often unsustainable conditions. This participation can take several forms: green purchasing and other consumption decisions; sustainability decisions take in the workplace and for other activities; becoming informed and understanding why and how to embrace ecological civilization; and direct involvement in ecological civilization projects and programs.

Of course, there will be expectations of direct benefits to the population, businesses and communities throughout transition periods. Moreover, there also are likely to be social adjustments, employment issues, and perhaps new limits imposed, for example, through ecological redlining. The success of the transition therefore will require transparency, access to relevant information and training, and equitable distribution of both benefits and burdens. Public and enterprise buy-in can be encouraged through incentives; a strong effort to address the needs of people disadvantaged by some aspects of the transition; adequate well-shared plans and environmental assessments; expanded availability and level of ecological goods and services; and a mix of short and longer-term quality-of-life improvements.

E. Finding Optimal Transition Sequencing

The PRC is fortunate to have a highly functional, multi-level planning system that is already well engaged with environment and development. The framework for ecological civilization is more or less in place, and some of the required reforms such as the transition to a service economy, with its environment and social considerations, are already well underway. However, what will be required over the next 15 years is far from clear in operational terms. It must be assumed that the manner in which transitions are sequenced is an important matter. Now is the time to devote effort to this, with backcasting from both 2050 and 2035, and with more detailed consideration of key outcomes for each of the 5-year plans leading up to 2035.

What is needed is a consideration of how the PRC's ecological systems will function under various situations of resource use, climate stress, and options of urban-rural development; likely possibilities for the maturation of a new green economy and development possibilities; the key factors influencing sustainable production and consumption transitions; and various elements of environmental risk reduction. These efforts are unlikely to be deterministic, but they can ensure that key transition elements are not overlooked, and where information is scarce, can set out research and pilot efforts to understand how transitions might be improved and linked.

V. ECOLOGICAL CIVILIZATION AS A CATALYST FOR REFORM AND PROGRESS

Ecological civilization sometimes is translated as ecological progress. This form can be thought of as improvements in the present state of natural capital—much the same as thinking about improvements in social progress and economic progress. Ecological progress is often associated with political aspects of ecological civilization since both national and local leaders are understandably anxious to show how their actions are valuable to citizens. Ecological civilization progress indicators and index systems are being worked on by many researchers. There is recognition that a credible scientific approach

is needed for such assessments—an approach compatible as much as possible with international efforts on sustainable development. These comments underscore the difficult matter of substantively demonstrating the value-added of any new approach, and its cost-effectiveness compared to less disruptive or even business-as-usual solutions.

One of the most important features of ecological civilization is that it acts as a catalyst for bringing together related components needed for green development. A prominent example is in the financial sector, where banks, insurance, and securities now operate with common green guidelines under the ecological civilization umbrella.¹⁰ Another example, which is still at an early stage, is the 2018 institutional reform of creating the new Ministry of Natural Resources, which brings together various institutions involved in land and water use, while keeping ecological and environmental regulatory oversight within the renamed Ministry of Ecology and Environment. Undoubtedly, these new arrangements will be significant contributors to ecological civilization construction. But there are significant issues about their capacity to deal with very strong central and sectoral institutions.

Macro-level economic reform, such as the shift toward an expanded service sector, has implications for ecological civilization implementation. However, many of the important transformations involving service-oriented activities may be covered via other specific topics involving the digital economy IT and artificial intelligence, innovations in the sharing economy, and the ever-expanding use of the internet. These aspects are not particularly well understood as to how they might relate (positively or negatively) to ecological civilization. An example is a current debate on using block chain technology for resource and environmental monitoring. This involves massive computer computations and high electricity use.

A key social macro-topic is reducing income inequalities and finding new job opportunities in rural areas. A link to ecological civilization is the disruptive aspects of finding space for nature. This can involve displacement of people and businesses from ecologically redlined areas, including parks and nature reserves. Ecological civilization can advocate co-management where local people take on new responsibilities, based on cultural and ecological or other experience, leading to stable livelihoods. This is already happening in many locations through eco-tourism and eco-compensation schemes.

The job creation potential of ecological civilization is certainly an active area for policy reform. Eco-compensation situations in the PRC are diverse but currently not necessarily optimal either in terms of approach for protecting the environment or for guaranteeing long-term jobs. Innovative technologies and institutional changes related to the green economy of the future can be pushed at a faster pace, with many direct and indirect implications for livelihoods. Creating an ecological civilization employment strategy is a sensible approach but still quite fragmented in reality.

Ecological civilization institutional development from the central government to local levels is still incomplete. It has been very helpful to have ecological civilization guidance provided through the Central Leading Group for Deepening Overall Reform to maintain a close relationship between economic and ecological reform. In particular, environmental quality and sustainability concerns are often used as drivers for painful economic reforms such as those involving the coal sector and heavy industries like steel and cement. Likely without this link, it would have been very much more difficult to bring about the recent progress on pollution control. The challenge now is to ensure that even better coordination can be carried out successfully at the various subnational levels, and on a greater variety of issues.

Another strategic matter is creating a robust legal framework for ecological civilization. There are several issues. At present, while there is strong interest on the part of the Supreme People's Court for strengthening environmental law, including enforcement efforts, there is not a defined approach for

¹⁰ See *Guidelines for Establishing the Green Financial System*. <http://www.pbc.gov.cn/english/130721/3133045/index.html>

ecological civilization law. Generally, the subject of ecological civilization has not been bundled into specific environmental laws or covered through regulations. Should there be a comprehensive ecological civilization law? Or would it be better to have ecological civilization introduced mainly through sector-based laws when they are reformed? Should an enabling approach be taken rather than punitive? These are questions that will need to be addressed over the time frame of the medium-term plan.

One of the hopeful signs for subnational progress is the designation and performance of ecological civilization pilot provinces and cities. The experiences of the Fujian, Guizhou, Zhejiang, and Jiangxi provinces, have been very positive in terms of economic transition and growth as well as ecological improvements.¹¹ Cities such as Shenzhen, Xiamen, and Changsha have been highlighted as examples of eco-cities or sustainable cities (UNDP 2016). It is time to transition from these pilot efforts into a broader base of experiences, with results assessed via a solid set of green accounting indices.¹²

Public participation in the construction of the PRC's ecological civilization still faces many challenges. There are tensions between the rapidly growing desire in the country's urban households for material goods and the idea of a moderately well-off society. There is insufficient information and suitable products available for those who want to follow green consumption lifestyles. It is difficult to gauge citizen feelings toward ecological civilization, including differences between city and countryside inhabitants; between youth and older people; and gender-based differences. Evidence, however, is strong that people are eager for contact with nature, including eco-tourism, and that people want clean, safe food. They link human and ecosystem health. Ecological civilization-oriented education and opportunities to make green choices in activities of daily living will be helpful. Demonstrated improvement in quality of life as a result of ecological civilization initiatives is a good way to convince people to embrace this new approach. Better still is to open opportunities for people, enterprises and social organizations to be partners.

This section has only skimmed the surface in considering how ecological civilization might act as a catalyst for reform and an integrated effort for progress on transformative change. Spatial planning and development can be one of the most important beneficiaries of ecological civilization. The PRC is undertaking remarkable efforts in this regard.¹³ Another often overlooked aspect demanding greater ecological civilization attention is the linkage between land, river and sea (Hanson 2018). The Blue Economy (Wenhai et al. 2019) based on ocean and coastal activities is seen by the PRC and many other countries as the source of untapped wealth as well as established activities such as fisheries, and marine transportation. The combination of development pressures as well as impacts from climate change, land-based sources of marine pollution, loss of coastal ecological habitat and other stresses has created crises in the PRC (CCICED 2019). These ecological-social-economic problems are not likely to be solved by the end of the 13th FYP. Hopefully they will be tackled effectively in the medium-term plan under the banner of a Blue Ecological Civilization effort.¹⁴ Some cities, notably Xiamen, have been very successful and provide good models for others.

¹¹ *A New Era of Eco-Civilization: Green Development, Prioritizing Eco Conservation*. 2018. Eco Forum Global Annual Conference Guiyang.

¹² In 2017, the National Bureau of Statistics (NBS) announced a green index that contains seven components: resource utilization, environmental management, environmental quality, ecological protection, growth quality, green life, and public satisfaction. Indicators such as total energy consumption, carbon emissions per unit of gross domestic product and total water consumption are to be assessed annually. See X. Zhiming. 2017. Beijing Tops Country's First Green Development Index. *China Daily*. 26 December. <http://www.chinadaily.com.cn/a/201712/26/WS5a41eb6fa31008cf16da3868.html>

¹³ A January 2019 presentation by Yang Weimin, Deputy Director of the Economic Committee of the National Committee of the Chinese People's Political Consultative Conference, "Toward a New Era of Ecological Progress", reviewed the PRC's regional spatial planning related to ecological civilization.

¹⁴ In fact, such an effort was started in the 13th FYP. According to the State Oceanographic Administration (SOA), "PRC aspires to build a sustainable marine ecological civilization."

VI. LEVERAGE POTENTIAL OF ECOLOGICAL CIVILIZATION INITIATIVES

In the years ahead ecological civilization will gain traction within the PRC through practical applications that demonstrate genuine improvements in coordinated development, with benefits for people, communities, and nature. Below are three examples that deserve considerable attention, since they are highly relevant to integrated development and structural reform. In each case the significance of taking an ecological civilization approach is briefly summarized in terms of how outcomes and benefits could be improved over the medium- or longer-term.

A. Rural Vitalization

The February 2018 No. 1 Central Document focused attention on the many needs for agricultural and rural vitalization (Wang and Zhuo 2018; USDA 2018), including ecological restoration of the countryside. While there will be a focus on village rejuvenation and agricultural practices, the effort will include new relationships between town and country, better rural infrastructure, and development of social capital that will reduce or eliminate income gaps. Development will be quality-driven, with due attention to environmental constraints, and new opportunities. Great attention must be given to the key attributes of capital types (natural, social, human, produced) and how these can be improved and linked.

Ecological civilization can provide an important framework, conceptually and practically, for the country's rural vitalization effort:

- Rural vitalization has to be based on maintenance, restoration and improvement of natural systems, including many that have been severely damaged. Ultimately, rural vitalization demands harmonization between people and nature throughout the PRC, and should take into account the characteristics of many different types of ecosystems.
- In the years and decades ahead, important but complex issues regarding land, water, and biological resources will need to be resolved. Among these issues are:
 - Establishment of new spaces for nature, including green corridors, an extensive national park system, ecological redlining, and improved functional zoning. Much of this effort will depend upon more sophisticated management strategies for watersheds, river basins, lakes and wetlands, coastal zone sub-regions, and landscapes. Ecological civilization provides the cover for improved planning and management that will require high levels of cooperation among agencies such as the new Ministry of Natural Resources, Ministry of Ecology and Environment, and also among sectoral and administrative bodies at national, provincial and local levels. New models for sustainable use will emerge and at various scales. Certainly none will be more significant than ecological civilization inspired directions in YREB.
 - Improvement in farmland use should be based on value-added production processes, ecological services and the potential of eco-compensation for farmers. Novel approaches are needed such as individual farm environmental plans. By 2035, or even before, when basic modernization of rural areas is completed (with attention to human health and pollution matters), green development will be advanced.
 - The new rural economy can draw upon specific types of closed loop manufacturing, circular economy, and low-carbon economy that will be minimize energy needs, reduce product losses in food and fiber production, and create very advanced green supply chains. Changes will depend on new green technologies and improved management systems.

- These should dramatically reduce eco-environmental footprints, safeguard biodiversity, help with both mitigation and adaptation to climate change, and with the multitude of water problems the PRC is currently facing regarding water quality, threats to aquifers, and problems related to natural disasters such as flooding and drought.
- Ecological and culturally based tourism will become a source of jobs and income in many more places than at present. Gateway cities will emerge and provide links between urban and countryside settings, for example, in proximity to national parks.
 - Today's human and social capital can only support a fraction of the ecological civilization needs essential for rural vitalization during the coming 5 to 10 years. Areas of concern include: capacity development directed to meet specific needs in specific geographic areas; enabling policies to retain and retrain rural families in new ecological skills and positions of co-management authority (an innovative example is the "River Chiefs" system).
 - The brain drain to the cities may well be reversed, with family members of a future generation united and able to enjoy prosperity on the land, but with good access to modern transportation and communication capabilities. Improvements are needed in public participation, transparency in decision-making, appropriate designs for village housing and infrastructure, and legal reform to guarantee land rights.

The No. 1 Central Document proposed that the full transformation to rural vitalization might take until 2050. While the tasks are arduous, let us hope that embracing ecological civilization can accelerate progress by at least a decade. System audits such as the first eco-environmental audit in the YREB (Chan 2018) could be taken as a model for determining the impact of ecological civilization on development improvements.

B. Low Carbon Cities and Towns

Throughout the world, cities vie for titles such as "greenest", "cleanest" or "best air quality", and "most sustainable". As climate change impacts become more severe, certainly some will try for "zero-carbon", or at least to be designated as a "low-carbon city". This is important since cities are viewed as innovators, with the financial, technical and motivational qualities to tackle greenhouse gas reductions.

The PRC has designated numerous pilot low carbon cities. With considerable success and a degree of competition among the cities (of different sizes and from different regions), this effort has expanded to become a national effort that is playing an important role in accelerating progress on the peaking of GHG emissions under the 2015 Paris Climate Change Agreement. This effort is helping to place the PRC into a global leadership position, even though currently its greenhouse gas emissions continue to climb (possibly not peaking until 2030). It will be much better that the PRC shift its greenhouse gas emissions peaking to an earlier date and set very rigorous goals in future, particularly since low-carbon economy is one of the key objectives in its ecological civilization strategy.

A recent performance analysis of 36 pilot low-carbon cities in the PRC makes several important observations and recommendations of what might be possible (Yang 2018). This study sets out four categories:

- (i) **Leading cities** where GDP per capita exceeds twice the national average;
- (ii) **Developing cities** where GDP per capita exceeds, but is lower than twice, the national average;
- (iii) **Latecomer cities** where GDP per capita is below the national average, but emission per capita is higher than the national average; and
- (iv) **Exploring cities** where GDP per capita and carbon emission per capita are below the national average.

As noted by Yang, a peaking roadmap (now from 2020 to 2030–2035) for the four categories suggests quite different paths and timing for each.

- (i) **Leading cities.** Carbon emission per capita will basically stop increasing or slow down from now on. They aim to achieve peak emissions by around 2020. After a period of plateau, the indicator of emission per capita will fall.
- (ii) **Developing cities.** Efforts should be taken to slow down the emission growth and actively promote the transition of the economy and of energy systems to achieve a relatively high emission peak by around 2025.
- (iii) **Latecomer cities.** Aim to achieve the peak emission by around 2030, attempt to realize a slowly rising in carbon emission by leap-forward development.
- (iv) **Exploring cities.** Aim to achieve the peak emission in 2030–2035, attempt to achieve a relative low emission level at the peak value .

These cities range in size and functional zoning classification from very large post-industrial cities such as Beijing in category (i) to ones in category (iv) such as Baoding and Guilin that may be either re-inventing themselves or are situated in settings with a strong nature connection.

If the PRC determines that faster progress is needed on carbon reductions, how can ecological civilization approaches help? One way is to scale up the existing pilot efforts. This is well underway and presumably will continue until all cities are covered. A second way is to use ecological civilization to seek synergies among various planning objectives and behaviour. Synergies can be found between climate change initiatives and those directed toward air pollution reduction. Also, there are opportunities via industrial modernization, various green or sustainable urbanization efforts, and through integrated energy systems such as smart grids. A third way is to focus on low carbon consumption choices in enterprises, institutions such as universities and, of course, lifestyles of people.

All these approaches are now well established in the PRC. However, there is much room for improvement, for example via public sector low carbon procurement policies. For enterprises, low-carbon incentives still need attention. As the PRC's urbanization proceeds, it will be very important to avoid lock-in effects based on older high carbon development models. The needs of smaller cities and towns may require special attention. Also, wherever they are located, low-carbon industrial parks and manufacturing facilities will be important contributors to a better future.

C. Innovation-Driven Development

Circular Economy, Water Ten (2015 PRC Water Pollution Prevention and Control Action Plan); Internet Plus; Smart Cities, Smart Grid, Sponge Cities—these and other new PRC buzzwords have one thing in common: they are all necessities arising from limited water resources to ensure a water-, energy-, food- and economically secure PRC. They form key components of the PRC's march to its goal of an innovation-led future economy to transform the economy so that it can continue to achieve economic development despite limited resources. These excerpts from the PRC Water Risk link ecological civilization with priorities in the PRC's innovation strategy.

“Made in PRC 2025” (Tan 2015), now a more rarely used innovation promotion term, was set out to be a decade-long action plan for creating a very advanced level of manufacturing, including energy saving and clean-energy vehicles, new materials, next generation IT, plus six other high tech, high value fields. The links to low carbon, circular economy, and environmental protection objectives are by no means as prominent as they might be. However, there are very significant investments in the areas noted. The 12th FYP list of seven strategic emerging industries contributed to the green orientation.

The fruits from these and other high-tech oriented research and development strategies are becoming available. Over the coming decade, they will become commercially feasible and form the foundation of Industry 4.0 (Fourth Industrial Revolution) innovation. Even by 2025 or sooner, tech innovation successes should breed further successes. An example is the broader range of high-precision environmental monitoring tools now available that will lead to better information on resource use efficiency. By 2035–2040, new products will have transformed many of the ways we can address eco-environmental matters. And by 2050, PRC expects to be deriving a very significant portion of its prosperity from innovation-derived products and processes.

Yet challenges such as sustainable water use will likely increase, while biological diversity and climate change issues also are expected to demand ever greater attention. So even with better technologies at hand, green innovations may not make as great an impact as we would hope unless there are strong supportive measures. These measures will center around continued economic and legal reform, continued efforts to build linkages around the various types of capital (including natural capital), and full participation in ecological civilization by consumers and producers. High tech innovations require buy-in at all levels, international to local; and overcoming existing powerful vested interests. The full transition to renewable energy sources is an example.

An important consideration is to align innovation reform policies with ecological civilization goals, and vice versa. Innovation processes to some extent are supply management concerns. The transition from fossil fuels to electrically powered vehicles has depended on breakthroughs in battery technology. This has required the sequencing of many secondary innovations to make this possible. The same is true at the moment for next generation initiatives in the circular economy, such as electronic devices like mobile phones. On another level are spatial considerations such as co-location to find synergies within industrial areas. As of December 2018, there were 168 High-Tech Zones in the PRC and many green industrial parks. These could be very helpful in terms of zero waste management, plus discovering new ecological civilization technological and process innovations. They do require standards and indicators to ensure their credibility and value (World Bank 2019).

Sometimes overlooked are the rural area innovations associated with natural resource management (e.g., high tech monitoring for ground water management), 5G data transfers, improvement of input efficiencies (drones and satellite applications), new products (e.g., from bamboo forests), biotechnology applications in ecological protection, and monitoring of ecological damage from advanced technologies, and the creation of novel entities. In cities and the countryside, these include new approaches to air conditioning, improved sewage and other waste treatment methods, and innovative approaches to soil management and restoration.

VIII. ECOLOGICAL CIVILIZATION BEYOND THE PEOPLE'S REPUBLIC OF CHINA

The PRC cannot expect to fully achieve its own environment and development goals without successful efforts on the part of other nations. This is most clearly seen regarding climate change, trans-boundary pollution, biodiversity issues, ocean sustainability, and linkages regarding environment, trade, and investment. Transformative and accelerated action during the coming decade is needed. Even if the Paris Agreement goals on climate change are fully met, and the UNSDG 2030 effort is successful globally, current levels of action are not enough to guarantee eco-environmental sustainability. Can ecological

civilization bring about new ways of thinking and additional opportunities to address the projected gaps and development needs? Hopefully, the answer is yes. And if so, will there be a receptive audience in other countries, especially those in the Belt and Road Initiative (BRI) partner countries, and those involved in south–south cooperation?

A. Regional and Global Ecological Civilization Action

A rationale is emerging for the roles that ecological civilization can play at the regional and global levels. Although such uptake internationally is still limited, there is growing interest on the part of some international organizations and countries. Urgent collaborative action involving the PRC internationally is needed for significant progress in the coming decade on global climate change, biodiversity and ecosystem protection, and new green growth and development initiatives. There are various entry points, including using ecological civilization’s capacity to create synergies in order to drive accelerated action on UNSDG 2030 goals at global and country levels, and enhance outcomes under the other environment and development conventions. Creating ecological civilization-oriented south–south cooperation initiatives provide another channel, as would efforts to make bilateral and multilateral trade and investment agreements compatible with ecological civilization principles, goals, and actions. Other channels include creating green supply chains of various types, with ecological civilization standards and procurement strategies; ensuring that the PRC and international enterprises observe ecological civilization-based corporate social responsibility; and improving international cooperation for green science and technology. Lastly, making ecological civilization a basis for decision-making by the PRC in its engagement abroad under BRI should become a very important channel.

Meeting national and local sustainability needs is, of course, the foundation upon which success at regional and global levels can be built. There are many examples of success in addressing specific sustainability issues in both developing and industrial nations. However, no country’s efforts have been successful in meeting comprehensive sustainable development strategies. While there is much talk of integrated goals, especially for addressing climate change, actual progress is still far too limited. International trade and investment fail to adequately address the range of serious impacts arising from globalization. Enterprises can and do play a significant role in contributing improved solutions for sustainable development. However, far too often the business sector falls short, or does not have the enabling conditions needed to make a full contribution.

B. Promoting Ecological Civilization at Regional and Global Levels

In September 2015 at the UN General Assembly, President Xi Jinping emphasized that all nations, including the PRC, need to meet their obligations toward building a sound global eco-environment (see Box 3).

Box 3. The People’s Republic of China’s Commitment to Global Ecological Sustainability

“In today’s world, all countries are interdependent and share a common future.... We should build an ecosystem that puts mother nature and green development first.... All members of the international community should work together to build a sound global eco-environment. We should respect nature, follow nature’s ways and protect nature. We should firmly pursue green, low-carbon, circular, and sustainable development. PRC will shoulder its share of responsibility and continue to play its part in this common endeavor...”

Excerpts of the Speech by People’s Republic of China President Xi Jinping, at the General Debate of the 70th Session of the UN General Assembly 28 September 2015.

Certainly there is a growing interest on the part of some international organizations, businesses and governments in ecological civilization. Yet uptake outside of the PRC has been limited.¹⁵ Some fairly obvious ways in which an ecological civilization approach could be of value regionally and globally include:

- **Supporting UNSDG 2030 action at global and country levels, and in various sectors.** The PRC's own experience during this coming decade may well be the most significant of any country for some sustainable development goals and targets. Sharing this experience, relevant technologies, and management reforms will accelerate progress elsewhere.
- **Using the ecological civilization banner to create synergies and accelerate action through the suite of global green conventions negotiated over the last 3 to 4 decades.** These include climate change, biodiversity, desertification, and oceans plus more specific ones such as the Ramsar Convention, Basel Convention, Mercury Convention, and several dozen more to which the PRC is a signatory.
- **Greening the BRI.** The BRI requires an environmental and long-term integrated approach to development in order to be successful (Tracy et al 2017). There are many opportunities to introduce ecological civilization as an ecological framework for green development with BRI partner countries. At the second annual BRI Forum for International Cooperation in April 2019, several sustainable development and green development initiatives were highlighted: BRI Sustainable Cities Alliance, BRI International Green Development Coalition; formulation of Green Investment Principles for BRI, Sustainable Development Goals for Children through Shared Development, BRI Environmental Big Data Platform, and the BRI South-South Cooperation Initiative on Climate Change (Xi 2019).
- **Creating ecological civilization-oriented south-south cooperation initiatives.** There are good opportunities to start projects and programs related to integrated approaches such as those needed to water basin management and coastal management; and for climate change adaptation. The PRC's south-south initiative related to climate change could be mirrored by a south-south fund for biodiversity conservation and perhaps another related to addressing desertification.
- **Making trade and investment agreements compatible with ecological civilization principles, goals, and practices.** The slow pace of World Trade Organization reform has stimulated various new arrangements, bilateral and regional arrangements involving the PRC. The need is to ensure consistency toward environmental concerns, and to ensure adequate monitoring in new agreements. The PRC has been selective in taking such action, particularly by not including dispute resolution mechanisms for environmental matters. Possibly the future will see changes in this approach, especially in agreements with developed nations—including matters such as green technology transfers, and environmental standards. It is in the PRC's best interests, given the transition to a new green economy to have favorable treatment of green products and services. Generally, the ecological civilization concept does not appear to be embedded in trade and investment arrangements.
- **Setting standards, procurement policies and other arrangements for green supply chains.** The PRC has been active with Asia-Pacific Economic Cooperation on establishing a green supply chain network with a hub based in Tianjin. Also, considerable effort has been put into the harmonizing of the PRC and international green standards. This topic is of major significance to both producers and consumers. Recently the Alliance of Green Consumption and Green Supply Chain has been established in the PRC as a platform for sharing of the PRC and international experience on sustainable consumption, while "promoting the development of ecological civilization and green development".

¹⁵ UNEP's 27th council meeting in February 2013 adopted a decision promoting the PRC's ecological civilization. The concept was introduced by Xi Jinping in his speech at the World Economic Forum at Davos.

- **Involving multinational and PRC enterprises working internationally and in the PRC on matters of corporate social responsibility.** This theme is by no means new, yet much more effort is still needed. This is a reputational matter for PRC enterprises abroad, as well as for multinationals operating in the PRC. Corporate social responsibility guidelines issued by the Ministry of Commerce mainly place these considerations in terms of sustainable development rather than ecological civilization (SSCR 2014). Perhaps that situation will change in the years ahead.
- **Increasing science and technology international cooperation for green tech.** Green technologies will be the basis for sustainable production, and therefore offer a broader range of consumer sustainable choices. Consider the world of 2025–2035 when the following technologies are widespread: wind and solar power; smart electrical power grids; electric automobiles, and lithium battery production; robotization; innovation in land management including remote sensing and detailed mapping for ecosystems and sensitive landscapes; organic agriculture based on environmentally friendly, water-efficient biotechnologies; traceable supply chains for foods, most other goods and materials (CCICEDb 2017). The PRC can be a leader for some of these areas. For others, they will depend on advances elsewhere.

VIII. CONCLUSIONS

The significance of ecological civilization is that it provides a coherent conceptual framework for major adjustments in approach to development needed to meet 21st century challenges. Ecological civilization therefore should become a practical compass for development as well as a philosophy. Many practical applications are required to demonstrate genuine improvements in coordinated development, with benefits for people, communities, and nature. Fortunately, there are already good starting points as noted in this paper. In the years ahead, ecological civilization will need to gain traction both within and outside of the PRC. This can be done by ensuring continuity through a combination of a robust mid-term ecological civilization strategy for 2020–2035, plus overall shaping of the medium-term plan toward this strategy.

A. Integrated Approaches

Environment and development issues involve complex systems where outcomes are not easy to predict. Often the call is for integrated approaches to problem-solving, especially for spatial and cross-sectoral issues. But these are not easy to implement, for example, in the UNSDG 2030. As ecological civilization becomes a dominant development approach in the PRC it will be wise to consider additional terms besides “integrated” in describing development needs. Three phrases come to mind: alignment of objectives, cohesion in approach, and synergies to optimize benefits. Applying these concepts should lead to better development outcomes, even if full integration is not immediately possible. Such is the case for the massive adjustments required for river basin systems like the YREB, for green urbanization, and for greening of the BRI.

Perhaps the most significant situation where the term “integrated” should apply is for ecological civilization rural renewal initiatives. It is in the rural areas where ecological degradation is felt most acutely and on the largest scale. It is where precious water resources must be conserved and soil loss stopped. Arguably, it is also where improvements from ecological civilization innovation can have the greatest positive impact on people. The ecological civilization improvements to the countryside will include ecological service enhancement and many other benefits. Hopefully, these can provide a better quality

of life for all: prosperity for rural dwellers; migrants moving into greener cities; and urban and suburban residents who will have health benefits, recreation opportunities and lower environmental risks from flooding. In fact, the benefits can reach far beyond the PRC since better land use in the country can influence the course of climate change and biodiversity protection, as well as reduce the ecological footprint of Chinese consumption habits elsewhere on the planet.

B. Alignment with Overall Structural Reform

The implementation of an ecological civilization-centered development strategy is still confronted with several challenges related to economic and social reforms. These partly reflect a need to develop the legal, judicial, and institutional frameworks that will fully embed ecological civilization into policy making. The disruptive aspects of ecological civilization will also need to be carefully managed. Key elements include the development of an employment strategy and the development of eco-compensation instruments to maintain social harmony between potential winners and losers. Optimal pathways and timing of ecological civilization approaches need to link more closely and comprehensively with macroeconomic reform as new elements of the economy take shape. It is especially the case for those associated with the sharing economy, with an expanded and reformed circular economy, and components of an advanced digital economy that will emphasize the “economy of things”. It will be interesting to see whether a well-defined ecological civilization economy will emerge at some point.

C. Accelerated Pace of Action

During the 13th FYP, the PRC has been very progressive in bringing forward a full action agenda regarding eco-environment. In fact, there is already a transformative set of changes with many opportunities and points of intervention to accelerate progress, for example, in the “War on Pollution”, ecological redlining, and various energy and environment initiatives. But it is still not enough. Some leading reasons to promote accelerated action during the next FYP include: addressing global environmental change now to avoid catastrophic events and very high costs later; allowing for comprehensive improvements that take advantage of synergies and co-benefits; making green products and technology available sooner for consumers and businesses, thus avoiding slides toward high consumption lifestyles; seeking fast reduction in public health risks, especially for vulnerable groups such as children; and realizing the savings that arise from industrial and other built environment eco-efficiencies. Early successes will breed further successes, and will move laggards to act.

D. Adaptive Planning and Management

Ecological civilization initiatives require adaptive planning and management, mid-course corrections, and opportunities to take full advantage of technology advances and behavioral changes. We can expect future global shocks, whether from ecological factors like climate change, political and economic shifts such as those affecting trade and investment, plus national level shocks such as the impacts of an aging population, or from the transition to a zero-waste society. Ecological civilization initiatives should build resilience and take advantage of opportunities when these shocks are felt. For some situations this will be a decades-long process. For example, restored forests and grasslands may take 30 to 70 years or more to build the soil and rich biodiversity desired. Lock-in effects arising from urban or transportation design may be of even longer duration.

Immediate needs in eco-environmental adaptive planning and management include building a better ability to address poverty reduction, green jobs in the countryside, and reduction in current inequalities of income, educational opportunities and other disparities. An emphasis on long-term arrangements for eco-compensation, co-management of parks and nature reserves in some areas, and ecological construction are all means for improving green development. These arrangements may work best when they are based on relationships between those seeking livelihoods and the beneficiaries of ecological

services. The important thing is to build long-term, predictable arrangements that will provide benefits to poorer people and communities.

An important but unresolved dilemma is how to look into the future we want. This makes it difficult to define the pathways to best get there. Even with good scenario construction, modeling and backcasting efforts, we lack full insight into the possibilities and opportunities of tomorrow. Although work is underway, there is no truly robust and trustworthy set of standards and indices for ecological civilization. The current national accounts still do not adequately address environmental and ecological values, especially ecological services. These and other problems are not to be taken lightly since the investments required for addressing eco-environmental issues will continue to be substantial and grow during this coming decade and beyond. Advances in the metrics should certainly be possible. Two very important points are the need for (i) changes and recalibration in the existing macroeconomic models; and (ii) greater focus on social factors including environment and human health, happiness, and other subjective matters related to quality of life, mainstreaming of gender aspects, and other factors important in achieving a *Beautiful PRC* by mid-century.

E. Broad Participation in Ecological Civilization Construction

Tensions with rapidly expanding consumerism and the government's expectation of building a moderately well-off society will need to be resolved, as will those arising from differences in perception between younger and older people, and between rural and urban residents. To succeed, enterprises and social organizations will need to be full partners with government in the construction of ecological civilization development.

A balance between top-down guidance and bottom-up strategies based on incentive structures and mechanisms for influencing public opinion will be needed. Most critically, the successful implementation of ecological civilization depends on a shift toward values underpinning green development. This will be vital for securing household participation, and for building demand for green technologies and goods and services that will underpin an ecological civilization influenced economy. Citizens must adjust their consumption habits, lifestyles and behaviors to be in line with a conserver society. Enterprises will have to provide much of the investment needed.

F. International Ecological Civilization—Sustainable Development Cooperation

The PRC will need to help in the building of international coalitions and partnerships of the willing to ensure that green progress happens globally. The PRC's most significant entry point for taking ecological civilization ideas abroad is the BRI. Ideally, not only should there be partnerships between the PRC and other individual countries, but there should also be regional efforts centered around particular themes. Examples might include specific sectoral activities such as clean water, greening of ports, aspects of climate change and biodiversity protection such as reforestation and carbon credits, and many others. Southeast Asian and Central Asian countries, plus other bordering nations are already engaged on environment and development matters. The common ground is UNSDG 2030. There can be additional strengthening through the involvement of international nongovernmental/social organizations that are active in many parts of the world including the PRC. A number of these are very interested or actively seeking engagement on ecological civilization. Similarly, enterprises, UN bodies, and other international organizations are potential allies.

The international display of interest in the PRC's ecological civilization, while on the upswing at present, cannot be guaranteed to continue over the long-term. Certainly the interest should not displace the effort expended on matters such as the UNSDG 2030. What the PRC can and should do, is to demonstrate by its actions the value of ecological civilization initiatives domestically and to others. Also,

to show how collaboration on matters such as green technology innovation can be combined with the PRC's ability and means to swiftly and cost-effectively implement better sustainability options. This approach already has worked on some aspects of low-carbon economy, and could be used to define new directions in the case of circular economy.

The October 2020 Conference of Parties (COP) 15 to the Global Biological Diversity Convention will take place in Kunming. This meeting will set out directions governing goals for the coming decade to reverse the crisis in biodiversity loss, reduce threats to ecological services, and seek new pathways for ecological restoration, or as the PRC would say—ecological construction. It is timely that this meeting will focus global attention on ecological civilization. The outcome will be a test of its persuasive value in the politics of global governance, just as the 2015 Paris Agreement demonstrated a new path to climate change.

To summarize, the tasks outlined in this paper are daunting. However, they are central to a future where all people can prosper while living within safe bounds of our planet's complex and changing ecological conditions. For achieving success, no country is more important than the PRC. And it can be successful in its ecological civilization endeavor only through effective collaboration and partnerships both globally and locally.

REFERENCES

The Alliance of Green Consumption and Green Supply Chain (GCSG) in China. <http://www.oneplanetnetwork.org/initiative/alliance-green-consumption-and-green-supply-chain-gcsg-china>

A. Baeumler, E. Ijjasz-Vasquez, and S. Mehndiratta, eds. 2012. *Sustainable Low-Carbon City Development in China*. Washington, D.C.: World Bank. https://siteresources.worldbank.org/EXTNEWSCHINESE/Resources/3196537-1202098669693/4635541-1335945747603/low_carbon_city_full_en.pdf

Chan, W. 2018. Audit! Yangtze River Economic Belt. China Water Risk. <http://www.chinawaterrisk.org/resources/analysis-reviews/audit-yangtze-river-economic-belt/>

Cheever, F. and J. C. Dernbach. 2015. Sustainable Development and Its Discontents. *Digital Commons @ DU*. https://digitalcommons.du.edu/cgi/viewcontent.cgi?article=1021&context=law_facpub

China Council for International Cooperation on Environment and Development (CCICED). 2016a. China's Ecological Civilization and the World. *CCICED Issues Paper*. <http://www.cciced.net/cciceden/POLICY/rr/Issuespaper/201612/P020161214521507778827.pdf>.

———. 2016b. *CCICED Task Force Report: South–South Cooperation for Ecological Civilization (Draft)*. <http://www.cciced.net/cciceden/POLICY/rr/prr/2016/201612/P020170116339502327669.pdf>

———. 2017a. *CCICED Issues Papers. 2012–2016*. CCICED.

———. 2017b. Ecological Civilization Shaping China's New Era. *CCICED Issues Paper*. <http://www.cciced.net/cciceden/Events/AGM/2017/file/201712/P020171204603690948624.pdf>

———. 2019. *CCICED Task Force Report: Special Policy Study on Global Ocean Governance and Ecological Civilization*. <https://www.iisd.org/sites/default/files/publications/cciced/agm/cciced-sps-1-3-oceans.pdf>

Diamond, J. 2011. 2d. *Collapse: How Societies Choose to Fail or Succeed*. Penguin Books.

Elvin, M. 2006. *The Retreat of the Elephants: An Environmental History of China*. Yale University Press.

Fu, J. 2018. We Should Push Countries along “Belt and Road Initiative” to Build Green Supply Chain. *China and the World: Ancient and Modern Silk Road*. 1(1). pp. 1–12. <https://www.worldscientific.com/doi/pdf/10.1142/S2591729318500062>

Gao, J. 2017. China's Evolving Approach to Environmental and Labour Provisions in Regional Trade Agreements. International Centre for Trade and Sustainable Development. 25 August. <https://www.ictsd.org/opinion/china-3>

Geail, S. 2015. *Interpreting Ecological Civilization. Parts 1 (Vision) 2 (Policy) and 3 (Standards, Mechanisms and Assessment)*. China Dialogue.

Global Footprint Network. <https://www.footprintnetwork.org>; also, see a series of *China Ecological Footprint* publications produced by WWF PRC. https://www.footprintnetwork.org/content/uploads/2018/01/2015_Living_Planet_Report_China_English.pdf

- Goron, C. 2018. Ecological Civilisation and the Political Limits of a Chinese Concept of Sustainability. *China Perspectives*. 2018(4). pp. 39-52. <https://journals.openedition.org/chinaperspectives/8463>
- Government of the PRC. 2016. The PRC's National Plan on Implementation of the 2030 Agenda for Sustainable Development. [http://www.chinadaily.com.cn/specials/China%27sNationalPlan\(EN\)\(1\).pdf](http://www.chinadaily.com.cn/specials/China%27sNationalPlan(EN)(1).pdf)
- Government of the PRC, China Environmental United Certification Center (CEC). 2017. "Alliance of Green Consumption and Green Supply Chain" Established in Beijing. News Release. 11 December. <http://en.mepcec.com/news/show-2217.html>
- Government of the United States, Department of Agriculture. 2018. *China: China's Annual Agricultural Policy Goals*. Attache Report. USDA.
- Groff, S. 2018. Supporting the PRC's "Mother River" Will Help Achieve Ecological Civilization. Manila: ADB. News release. <https://blogs.adb.org/blog/supporting-prcs-mother-river-will-help-achieve-ecological-civilization>
- Hanson, A. 2013. *China and Ecological Civilization*. China Council for International Cooperation on Environment and Development (CCICED). Various articles from *Eco-Forum Global Annual Conference 2013-2018*.
- . 2018. *The Ocean and China's Drive for an Ecological Civilization*. <https://brill.com/view/book/edcoll/9789004380271/BP000012.xml?lang=en>
- Homer-Dixon, T. 2006. *The Upside of Down: Catastrophe, Creativity and the Renewal of Civilization*. Toronto: A.A. Knopf Canada; https://en.wikipedia.org/wiki/Progress_trap
- Hunter, G. et al. 2019. Sustainability of Low Carbon City Initiatives in China: A Comprehensive Literature Review. *Sustainability*. 11: 4342. <https://www.mdpi.com/2071-1050/11/16/4342/htm>
- Innovative Green Development Program. 2015. Low Carbon Cities in China: National Policies and City Action Factsheets. http://www.efchina.org/Attachments/Report/report-cemp-20151020/iGDP_CityPolicyFactsheet_EN.pdf
- Lewis, S. L. and M. A. Maslin. 2018. *The Human Planet—How We Created the Anthropocene*. Yale University Press. <https://yalebooks.yale.edu/book/9780300232172/human-planet>
- Lu, Y. et al. 2019. Forty Years of Reform and Opening Up: China's Progress Toward a Sustainable Path. *Science Advances*. 5(8). <https://advances.sciencemag.org/content/5/8/eaau9413>
- Marinelli, M. 2018. How to Build a 'Beautiful China' in the Anthropocene. The Political Discourse and the Intellectual Debate on Ecological Civilization. *Journal of Chinese Political Science*. 23(3). pp. 365-386. <https://link.springer.com/article/10.1007/s11366-018-9538-7>
- National Development and Reform Commission (NDRC). 2016. Notice on Publishing Green Development Index System and Evaluation Target System of Ecological Civilization Construction. (in Chinese). http://www.ndrc.gov.cn/zcfb/zcfbtz/201612/t20161222_832303.html
- Pan, J. 2014/2016. *China's Environmental Governing and Ecological Civilization*. China's Social Sciences Press and Springer. (Translated from Chinese).

Pan, Xiang-chao. 2018. Research on Ecological Civilization Construction and Environmental Sustainable Development in the New Era. *IOP Conference Series: Earth and Environmental Science*. 153. 062080. https://www.researchgate.net/publication/325519789_Research_on_Ecological_Civilization_Construction_and_Environmental_Sustainable_Development_in_the_New_Era/

Ponting, C. 1993. *A Green History of the World: The Environment and the Collapse of Great Civilizations*. Penguin Books.

Sarker, Md. N. I. et al. 2018. Low Carbon City Development in China in the Context of New Type of Urbanization. *Low Carbon Economy*. 9. pp. 45-61. <https://doi.org/10.4236/lce.2018.91004>

Sino-Swedish Corporate Responsibility (SSCR). 2014. *Guidelines to the State-owned Enterprises Directly under the Central Government on Fulfilling Corporate Social Responsibilities*. <http://csr2.mofcom.gov.cn/article/policies/national/sasac/201410/20141000753366.shtml>

System of Environmental Economic Accounting. Ecosystem Accounting and Ecological Civilization in China. <https://seea.un.org/news/ecosystem-accounting-and-ecological-civilization-china>

Tan, D. 2015. Made in China 2025: Are You On The List? *China Water Risk*. <http://www.chinawaterrisk.org/opinions/made-in-china-2025-are-you-on-the-list/>

Tracy, E. F. et al. 2017. China's New Eurasian Ambitions: the Environmental Risks of the Silk Road Economic Belt. *Eurasian Geography and Economics*. 58:1. pp. 56-88. <https://www.tandfonline.com/doi/full/10.1080/15387216.2017.1295876>.

United Nations. 2019. *Global Sustainable Report 2019: The Future Is Now—Science for Achieving Sustainable Development*. https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf

United Nations Development Programme (UNDP). 2015. China's Success on Millennium Development Goals Provides an Example for Others to Follow for the Post-2015 Development Agenda, Says New UNDP Report. News release. 17 February. <https://www.undp.org/content/undp/en/home/presscenter/articles/2015/02/17/china-s-success-on-millennium-development-goals-provides-an-example-for-others-to-follow-for-the-post-2015-development-agenda-says-new-undp-report0.html>

———. 2016. *China Sustainable Cities Report 2016: Measuring Ecological Input and Human Development*. Beijing: UNDP in the PRC. http://www.cn.undp.org/content/china/en/home/library/democratic_governance/china-sustainable-cities-report-2016--measuring-ecological-input.html

United Nations Environment Programme (UNEP) and Policy Research Center for Environment and Economy (PRCEE). 2016. *Green is Gold. The Strategy and Actions of China's Ecological Civilization*. Kenya.

Wang, H. and Y. Zhuo. 2018. The Necessary Way for the Development of China's Rural Areas in the New Era-Rural Revitalization Strategy. *Open Journal of Social Sciences*, 6, pp. 97-106. https://file.scirp.org/pdf/JSS_2018060816065815.pdf

Wang, X. and X. Chen. 2019. An Evaluation Index System of China's Development Level of Ecological Civilization. *Sustainability*. 11(8). <https://doi.org/10.3390/su11082270>

Wenhai, L. et al. 2019. Successful Blue Economy Examples with an Emphasis on International Perspectives. *Frontiers in Marine Science*. 7 June. <https://doi.org/10.3389/fmars.2019.00261>

World Bank. 2019. *Enhancing China's Regulatory Framework for Eco-Industrial Parks Comparative Analysis of Chinese and International Green Standards*. Washington, D.C. <http://documents.worldbank.org/curated/en/950911554814522228/pdf/Enhancing-China-s-Regulatory-Framework-for-Eco-Industrial-Parks-Comparative-Analysis-of-Chinese-and-International-Green-Standards.pdf>

Wright, R. 2004. *A Short History of Progress*. Toronto: Anansi Press.

Xi, Jinping. 2019. Keynote Speech. Second Annual Belt and Road Forum for International Cooperation 2019. 26 April. <http://www.cpecinfo.com/news/the-complete-text-of-president-xi-jinping-speech-at-the-belt-and-road-forum-for-international-cooperation-2019/NzAwMQ==>

Xie, Z. and J. Pan. 2018. *China's Road of Green Development*. Foreign Language Press.

Yang, X, et al. 2018. Development Path of Chinese Low-Carbon Cities Based on Index Evaluation. *Advances in Climate Change Research*. 9(2). pp. 144-153. <https://www.sciencedirect.com/science/article/pii/S1674927817301223#!>

Yi, W. 2012. China's Sustainable Development in the Shifting Global Context. *Sustainable Development*. 26(3). pp. 183-190. http://english.cas.cn/bcas/2012_3/201411/P020141121531782671178.pdf

Ecological Civilization in the People’s Republic of China: Values, Action, and Future Needs

Ecological civilization is being used by the People’s Republic of China (PRC) to provide a coherent conceptual framework for adjustments to development that meets 21st century challenges. This paper explores three aspects of ecological civilization: (i) its significance as a concept; (ii) challenges for applying it widely as a catalyst for reform and progress within the PRC; and (iii) strategic opportunities for its use in transformative change toward a new relationship between people and nature to guide future development in the country. In addition, it explores the potential value and roles of ecological civilization beyond the PRC.

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