

CCICED 2014 ISSUES PAPER¹

From Tipping Point to Turning Point

INTRODUCTION

China has looked into the future and desires change. That point clearly emerged during the November 2013 Third Plenum of the CPC 18th Party Congress. By more aggressively tackling sensitive issues such as corruption, market-based development and environmental improvement, the new leadership of China has laid out a pathway towards continued prosperity, social development and ecological security. The goal is a “Beautiful China” and, ultimately, a shift towards an Ecological Civilization (*Shengtai Wenming*).

The “Five in One” approach, as articulated during the 3rd Plenum, is to place progress in addressing Ecological Civilization at the same top policy level as the other four key policy themes so that there is adequate progress (*jinbu*) in dealing with: economic development, social development, political development and cultural matters. Thus Ecological Civilization, a concept that has been discussed since at least 2007 in Chinese government and political circles, will bring new perspectives and priority to environment and development policies and action. Most recently, at a meeting of officials on 2 September 2014, Premier Li Keqiang kicked off planning for the 13th Five Year Plan (2016-2020), indicating that it is “the final dash” to a comprehensive well-off society.² He said that officials should “support initiatives that promoted social development, environmental protection and improved people’s livelihood as well as measures to promote fairness and efficiency.”³

2013 was marked by an extreme environmental situation in China, a *tipping point* in terms of hazardous levels of urban air quality. Unless the environment and development effort is substantially more successful in the years ahead, perhaps even more devastating environmental tipping points could occur. Such tipping points can express themselves suddenly and severely, and cost a great deal to address effectively.⁴ Some possible examples include disasters related to mining sites and tailing ponds, soil and groundwater contamination, effects related to climate change, and disruptive pest and disease situations. Will such a gloomy outlook for China necessarily become an inevitable outcome? Hopefully not.

¹ The Issues Paper is prepared each year by the CCICED Chief Advisors, Arthur Hanson and Shen Guofang with inputs from the Chief Advisors Group and from others.

² China Daily. 5 September 2014. *Li: Plan to be Driving Force of Economy*.

³ South China Morning Post. 5 September 2014. *State Council Kicks Off Drafting of Five-Year Plan*.

⁴ Environmental tipping points on environmental matters may have one or more of the following characteristics: *There is a threshold beyond which an abrupt shift of ecological states occurs, although the threshold point can rarely be predicted with precision; the changes are long-lasting and hard to reverse; there is a significant time lag between the pressures driving the change and the appearance of impacts, creating great difficulties in ecological management.* (Observations from Biodiversity Information System for Europe. <http://biodiversity.europa.eu/topics/tipping-points>). Alex Wang. 2012. *China’s Environmental Tipping Point*. Chapter 5 in *China in and beyond the Headlines*. Timothy Weston, Lionel Jensen, eds. Rowman and Littlefield Publishers. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2130452

Many other nations have experienced severe environmental tipping points⁵—where an event crystalizes public fear and anger and makes it essential that government act effectively to address the challenge. In China’s case the response to overtly awful air pollution is a “War on Pollution” declared in March 2014⁶, with a comprehensive Air Pollution Action Plan (2014 to 2017), and the expectation that two other environmental action plans (water pollution, soil pollution) will be initiated in 2014 and beyond.

On this more hopeful note, and with a broad range of commitments (see Table 1) being made by China’s top-level leaders, a *turning point* may be reached, where there is gradual, or perhaps even dramatic shifts toward improved environmental quality, sustainable development and progress made along new pathways towards Ecological Civilization. An obvious concern is to ensure that the current large gaps between national expectations for environmental improvements and local capacity to deliver results are reduced or eliminated. To secure this turning point will require massive effort in the form of a Green Transition and new Green Development patterns. These elements of change will be in line with the current efforts taking place at the global level towards a post-2015 identification of sustainable development goals and action, and other efforts such as those being discussed globally by the United Nations for climate change, biodiversity and other environment and development concerns.

Thus China continues to be at a crossroads: tipping point or turning point on key environment and development issues. China has a *window of opportunity* right now that may not occur easily again.

This window has occurred in part because of public concern over environmental issues. A recent Pew survey⁷ in some 40 countries of 5 top global threats revealed that a third of the 3,000+ Chinese respondents listed pollution and environment as the leading global threat. This is one of the highest levels recorded worldwide, and was the largest single concern among the five for Chinese. The focus on governance reform by China’s current administration almost immediately after taking office is a second reason. Third is the widespread recognition of the ecological and environmental damage in relation to quality of life and economic cost. And, fourth, China is paying a reputational price internationally, especially as incident after incident of air pollution and other problems are reported. The impact is on tourism, potentially on China’s ability to stay competitive, and on China’s ability to attract high caliber businesses and expertise needed for the next phase of economic growth.

This year’s CCICED work is related particularly to the institutional innovation and other changes needed to accelerate movement towards Ecological Civilization and Green Development.⁸ Hopefully such changes can lead to good turning points, and to a new environment and economy relationship consistent with the moderately well-off

⁵ See examples in the database of the Resilience Network.

<http://www.resalliance.org/index.php/database>

⁶ <http://www.reuters.com/article/2014/03/05/us-china-parliament-pollution-idUSBREA2405W20140305>

⁷ <http://www.pewglobal.org/files/2014/10/Pew-Research-Center-Dangers-Report-FINAL-October-16-2014.pdf>

⁸ The 2014 CCICED AGM theme is *Management and Institutional Innovation in Green Development*.

Xiaokang Society desired by 2020, and with better prospects for creating an Ecological Civilization in subsequent decades.

CCICED is well placed to provide inputs during this window of opportunity for policy changes. Indeed, the current work program is directed at identifying policy recommendations that can be implemented swiftly and effectively regarding priorities arising from the 3rd Plenum. The four Special Policy Studies for 2014 particularly address items from the Plenum and subsequent action.⁹ But there is also a need to set out longer-term perspectives consistent with Ecological Civilization. The two 2014 Task Forces are intended to address this major need.

The CCICED Task Force on Evaluation and Prospects for a Green Transition Process in China has examined the compatibility of selected economic policy actions taken in the past decade and their impact on pollution so that new, more appropriate economic decisions might be proposed for the future. The Task Force on Institutional Innovation for Environmental Protection in the Context of Ecological Civilization has examined the inadequacies of the current institutional structure in terms of addressing future needs, and has examined key innovations from experiences within China and internationally.

A WINDOW OF OPPORTUNITY IN CHINA

This past year will likely be viewed as one of the most transformative periods of China's policy change. A window of opportunity has opened in an unprecedented fashion. Several issues of long-standing social and economic concern are being addressed, such as the *hukou* system of place of residence restrictions, introduction of property taxes, softening of one-child family rules, deregulation and market based reforms, action to avoid heavy industry overinvestment, promotion of the service economy, domestic consumption, and a shift to improved urbanization models.¹⁰

The passing of a major revision to China's Environmental Protection Law, slated to come into effect in January 2015, is a major achievement that addresses key concerns such as much more severe punishment for environmental pollution and other actions that damage the environment, improved public participation and transparency in environmental information disclosure, and more effective involvement of enterprises on environmental improvements.¹¹ Over this past year, rarely has a week gone by without important improvements to environment and development policies and

⁹ The 4 CCICED SPS topics are: *Performance Evaluation on the Action Plan of Air Pollution Prevention and Control and Regional Coordination Mechanism; Institutional Innovation of Eco-Environmental Redlining; Good City Models under the Concept of Ecological Civilization; and Chinese Environmental Audit System for Government Officials.*

¹⁰ See Barry Naughton. July 2014 'Deepening Reform': *The Organization and the Emerging Strategy.* Hoover Institute. China Monitor No. 44.

<http://www.hoover.org/sites/default/files/research/docs/clm44bn.pdf>

¹¹ Numerous articles are available concerning the details of the revised law, including:

http://www.npc.gov.cn/englishnpc/news/Legislation/2014-04/25/content_1861275.htm

<http://www.chinalawinsight.com/2014/05/articles/compliance/environmental-protection-law-big-changes-in-2014-2> ;

http://switchboard.nrdc.org/blogs/bfinamore/new_weapons_in_the_war_on_poll.html ;

http://news.xinhuanet.com/english/china/2014-04/24/c_133287570.htm ; <http://asiafoundation.org/in-asia/2014/05/28/chinas-environmental-protection-law-lays-groundwork-for-greater-transparency>

actions (see Table 1 for examples). The budgets in place or proposed for addressing environmental protection issues continue to rise, sometimes dramatically—as in the case of funding for the Air Pollution Action Plan.

Table 1. Selected Environment and Development Initiatives Announced November 2013 – October 2014

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- NPC approval of revised Environmental Law (March 2014)
 - “War on Pollution” action including Air, Water Soil Action Plans (Air in March 2014, others pending)
 - Lifetime accountability for officials’ environmental performance (July 2014)
 - Ecological redlining to serve as a baseline for protecting ecological functions and environmentally-fragile areas (December 2013)
 - Strengthened role of courts and appointment of judges to assist in the court system’s capacity development and competency regarding environmental matters (July 2014)
 - Green procurement through purchase of electric vehicles by government agencies; waiving of 10% purchase tax for EVs; significant government investment in national network of charging stations for EVs (August-September 2014)
 - Green Market Supply Chains / Procurement Centers, Tianjin and APEC (May 2014)
 - Guidelines on Urbanization including environmental protection criteria (December 2013)
 - State Council Reaffirmation of China’s Climate Change Goals to 2020 (September 2014)
 - First draft Revision of China Air Pollution Act released for comment (September 2014)
 - National Carbon Market projected to begin in 2016 (August 2014)
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The unprecedented level of attention over this past year to pollution control, green development and ecological construction is quite remarkable, as is the overall governmental attention to Ecological Civilization. This level of attention is driven in part by public concern, but also by a deeply-held belief that past models of Chinese economic development are inadequate for the future, more comprehensive and integrative approaches required for sustainable development. For some issues, the credibility of the CPC is at stake and therefore a matter of concern to the governance system at all levels.

Given the current level of governmental responsiveness, it is a time when swift action is not only possible but also politically desirable. It means that a window of opportunity now exists to implement environment and development ideas that in the past have faced political or bureaucratic acceptance difficulties. Comprehensive changes toward introduction of an environmental tax system would be a potential case. Another is the greater opening of environmental assessments and other planning mechanisms to broader public scrutiny. A third is full participation by the financial sector in assessing environmental risks and performance, such as in the granting of major loans.

The list of needed improvements is actually much longer, and it is fair to imagine that the window of opportunity might continue almost indefinitely. Yet windows open and close in response to many pressures. It is wise to take full advantage while the opportunity is available. Fortunately, the timing is excellent for the 13th FYP in

particular. Great advances could be made during this special period leading up to completion of 2020 goals set up as early as the turn of this century.

There are, however, some important linkages not yet fully made in the current effort on reforms. One is the establishment of a fundamentally stronger relationship between environment and economy. These two topics are now interlocked so that changes in environmental conditions affect the economy and vice versa. Yet the current round of economic reform does not fully recognize or act on these connections. This is particularly the case for the market reform packages now being proposed. Environmental externalities cannot be fully addressed under the current reforms on pricing, corporate sanctions and incentives, and by the current capacity for structural reform in the economy. Thus, economy—whether driven by foreign trade or by greater domestic consumption—is still not anywhere near a harmonious relationship with the environment. Ecological debt load and human health consequences within China are still on the rise to an extent that is rather poorly understood and therefore dangerous.

The second major linkage that needs to be considered more fully is the cross-sectoral environmental impacts that can seriously affect development. This is a long-standing concern, but integrative, comprehensive efforts are still not fully identified. Another way to state this dilemma is that environmental problems cannot be completely solved by environmental agencies since they are so much weaker than powerful sectoral ministries, large SOEs, and other interests.

Third is the need for much greater clarity on the role of ecosystem integrity and ecological services in social, economic and political decision making. This is a concern where China's government is now very active, but in many ways the mechanisms are still inadequate, for example, administration and management of nature reserves, although expectations are very high regarding new mechanisms such as ecological redlining.

Throughout these early years of the new leadership, considerable emphasis has been given to “top-level” guidance. This is understandable, given the emphasis on change, enhanced performance, elimination of corruption and other aspects of China's governance. There has been considerable discussion about the need for strengthening and innovation of environmental institutions as part of this. Perhaps the most notable aspect has been the administrative structure for Deepening Reform¹², which has established a *Deepening Reform Leadership Small Group* headed by Xi Jinping, with six subsidiary groups including one on *Economic System and Ecological Civilization*, which for the first time explicitly links economy and environment. The important question is how this leadership effort will be shadowed in organizational reforms that take place at other levels and within government departments and other structures.

The Issues Paper cannot answer this question directly, of course, but it is very clear that a central theme of environment and development reform, and indeed China's overall reform, is how to bring about a more integrated and inclusive approach to governance and development. This is a topic also of concern to post-2015 agendas

¹² A useful discussion is provided by Barry Naughton in his article ‘*Deepening Reform*’: *The Organization and the Emerging Strategy*. China Leadership Monitor. No 44.

globally—for new sustainable development goals, climate change negotiations, and efforts directed to green growth and green economy within various countries, and on the part of businesses and international organizations. The topic of institutional innovation and reorganization will be particularly important as reforms related to Ecological Civilization mature. Given that Ecological Civilization must find space within existing policy debates on four other key themes (the “5 in 1” approach), there will need to be changes in many laws and regulations, adjustments in market reforms, and important matters related to behavioural change of institutions and by individual households and citizens and in decisions made in the governance of their communities. Some of these shifts are examined in the key issues discussed in this paper.

INTERNATIONAL TRENDS ON ENVIRONMENT AND DEVELOPMENT

2015 is the target year for some key international negotiations on environment and development, with 2014 serving as a key testing time for countries to determine how far they are prepared to go in moving away from entrenched positions, and to decide collectively they will act to break the impasse on growing problems, especially climate change, and on social matters such as poverty reduction and its relationship with sustainable development efforts.

Regrettably at the national level there have been some serious signs of backpedalling on environment and development, such as the cancellation of the Australian carbon tax, the struggle most European countries are having to reach EU energy and climate 2020 targets¹³, the USA difficulties in bringing about almost any kind of agreement involving Congress on serious environmental matters, and the continuing failure to slow tropical deforestation such as the burning of forests in Southeast Asia for planting of oil palm, rubber and other commodity crops in high international demand. In general, it has not been a good year or two for the environment at this time of economic struggle and prolonged recovery in many parts of the world. In some instances, there has been substantial retrenchment in expenditure, downsizing and consolidation within environmental agencies, and a lessening of monitoring and other important activities.

One consequence of national level problems has been a rise in the level of environmental initiatives at the local level, especially in cities. This trend is reflected in the heightened contribution of cities and provinces towards achieving important objectives such as reduction in greenhouse gases. This is the case for example in Canada but also in other parts of the world. Much has been made of the potential role of cities as innovators. The C40 Cities network of megacities committed to climate change action is an example, along with networks for eco-cities, and ICLEI (Local Governments for Sustainability) initiatives.¹⁴ These and other urban networks are rising in significance on a number of environmental issues, and their actions and voice will be reinforced in the coming years as urban migration continues to increase in countries throughout the world.

¹³ *Trends and Projections in Europe 2013 – Tracking progress towards Europe's climate and energy targets until 2020*. European Environment Agency (EEA).

<http://www.voxeurop.eu/en/content/article/4263331-europe-united-failure>

¹⁴ <http://www.iclei.org>; <http://www.c40.org>

The preparations for the 2015 International Conference on Climate Change in Paris have included the Climate Change Summit organized in September 2014 by the UN Secretary General.¹⁵ This meeting provided an important testing of the waters and highlighted a willingness of countries to listen, but did not lead to any major breakthroughs towards consensus, or full agreement on the part of major greenhouse gas emitters. Just prior to this summit, the Global Commission on the Economy and Climate¹⁶ released an important new report *Better Growth Better Climate* with a 10-point action plan for low carbon economic growth. The Action Plan notes that *Decision-makers must integrate climate and other environmental impacts into their core economic, development and investment strategies. Taking a long-term approach, integrating these factors into investment and business decision-making, can reduce investor risk without harming performance.* The key message is that such economic growth will be sustainable—and will indeed prove to be the best way into the future, while reducing the massive destruction and costs from climate change.

The second major item on the international agenda, but with progress still limited, is the development of post-2015 sustainable development goals—the follow-up to the Millennium Development Goals. This is a process-driven effort guided by the Rio+20 outcome document. Many consultations have taken place, based on sectors such as water and on regional concerns. The proposed post 2015 goals are to be submitted to the 68th session of the UN General Assembly.

Not surprisingly, considerable attention is being given to financial aspects of sustainable development. For example, the Intergovernmental Committee of Experts on Sustainable Development Financing has recently completed a report as input to the post-2015 effort.¹⁷ UNEP has initiated an Inquiry into the Design of a Sustainable Financial System.¹⁸ It is intended to provide an understanding of how to fund the transition to a green economy globally. The green economy transition costs are high, and the challenges great, given the precarious state of the global economy. However this work is badly needed since climate change, biodiversity protection and many green economy efforts have stalled due to difficulties on financing, especially North-South initiatives.

The global business community continues to build a larger stake in green growth and green economy initiatives. In many ways progressive enterprises are showing leadership through their investments, technology development and public-private partnerships. The World Economic Forum released a *Green Investment Report* at the 2013 Davos meeting¹⁹ suggesting that the private sector would have to raise most of the USD700 billion per year required to address the additional green investment for holding climate change to 2 °C. The ratio might be 5:1 private to public funding.

¹⁵ IISD. *A Summary Report of the 2014 Climate Summit*. Climate Summit Bulletin. 26 Sept 2014.

<http://www.iisd.ca/download/pdf/sd/crsvol172num18e.pdf>

¹⁶ <http://newclimateeconomy.report/global-action-plan/>

¹⁷ <http://sustainabledevelopment.un.org/content/documents/4588FINAL%20REPORT%20ICESDF.pdf>

¹⁸ <http://www.unep.org/NEWSCENTRE/default.aspx?DocumentID=2758&ArticleID=10698> ;
http://www.unep.org/greeneconomy/financialinquiry/Portals/50215/Inquiry_summary_final%20June%202014.pdf

¹⁹ http://www3.weforum.org/docs/IP/2013/ENVI/WEF_GreenInvestment_Report_2013.pdf

A relatively new concept being explored internationally is green bonds. Largely a tool so far being used on a limited basis by The World Bank and IFC and some other development organizations, the idea is to tap into the huge pool of investors interested in the bond market (\$80 trillion dollars). Green bonds are defined by the World Bank as *fixed income, liquid financial instruments that are used to raise funds dedicated to climate-mitigation, adaptation, and other environment-friendly projects*. A major push is underway to increase knowledge of their potential value to cities, corporations and countries. And to make them well understood as safe investment options. With considerable publicity in 2014, it is possible that green bonds may reach a level of USD 30 to 40 billion in 2014, mostly for infrastructure, forest, watershed management, clean tech, renewable energy, or other tangible sustainable development projects.²⁰

Another important financial initiative—announced at the time of the 2014 Soccer World Cup in Brazil—is the BRICS Development Bank being established in Shanghai with a capitalization of USD50 billion with equal capital input from each of the five BRIC countries and a contingent reserve arrangement of USD100 billion, with 41% of this from China.²¹ The aim is to provide additional financing to developing countries for meeting infrastructure and sustainable development needs from the “New Development Bank” and the contingent reserve to be used for members that might have financial difficulties. This is at an early stage and bears watching in terms of its contribution to environmental aspects of sustainable development.

FRAMEWORK FOR STRENGTHENING ECOLOGICAL CIVILIZATION POLICIES AND PRACTICES

The concept of Ecological Civilization should, over time, provide strong guidance to the people and institutions of China for development and for other important decisions that will influence production and consumption, and attitudes towards the type of economic growth, social development and political decision-making that will shape China’s future. At this crucial point, two years after this overarching concept was firmly embraced as part of China’s governance model, it is appropriate to think about factors that may affect progress on its implementation. The discussion below is based on many conversations, review of written materials, and also on observations arising from the meetings and materials of CCICED’s research teams.

Some implications of building an Ecological Civilization include the following:

- Building respect for nature throughout society, both rural and urban; on the part of government bodies, enterprises, social organizations, across all sectors, and on the part of media, educators and others entrusted to provide guidance and oversight.
- Recognizing ecological integrity and the maintenance/enhancement of ecological services as a fundamental requirement for meeting China’s basic needs, quality of life and prosperity, and for contributing to global sustainable development.

²⁰ <http://www.worldbank.org/en/topic/climatechange/brief/green-bonds-climate-finance>

²¹ <http://www.economist.com/news/finance-and-economics/21607851-setting-up-rivals-imf-and-world-bank-easier-running-them-acronym>

- Building cooperative and effective working relationships on environment and development among sectors and institutions at all levels from local to national, regional and global.
- Promoting ecologically and environmentally sound decisions on the part of individuals and households on all matters within their control, and ensuring the enabling policies are in place to allow this to happen.
- Protecting cultural values and recognizing differences in the sustainable development choices made by people depend on their circumstances and needs.

These implications remain consistent with the “putting people first” concept of China. However they also require that protection of environment and ecosystems must also be given high priority. Only then can “putting people first” survive as a long-term priority. Ultimately, Ecological Civilization is a concept that is remarkably different from a society focused on short-term priorities.

Today’s institutions within China and elsewhere generally are ill-suited for constructing an Ecological Civilization. Objectives, operational methods, incentives, or governance are inadequate for the tasks. Other problems include slow-moving action, limited human or financial capacity, and managerial issues. What needs to be done?

A vision of institutional reform for Ecological Civilization to take hold should be built around a number of general and specific points (by no means a complete list):

General:

- Base all planning and environmental management decisions on Ecological Civilization criteria and monitoring.
- Create a sufficient legal basis for Ecological Civilization implementation.
- Shift towards an ecological-economic approach to development decisions.
- Create an integrated and optimized spatially-implemented approach to planning related to all aspects of environmental management, including urban design, land use, resource development, pollution control industrial development, transportation and disaster prevention. Despite impressive investments and improvements in recent decades, the approaches currently in place are inadequate. Maintain strict observance of ecological red lines, pollution control and environmental standards with swift action when violations occur.
- Carry out institutional framework for environmental protection and management to provide top-level coordination, efficient and trusted action at all levels, and create supervision by the public. Ensure full accountability on the part of government officials.
- Create an institutional framework for providing incentives and other enabling mechanisms for Ecological Civilization innovations and for green development. This aspect will need to be coordinated with market-based economic reforms.
- Transform financial sector institutions by enabling them to: stop making environmentally and socially unsound loans of any sort, but instead give preferential treatment to ecologically and environmentally sound initiatives; adequately address environmental risk reduction, for example, by climate

adaptation; foster eco-innovation technology and services; contribute to eco-compensation (insurance, ecosystem restoration).

- Build a strong sense of responsibility on the part of enterprises towards natural and community environmental conditions, and strengthen their interest and capacity in technological, managerial and investment innovation for Ecological Civilization.

Some Specific Priorities Needed:

- Factor 10 eco-efficiency in manufacturing, production, and natural resource exploitation (including mineral processing, water and fertilizer use in agriculture, fisheries).
- Extreme levels of Circular Economy action.
- Sustainable consumption, green procurement, and green market supply chains.
- Eco-city and low carbon cities.
- Integration of human environmental health objectives into Ecological Civilization objectives and action plans such as those associated with air, water and soil pollution.
- Mountain to sea ecological services planning for water basins and coastal zones.
- Nature reserve and ecological redlining conservation and management.
- Institutional strengthening for meeting very difficult climate change adaptation and mitigation objectives and transformative changes in the energy sector.

A governance system based on Ecological Civilization should be transparent, open and fully accountable to people. The governance framework must recognize the need for capacity development, including how to build new working arrangements between the government and people, and the need to create a much stronger ability of enterprises to take on major responsibilities and provide much of the funding necessary to make Ecological Civilization a reality. Governance of urban areas provides some of the greatest opportunities for China to realize new paths to green development and therefore for the rapid emergence of Ecological Civilization.

The time period for anything resembling an Ecological Civilization must cover major development transitions: the 13th FYP; the 2015-2030 mid-term green transition period including important energy transitions such as peak coal, peak fossil fuel use, major ramping up of renewable energy use; 2030-2050 for longer term opportunities and actions. Over such a long time span there undoubtedly will be many course corrections, introductions of important new technologies, and other hard to predict challenges and opportunities. Thus Ecological Civilization still needs to be treated as an important organizing concept but one where there is a need to continue seeking answers to key questions about its implementation.

Thus, this section will end with a number of important questions that may be used to clarify what must be considered as feasible for constructing this new approach. These provide a flavor for what may happen in coming years, but the list of questions below is a sample rather than an exhaustive list.

- A key question is how can Ecological Civilization and associated green development *transitions* be accelerated so they help to avoid environmental tipping points while maintaining economic and social development goals?

- How can fulfillment of Ecological Civilization needs be helped through improved governance, including efforts to stamp out corruption, enhanced models of regulation and market incentives, political reform, and public participation/supervision of development?
- What level of expectations should arise from the “Five in one” approach to policy development? What should be key priorities among the many possible combinations concerning the relationship of Ecological Civilization to the other four? For example, should most of the effort in the coming several years be devoted to the definition of a new relationship between ecology and economy (as the Brundtland Commission recommended globally in 1987²², but has so far not been fully achieved, whether in China or elsewhere)? Or should it be a more balanced approach involving all four others?
- What is required to genuinely make environmental action an equal to economic development? Despite good intentions it has not happened so far within China, or elsewhere to a desired level.
- Institutional innovation for Ecological Civilization requires coordinated approaches to development, including highest-level guidance, monitoring and to some extent, integrated planning and management. How can super-ministry or other approaches at a national level help with coordination and other needs to ensure comprehensive approaches to planning and management for Ecological Civilization? What is needed in addition to environmental auditing in order to ensure full accountability for Ecological Civilization Progress?
- How can China’s commitment to massive urbanization contribute effectively to realization of an Ecological Civilization?
- Ecological redlining is viewed as an important process to safeguard and improve ecological goods and services, and, overall, to protect ecological and environmental security. However, it is only one element and mechanism for the broad achievement of Ecological Civilization. What additional steps are needed to fully protect ecosystems and their contribution towards an Ecological Civilization approach, especially in relation to behavior of the public, enterprises, community leaders, and government bodies?
- Is there a need for extensive legal reform to ensure that a wide array of laws and regulation are updated to take Ecological Civilization needs and approaches into account? And is there a need for a national law on Ecological Civilization in the same way that earlier laws were set in place to guide the development of Circular Economy?
- How much of China’s success on implementing Ecological Civilization concepts is likely to be influenced by perceptions outside of China, for example on matters related to Green Market Supply Chains, energy transitions?

²² World Commission on Environment and Development. 1987. *Our Common Future*.

How much effort should China put into making Ecological Civilization ideas a key part of its Going Out strategy?

KEY ISSUES

In a time of green transition, which inevitably China must embrace in its efforts toward achieving green development, there will be mixed signals about progress. Undoubtedly there will be continued efforts on the part of some vested interests to slow the pace of change. It will be tempting to avoid transformative modes of change that tend to be disruptive. Progress towards an Ecological Civilization will be stalled if that is the case, and environment will not be mainstreamed in development decisions to the extent necessary. Fortunately, the resolve to meet and resolve challenges, and to take advantage of the current window of opportunity appears to be present.

In this section ten major issues are highlighted. All are important, but some stand out for the most urgent attention, especially Issues 1, 5 and 10, the foundation stones of a modern governance system, safeguarding of ecological services, and the critical matter of a green transition that will firmly address the move from tipping points to environmental turning points. The ten issues are clustered into four themes: innovation in governance (Issues 1-4), ecological services (Issue 5), sustainable production and consumption (Issues 6-7), regulations and incentives (Issues 8-9), and trimming green transition times (Issue 10).

INNOVATION IN GOVERNANCE

ISSUE 1. CREATING A MORE EFFICIENT AND INCLUSIVE GOVERNANCE SYSTEM

Institutional change for environment improvement is lagging behind other societal changes and economic development.

Examples include environmental protection and management enforcement effectiveness, green tax reform, cap and trade for climate change, coordination across sectors and at different levels of government. The current system is one dominated by government rather than a modern governance system in which enterprises and social institutions play a significant role. The governmental administrative system is inadequate in relation to the level of need, both in terms of the number and capacity of personnel available to address critically important matters such as air pollution, the quality and quantity of financing, the worth of current regulatory tools, and long-term strategy to manage the transition towards environmental quality—currently this strategy is a patchwork. Implementation of environmental action generally lags years, or even decades behind China's rapid economic growth and economic development shifts in policy. China is implementing its environmental protection action based on western models from the 1970s rather than models that might be more appropriate to its own circumstances today and for the future.

This issue may be partially alleviated by the more definitive action being proposed or implemented by the current leaders. However the signs of past delays and problems are apparent. For example, only one of the three pollution action plans is fully

underway. There have been problems in achieving the more stringent energy and greenhouse gas emission targets of the 12th FYP, and there may well be problems in achieving air pollution controls such as for nitrogen compounds. These matters are indicative of the need to bring important sectoral players into the tent of pollution control and prevention.

The debate about whether a superministry for environment and natural resources will be a robust or sufficient institutional answer is probably the wrong one to be having. Perhaps more important is whether China can develop a set of robust mechanisms for integrated management at all levels of government in order to break down decision-making silos on environment and development matters. This is a long-standing problem, and it is by no means one found only in China. There is an apparent need for a long-term, top-level coordinating institution that can provide authoritative guidance on matters related to environment and economy.

A second major part of the institutional strengthening problem is the time taken to introduce environmental market based reforms, especially a system of green taxes, improved pricing that takes into account environmental externalities (negative and positive), and modifications to the regulatory framework to provide for sufficient penalties and the enforcement required. The virtue of such an approach is administrative efficiency and coverage across a wide range of targets. Until such a system is in place, cost of environmental action will remain higher and be less effective than it should be.

The broader governance issue is an urgent problem to be tackled since it directly links to social and political concerns such as the model of public and enterprise involvement to be pursued. Public participation is addressed in Issue 2 below. For enterprises the need is to have a much greater, more sophisticated, and more effective role in finding and helping to pay for the solutions to environmental problems related to their money-making activities. Companies large and small need to address environmental risk to their operations in addition to basic legal compliance. Although there are now significant levels of investment by some businesses towards a green transition, with innovative technologies²³ and management, it is still quite far from what is needed for a green and prosperous business-driven approach. Solutions such as widespread closures of factories, temporarily or permanently can help in the short run, but not for the longer-term.

ISSUE 2. INCREASING SOCIAL GOVERNANCE OF DECISIONS

Important contradictions in policies remain, or are developing, regarding the supervisory role of the public towards environmental performance of government, regarding information disclosure, communications regarding environmental risk assessment, and transparency of decision making on matters related to project approvals, environmental planning and impact assessment.

Building public participation into the governance model has been underway for a time, and the efforts to build the necessary environmental information disclosure, whistle-blower and complaint channels are important but still insufficient measures to

²³ See the *China Greentech Report 2014*. <http://www.china-greentech.com>

guarantee the public's desired role in the supervision of environment and development. Hebei Province recently has drafted regulations on public participation regarding environmental matters. It is a model approach that is very explicit and helpful in many ways.

However there is a sticking point that may always be present in such efforts, and that is the inclusion of clauses regarding responsibility on the part of public participants. Clearly there is a nervousness about public demonstrations, but there is a fine line between those that are poorly informed, or perhaps embarrassing to local officials, and those that are truly dangerous to public safety or other more legitimate reasons to call for punishment of those involved. In other countries it has often taken a considerable level of public courage to turn development away from ecologically destructive towards a more environmentally friendly approach. This point needs to be kept in mind as China builds its expanded public role. The fine line may be adjusted through courtrooms as well as on the streets.

A matter of growing need is to have more well trusted independent platforms (organizations, websites and individuals) that can provide authoritative information and take on a role in making information disclosure work well). For example, full environmental assessments or other planning documents may be lengthy and technically difficult to review and understand. Good "third party" bodies can help to make such information accessible and can also comment on particular types of problems, such as chemical plants, or work locally on environmental improvements.

ISSUE 3. DEVELOPING ADAPTIVE PLANNING AND MANAGEMENT

Ambitious pollution control and other environmental action plans are untested and require an adaptive management approach that is not yet fully worked out. It is important not to take inflexible approaches that may lead to "blind alleys" and limited return on investment.

The danger of short-term action plans is that they will come with high price tags, high expectations, and perhaps untested or poorly integrated approaches. The air pollution action plan is an example. On the other hand, plans with a long time horizon, for example China's Biodiversity Action Plan²⁴, which sets out an agenda until 2030, could be set on a track that is too inflexible for shifting conditions, such as those related to climate change impacts, and could avoid hard decisions by pushing some items into the future when action should be taken at an early stage. All of the action plans being proposed, or likely to be proposed, are precedent setting, and therefore must be monitored closely for their performance. It should be presumed that implementation efficiency must be constantly improved. They should be adjusted according to changing needs, of course, but these may be hard to determine over short time periods. If plans genuinely are lagging behind serious and rapid environmental degradation, cumulative impacts are likely to expand in size and complexity. This is a concern, for example, with soil pollution or ground water depletion and pollution.

²⁴ *China National Biodiversity Conservation Strategy and Action Plan (2011-2030)*.

In the case of the air pollution action plan, clearly one of the most difficult aspects is how to bring about robust, cost-effective regional solutions, without which there is very little hope for long-term success. Also, there are political and public expectations of considerable progress within a matter of a very few years. Obviously the problem is so serious that there appears to be little choice other than to articulate such a hope. What is the consequence if the results cannot be delivered on a reliable basis, as may well be the case? The public will be far less interested in average annual declines in key pollutants than in whether there are far fewer days of severe air pollution, such as those that afflicted Beijing in October 2014. Given that it likely will be a 15 to 20 year battle to bring about fully satisfactory conditions for air quality, the preparations and initiatives that will follow the current action plan, the nature of the public dialogue (locally and regionally) and the innovation in financing and other mechanisms that may need to be strengthened deserves considerable attention. Some of the attention needs to be placed on co-benefits and synergies that will help to justify accelerated action and recognition that there may be a broader set of benefits being achieved, even if skies still appear grey.

For initiatives such as the long-term Biodiversity Action Plan, there is an opportunity to link this plan closely to progress on Ecological Civilization. However the Action Plan preceded the current political effort, and therefore the Plan will require updating. Furthermore, while there are some successes, China's biodiversity conservation is facing serious threats, and some life forms have already reached tipping points where local or regional extinctions already have occurred. In the oceans, there is drastic reduction of some species and prospects of further decline. The situation could significantly worsen during the coming decade as a consequence of China's economic prosperity that has lowered the country's natural wealth, and also from the partitioning of habitat through urbanization and transportation infrastructure and from excessive land reclamation in coastal areas. Worldwide the situation is at a crisis point, with a roughly 50% decline in population sizes of some 10,000 monitored populations of animals between 1970 and 2010 according to WWF International.²⁵

ISSUE 4. REDUCING CORRUPTION IMPACTS ON ENVIRONMENT

Environmental impact assessments and other aspects of permitting and regulation are susceptible to falsification, selection among contradictory laws and regulations, cover-ups and many other corrupt practices especially at local levels.

The current campaign against corruption within China has not placed any particular emphasis on environmental matters. There is no published estimate of how much corrupt practices cost in terms of pollution damage or in other environmental damages. Indeed, there are no published studies that comprehensively cover the subject of corruption and the environment in China. Much of the available information is anecdotal, often directed at local officials.

Minister Zhou Shengxian noted in a December 2006 interview with Xinhua News Agency²⁶ concerning reviews of a number of projects that might affect air pollution,

²⁵http://www.livingplanetindex.org/projects?main_page_project=LivingPlanetReport&home_flag=1

²⁶ See *Fraud Blamed for Worsening Air Quality*. http://www.chinadaily.com.cn/china/2006-08/20/content_669082.htm

fraud in project approval was prominent with many projects passing their environmental assessment without fulfilling the necessary criteria. Other common local problems in the past have included failure of power generation stations and various kinds of manufacturing facilities to run installed pollution control equipment—except sporadically, or when inspections were likely.

In November 2013, after a large-scale review by the Ministry of Environmental Protection of organizations licensed to carry out environmental impact studies, 34 were penalized by MEP for “falsifying documents” or the “poor quality” of environmental reports. Some had licenses revoked for “obtaining qualifications by deception.”²⁷

There are many reported instances of illegally constructed golf courses that depend upon approval at local levels.²⁸ This is one of many types of corruption involving land use. In a Financial Times article²⁹ it is noted that:

Some local governments even use state funds earmarked for green belts, parks or environmental protection and rehabilitation projects to build golf courses, despite the damage they can cause to the environment.

Zhang Jing at Nottingham University China Policy Institute recently wrote that *intensive pollution in China is not simply an environmental or economic problem, it also relates to corruption and dereliction of duty.*³⁰ Unlike earlier studies by the World Bank and others on the subject of pollution havens, Zhang (2014)³¹ claims that *incoming FDI to China is more likely to be drawn to provinces with relatively weak environmental regulations...I find that the negative impact of FDI would become positive when more effort is put into fighting against corruption...However, the current average anti-corruption effort is too low to compensate the negative environmental impact of FDI.*

The range of potential sources and methods of corruption that might destroy the effectiveness of environmental efforts is very large and might be carried out at various scales. Transparency International³² and others have drawn up lists that include falsification of shipping documents in order to bring hazardous waste products into China for reprocessing; fish and other products such as animal parts that have been illegally caught. Products such as ozone depleting substances have been illegally exported from China in the past.

Corrupt practices certainly will undermine Chinese efforts to develop an Ecological Civilization. There is a need for a new, morally solid approach that would not rely only upon investigation and punishment, even though those aspects are important, but

²⁷ <http://www.cleanbiz.asia/news/china's-environmental-watchdog-punishes-assessment-agencies#.VEiOp751RLF>

²⁸ Washburn, Dan. 2014. *The Forbidden Game. Golf and the Chinese Dream.* Oneworld Publications Ltd.

²⁹ <http://www.ft.com/cms/s/0/e514b5cc-74d7-11e0-a4b7-00144feabdc0.html#axzz3FzOXIjWv>

³⁰ <http://blogs.nottingham.ac.uk/chinapolicyinstitute/2013/04/16/environmental-protection-and-anti-corruption-in-china/>

³¹ Zhang Jing 2014. *Foreign Direct Investment, Governance, and the Environment in China: Regional Dimensions.* Palgrave Macmillan.

³² U4 Anti-corruption Resource Centre www.u4.no

more fundamentally on societal functioning in a way that makes environmental crimes and the accompanying corruption abhorrent.

The proposed environmental audit process to be applied as local officials leave their post is an example of at least one approach to help with this transformation. By making this audit and any consequential action a permanent part of their record should help to change behavior. Over the coming years, effective use of new legal sanctions under the newly revised national environmental protection law should provide a powerful new means to root out illegal actions that are fostered by corruption.

ECOLOGICAL SERVICES

ISSUE 5. PRESERVING ECO-ENVIRONMENTAL QUALITY AND VALUES

Environmental quality issues are becoming long-term threats to human health and wellbeing, while damage to ecosystems is causing difficult and costly remediation situations that are not being adequately addressed.

The concerns include loss of ecological services, vulnerabilities that can turn into disasters, loss of human and ecological productivity, reputational loss that affects tourism, trade and investment, recruitment and retainment difficulties to get skilled people to live in polluted areas, especially for those with young children. There is harm to older citizens who are highly vulnerable to the levels of pollution found in many cities.

The cumulative environmental and ecological debt found in China today is generally underestimated since it is difficult to monetize all ecological services, and understanding of health impacts is still quite limited. Certainly these factors need to be brought into decision-making much more than at present. Cleanup costs elsewhere in the world, for example, in brownfields and abandoned mine sites can reach levels of a billion dollars or more for a single site. In China there are thousands of sites requiring remediation.

In countries such as Japan—which suffered through high levels of pollution in the 1950s to 1970s—there were well-documented cases, for example the *Yokkaichi asthma* linked to that city’s extensive petrochemical industry started in the mid-1950s. The rates of COPD, bronchitis and other lung problems resulted in a mortality rate from such diseases 10 to 20 times higher than surrounding areas.³³ Similar issues could be found in countries such as Germany in the Rhine River and in various parts of the USA. Public knowledge about these problems is one of the most significant drivers for environmental improvement—just as the various problems with food quality have led to reforms in China. China is still at an early stage of determining how to deal with environmental health in the many legacy sites found throughout the country, and in relation to environmental planning for new industrial developments.

China’s ecosystem degradation is to some extent being held in check through massive investment under various eco-compensation schemes. The forestry, grassland and

³³ *Mortality And Life Expectancy Of Yokkaichi Asthma Patients, Japan: Late Effects Of Air Pollution In 1960–70s*. Environmental Health Journal. (as cited in http://en.wikipedia.org/wiki/Yokkaichi_asthma)

wetland restoration efforts are thought to be the largest such programs in the world today.³⁴ As President Xi Jinping has noted in his new book *The Governance of China*, more effort is needed.³⁵ *Ecological redlining* plus more attention to the existing designation of *ecological functional zoning* is intended to be a definitive step forward. All of these efforts are to be praised.

Yet there is considerable concern about whether there will be sufficient monitoring, enforcement and funding to ensure designated areas are respected for their ecological values. Ecological redlining may require setting aside some 35% of China's area for ecosystem protection. There are various points of view about how to deal with peri-urban and suburban areas, since these are also areas that often are sought after by developers.

Also, questions must be asked about adequacy of biodiversity conservation in even very large areas where there is also a growing level of tourism and recreation such as ski areas. An example is the internationally recognized Changbaishan Reserve in Jilin Province. This spectacular volcano and alpine lake complex now receives huge numbers of visitors and includes recreational activities such as skiing. As recently as a few decades ago this reserve held numbers of Siberian tigers and other large predators. However numbers have plummeted or reached the point of local extinction for several mammals and perhaps other animals.³⁶

GREEN PRODUCTION AND CONSUMPTION

ISSUE 6. HIGHER RETURNS FROM R&D INDUSTRIAL INVESTMENT

Getting full value from China's large science and technology investment on clean technology, renewable energy, and other environment and sustainable development initiatives continues to be a significant difficulty since implementation capacity is limited and entrenched interests slow down transformative change efforts.

China's great success related to Circular Economy, solar and wind power, and, hopefully, many other complex transitions to Green Economy and Green Growth options are lessons to others about what can be accomplished. Compared to even a decade ago, China has gradually set a path that places it well along a pathway of innovation regarding environmental, energy and green infrastructure initiatives. However the cost is high and there is a need for more rapid and consistent commercialization of scientific and technological knowledge and discoveries. Perhaps half of the programs now underway through specially designated funding in one way or another have environmental or sustainable development connotations. This is remarkable. But the trip from lab bench to proving grounds and then to full

³⁴Scherr, S.J. and Bennett, M.T. 2011. *Buyer, Regulator, And Enabler—The Government's Role in Ecosystem Services Markets: International Lessons Learned for Payments for Ecological Services in The People's Republic of China*. Asian Development Bank.

<http://www.greengrowthknowledge.org/sites/default/files/downloads/resource/adb-buyer-regulator-enabler.pdf>

³⁵ Xi Jinping. 2014. *The Governance of China*. Foreign Language Press.

http://www.china.org.cn/arts/2014-09/28/content_33640716.htm

³⁶http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/Changbaishan_BR_GLOCHAMO-ST-2011.pdf

implementation within society is difficult. Hydrogen economy is an example internationally, and the reception of the EV (electrical vehicle) whether in China or elsewhere in the world demonstrates how the process can take much longer than expected.

Part of the problem is the skewed nature of incentives and of organizational structure. China's continuing high use of coal for electricity generation is an example, where the complex problems of coal pricing, the difficulties of establishing smart grids for transmission optimized for use of wind and solar sources, and various institutional problems have slowed the progress of shifting from coal as the principal source. The peak use of coal could come quickly or be delayed for a decade or more depending on the resolution of the problems of implementing alternatives, as well as on developing stringent demand reductions.

Another side of the science and technology issue is the great opportunity to more quickly bring about the new green economy that is more reliant on the digital revolution, and with higher value-added for most activities, but with extreme reductions in energy and material use in manufacturing and service sectors. The coming agricultural revolution in China must not be based on excessive chemical and water use.

ISSUE 7. SEEKING ENVIRONMENTALLY SUSTAINABLE CONSUMPTION

The shift towards expanded domestic consumption requires much more effort to avoid unsustainable consumption patterns emerging, especially in urban populations.

The stimulus for increasing domestic consumption in China is understandable from a strategic economic perspective but it is not clear how much of the projected consumption can either help to stimulate a green transition, or indeed be classified as sustainable consumption. The increased flow of CITES-sanctioned wildlife parts such as ivory, rhino horn and many other items into China is linked to the rise in wealth. Changes in Chinese diet to include much more meat has impacts on demand for agricultural lands and water, and with resulting pollution and other environmental impacts both inside and outside of China. The rapid rise of Chinese travellers to destinations within and outside of China has raised serious questions about carrying capacity at parks and other natural areas, and other travel related issues such as greenhouse gases, since the uptake of carbon offsets on travel has not been a major success yet in China, or elsewhere.

Issues such as land and water consumption by golf courses and ski resorts, the proliferation of second, third or more residential properties, and other examples of high consumption lifestyles are widely debated. However existing policies are not fully enforced, or perhaps are even to some extent unenforceable. Projected forward a decade or more, it may be the conspicuous consumption problems created by high incomes are some of the most severe facing China, just as they have in some western countries.

The love for the automobile in China appears no less than in many other countries. Already the larger cities have been given over to the auto. The implications for both

environment and energy use are well understood, but still not fully addressed, either in terms of very stringent controls on ownership, use or advanced fuel and pollution control systems. Surely this will come about, but it is happening more slowly than should occur.

Impressive gains in understanding green market supply chains and acting on this knowledge have been made in recent years. An example is the case of Tianjin and its efforts to build its new financial district with specifications related to good environmental planning such as making public transportation very easy to access, and ensuring that buildings are constructed with design and material use based on green market supply chains. Similarly inspiration can be seen in some of the advanced efforts of Shenzhen. However these examples are still the exception rather than standard practice.

Overall the challenges of domestic sustainable consumption are daunting and perhaps the most pressing aspect for the people of China to embrace as part of their journey towards green development and Ecological Civilization.

REGULATIONS AND INCENTIVES

ISSUE 8. LEGAL BASIS FOR AN ECOLOGICAL CIVILIZATION

The current patchwork of environmental law is not a sufficient basis for meeting Ecological Civilization legal needs. Nor is there a strong enough legal basis for market reforms related to environmental management. The revised Environmental Protection Act is a good starting point for a modern approach.

It has taken more than half a decade to reach agreement on the newly revised Environmental Protection Act passed by the National People's Congress in early 2014. This revised Act might best be considered as the wedge that will help to drive changes in attitude and achieve results against recalcitrant polluters, open the way to greater transparency on the part of government and provide various means for people to have a greater voice on environmental matters, including via court action. It likely will require follow-up regulations that may take time to put in place. Further revisions in the environmental protection act may be desirable within a relative short time, perhaps only 3 to 5 years, since there was not agreement on all of the important points that might have been included.

The slow process of legislative reform on environment across key sectors is likely to hold back implementation progress overall. The thin edge of the wedge is now in place. But many, perhaps most environmental matters have important ramifications in other legislation such as on water, land, industry, energy, urban and rural development. In addition central agencies such as the Ministry of Finance play an important role, for example in green taxes and emissions trading. Changes in the administration of justice through the existing court system is starting to occur, but not at the desired pace. Adequate enforcement policies are not yet in place even though it is now possible to set meaningful fines.

A broader and important issue is to determine the type of legislative base that should underpin new initiatives associated with Ecological Civilization. Would such

legislation be primarily to enable such initiatives—or would there be regulatory and punitive aspects? How would legislation on this subject relate to existing economic, social or environmental law, regulations and market based approaches? Perhaps a good starting point would be to define the most relevant existing laws and examine them against Ecological Civilization criteria and expectations. Then consider whether there is a need for reform of the existing statutes, or development of new laws.

The case can be made that rather than draw up too many new laws and regulations, the most important need is to fully utilize existing laws, well enforced, and to improve the capacity of the courts to do a proper job on cases brought either by the state or by individuals and organizations as permitted under the revised environmental protection law. However it is unlikely Ecological Civilization could be made into an operational concept without the backstopping provided by the rule of law, properly applied.

ISSUE 9. DEVELOPING A FINANCIAL SYSTEM FOR A GREEN TRANSITION

Level of investment and capacity required to successfully implement Ecological Civilization are not well understood, nor are the funding sources fully identified.

Investment and financing for environment and sustainable development are undergoing considerable scrutiny as noted in an earlier section of this report. Partly this interest is driven by the need to find substantial levels of funding for addressing climate change adaptation and mitigation. However, with the massive needs of infrastructure necessary for quality of life in burgeoning cities, and in a green transition concerning energy, agriculture and transportation trillions of dollars are needed globally, and particularly in the countries of the South.

China is more fortunate than many other nations, in part because its investments over recent decades have laid the groundwork for the even larger challenges ahead. Still China will have a difficult time to raise the roughly USD250 billion needed annually to meet its desired level of investment in green development. The Development Research Centre (DRC) of the State Council and IISD (the International Institute for Sustainable Development) are examining the current capacity of the financial system to understand green economy financial needs and how to support them in an innovative fashion. The preliminary findings in this report³⁷ suggest that the situation is still at an early stage. While there has been considerable progress regarding some mainstream aspects of green development, *green finance flows remain far below what is needed, and carbon- and natural resource-intensive investments continue to rise, in China and elsewhere.*

Furthermore, in China: (1) *There is not yet a comprehensive understanding of a green financial system, covering definitions and standards, institutions, policies and sequencing for specific contexts.* (2) *Policies to develop a green financial system can in many instances be advanced at local and national levels, but in some instances need to be established at regional and international levels.* (3) *Institutional arrangements, and individual and organizational competencies, are currently inadequate, and so need major upgrading to effectively advance a green financial*

³⁷ http://www.iisd.org/pdf/2014/greening_china_financial_system_en.pdf

system. All of these problems are found in other countries, so China is by no means unique.

What sets China apart is the scale of possible future action. Quite likely China may become the world's largest investor in green development. This is dictated not only by its sheer size but also for its massive infrastructure needs for rapid green urbanization, energy and transportation networks. In addition there are considerations related to investment in Clean Tech and other new green industrial development.

The transformation towards Ecological Civilization could be expensive, or not. Partly it depends on the accounting, especially in relation to the value of ecological services that can be preserved or enhanced as a consequence of a more robust relationship between ecology and economy, and in the eventual value to human health and ecosystem productivity. Unquestionably, financial investment must also benefit the economy. Then what might otherwise be seen as simply an add-on cost can then be seen as having a positive and substantial return to society and perhaps even to individual and institutional investors. This is the premise of green bonds, for example.

During the next decade the picture of Ecological Civilization approaches to development will become clearer, as will many of the experiments for funding low carbon initiatives, and other “modern” approaches to solving environment and development concerns. The danger will be if innovation fails and the existing mainstream of conventional high energy and material use once again takes hold whether in China or in other countries. In this regard, China cannot alone be expected to do the job on its own. Investment and trade policies are very important, as is ensuring that new technologies are not kept out of markets by unreasonable barriers. International financing mechanisms and international cooperation are important bedfellows for green development, and undoubtedly, also for China's success with Ecological Civilization.

ISSUE 10. TRIMMING GREEN TRANSITION TIMES

Green transition time frames currently are longer than desired and need to be shortened while not reducing effectiveness.

As China moves into the last phase towards meeting its goal of a moderately prosperous *Xiaokang Society* by 2020, it should be very apparent that a truly prosperous society depends on environmental objectives keeping up with economic and other development objectives. Clearly that has not been the case, a point made throughout this paper. Transformative change for environmental protection in particular has been much harder to put in place than either social or economic changes.

For the future, it will be essential to trim green transition times substantially. It likely will not help to simply use the guideline that reduced economic growth rates will help a lot. The reason for this statement is related to the overall size and complexity of China's economy now. Even a relative small increase in the economy from year to year results in considerable environmental damage by comparison to past high growth rates of a much smaller economy, even though decreased pollution and energy intensities can help to mitigate this aspect. Environmental damage tends to be cumulative, especially if not dealt with quickly. There also are delayed and

recombinant effects (PM_{2.5} is an example of the latter). If the benefits of accelerated green transition can be reached over five-year periods rather than 10 or more years, there is hope that the catch-up game of environment and economy could become less serious.

Another important point to be made on this subject is the urgent need to create rapid green transitions in China's urbanization, expected to reach peak levels during the next 10 or 15 years. First, the attention given to environmentally-driven spatial and infrastructure planning could help immensely with meeting all other aspects of urban development, such as energy consumption, and reduction in use of materials such as steel and cement. Overall such planning will be linked to the need to put people first, as desired by Premier Li Keqiang and other senior leaders, since cities will be planned around criteria for quality of life, as well as economic and social considerations. Eco-city and other good city models can provide the basis for this once in a generation opportunity to accommodate in an environmentally friendly way the needs of China's peak in urban migration and development.

In general, the projected turning points and peaking of resource and energy use needed for green transitions in the economy and development should be contained to the period of 2020 to 2030 rather than later.³⁸

CONCLUSIONS

Environmental management has lagged behind economic growth—where targets often have been exceeded. Cumulative loads on China's environment are reaching *tipping points*, or thresholds, where very severe and difficult to remedy conditions become visible. Air pollution is only one of several that may be expected to reach a crisis stage in coming years. Soil and groundwater contamination may present even greater difficulties. Climate change effects may result in other environmental tipping points within China.

Given that the damage to ecosystems and to health will require long time frames to fully repair, Chinese people's trust in government may be severely tested. Therefore it is important to reach *turning points* where it is quite obvious to the general population that problems are being successfully addressed, even if much more time is needed for the solutions to be fully realized. In particular, the "War on Pollution" must turn into a long-term effort that should define and achieve major turning points in the national struggle for adequate environmental protection. This will require time periods that extend well past 2020 in most cases.

The recent actions to Deepen Reform, stamp out corruption, promote Ecological Civilization, and to implement new concepts such as Ecological Red Lining, plus the newly revised Environmental Protection Law, provide a strong foundation for China's future environment and development. What is missing is a coherent medium term strategy for green development. A huge window of opportunity exists to define and put in place such a strategy—a *Green Transition Strategy*—as discussed in the conclusions noted below. Fortunately in this time of policy flux within China and the

³⁸ See, for example, Fergus Green and Nicholas Stern. 2014. *An Innovative and Sustainable Growth Path for China: A Critical Decade*. <http://www.cccep.ac.uk/Publications/Policy/docs/An-innovative-and-sustainable-growth-plan-for-China-a-critical-decade.pdf>

concern on the part of both the public and government for reform, there is a very clear window of opportunity to build a sustainable future. China can lead by example, and its efforts will be essential to global green growth.

Green Transition Strategy

A *Green Transition Strategy* should span from 2015 to 2030. While the “final dash” to a moderately well-off society can be accomplished via the 13th Five Year Plan, the real environmental marathon has started now but will take at least three five-year plans to secure. In China there are few action plans or other goals related to the environment for this longer time frame.

China will need to accelerate its progress towards an early peak in use of coal and oil during this time frame. Indeed this is a key point for transformative structural change to green development for industry, eco-urbanization, and for truly sustainable forms of expanded domestic consumption. The coming 15 years is the time to take fullest advantage of available green technologies that will shape a substantial part of China’s new green economy.

Pace of Reform

Environmental progress must keep up with other fast-moving reforms. While much has been said about this, it has not actually happened during the last decade. This is a problem not only in China but globally. Ecological debts have been building rapidly, and unsustainable development patterns continue.

The most important aspect is to ensure that market based reforms are recognized more clearly to be an essential part of environmental innovation reforms. Resource pricing policies, green tax reform, and subsidy reform are needed. Innovations such as green bonds for urban infrastructure, and full implementation of national emissions trading systems, including carbon are important.

Financing

Increases in the rate of investment on environment protection must match or exceed the economic growth rate for some time to come. In part this investment is required to address the ecological debt and environmental shortfall created by past rapid economic growth. But most importantly, it is needed in order to put a halt to continued degradation, and to ensure that the huge new investments in urban infrastructure follow best practices.

While the cost of a green transition will be substantial, these costs can be shared between government and business. Moreover they likely will be much less than the cost of continued environmental degradation. The new economic benefits of a green economy and the social benefits of green development will help in the construction of an ecological civilization. The level of investment for environmental protection

should rise to at least 3% of GDP. By contrast, a recent estimate of the cost to GDP of climate change in China is about 12%, highest of any large country.³⁹

A diverse set of green financial mechanisms is required. The elements include: a shift towards a green taxation system with the funds raised put back into environmental improvements; green bonds for infrastructure development especially where fees can be charged to recover costs; accelerated implementation of a carbon emissions trading system; special funds based on the polluter pays principle to cover problems such as brownfield restoration; removal of the right for cities to engage in land sale transactions that result in loss of “greenfield” development, or that are based on land reclamation in coastal areas; and new forms of environmental public-private partnerships.

Green Market Supply Chains

To achieve substantial environmental dividends from China’s promotion of domestic consumption will require a different culture of consumption. The cities will make or break this element of Green Transition. Leading efforts such as Green Procurement in construction of the new Financial District of Tianjin provide important examples of what city administrations and publicly funded projects throughout China should do.

Ordinary citizens still do not have access to trustworthy certification of a full range of green products and other information to make environmentally-informed decisions for most of their purchases, including major ones such as appliances, furniture, and building products such as paints, and food items such as palm oil. They must have better awareness of the value of green purchasing habits, good information on the qualities that separate green goods from those that are more damaging to the environment, easy access to suitable products at reasonable prices.

Green market supply chains most often will be international in their nature and extend beyond retail sales to include the whole life cycle from procurement of raw materials, manufacturing to material recovery after use.

Environmentally sustainable consumption will be important for trade competitiveness as well. Green market supply chains should be worked into important new trade linkages being established by China. In particular, the exciting and important commitment to revitalizing the ancient routes of trade through a modern “Silk Road” connection to Central Asia and to Europe, and the “Maritime Silk Road” to other parts of Asia, the Middle East and Africa, is a special opportunity to highlight the need for sustainable development practices. It can be a good means for China to take the concept of Ecological Civilization well beyond its own borders.

Implementation of Modernized Law

The capacity to fully enforce the elements of a modernized legal framework for environment and development, and to seek fair treatment from a fully informed

³⁹ Global Commission on Economy and Climate. 2014. *Better Growth Better Climate*. <http://newclimateeconomy.report/#>; <http://www.economist.com/news/briefing/21618682-policies-slow-down-warming-may-be-more-attractive-if-framed-ways-speeding-up-growth-try>

judiciary is necessary. Weak links in the rule of law, and also corrupt practices affecting the environment must be addressed as quickly and effectively as possible at local levels, especially provinces. Only if these measures are taken can the public play its supervisory role well. Stronger regulations for environmental planning and management require standard setting, long-term monitoring, improvement in data analysis and communication of results in a relevant and easy to understand way. While there have been improvements, these issues are still dealt with inadequately.

Protecting Ecological Lands and Strengthening Regional Environmental Management

China is now well aware of the need to protect ecological services and therefore the concept of ecological redlining is a major step forward and builds upon decades of effort to create protected areas. Yet this new initiative may set off major battles between those who wish to protect ecologically fragile areas, and those who wish to do otherwise. Great swaths of land in China are still classified as wastelands, opening their use to almost any economic or social purpose. In reality all lands have some broadly defined ecological services. It would be sensible to eliminate the term wastelands, and to start with the assumption that unless land is already allocated to agriculture or within certain other categories for restricted use, it should be considered as part of China's ecological lands. And then further designate highly significant areas within the category of ecological red lined areas.

Taking a regional approach to addressing environmental management is one of the most important innovations required for ecological civilization. China should move in this direction on a number of concerns ranging from the existing Air Pollution Control Action Plan and other pollution plans yet to be implemented, water basin management, coastal zone and sub-regional ocean planning and management, eco-compensation, and specific regional development efforts such as those in central and western China.

It is now time to consider the entire eastern part of China as a whole for regional environmental management. Within this eastern part there should be unified planning, for example in considering regional air pollution impacts of new projects; and an integrated approach taken for economic and energy restructuring, urbanization and mobility. A regional joint enforcement mechanism should be put in place. An integrated system of basic scientific research and monitoring should be set up to meet the regional information needs at national and provincial levels.

Innovation in Environmental Institutions

Institutional reform requires strategic transformations. Among them: a modernization of relationships between government, market and society into a multi-stakeholder governance system; unified supervision of environmental issues; and a higher degree of accountability through environmental audits. Of these matters, social governance should be given very high priority. All State Council institutions should undergo pressure tests to ensure their capacity and readiness for addressing ecological civilization and green transition priorities.

By design and capacity, or through being overshadowed by economic interests, corrupt practices and by outdated approaches, environmental protection and

management administrations have long been in a weak position. They operate without adequate authority, and encounter resistance from various sectors and local governments. The construction of ecological civilization demands even more from the existing network of environmental institutions, with on-going coordination at the top level in order to provide unified supervision.

Pollution prevention and control functions and ecological protection functions that currently are scattered across various departments and administrations should be placed into strengthened bodies nationally and provincially with more adequate authority, plus human and financial resources required to successfully lead the “War on Pollution” and other high priorities for environmental action. One such priority should be a strengthened environmental impact assessment process made less vulnerable to corrupt practices and with the additional focus of strategic assessment of policies and major plans.

The accountability of officials in this strengthened system should be judged in a fair way based on an environmental audit system that can serve the dual purpose of measuring progress on meeting environmental objectives and on individuals’ performance. The results should be based on independently verified information, and using well tested approaches already available internationally. The results of such audits should be reported to the National People’s Congress in addition to other bodies of government and the CPC. And, of course, they should be accessible to the public.

China Environment and Development Outlook

The information base currently published through government is not broad enough in scope, especially for some pollutants and for the new efforts that would part of a Green Transition. Furthermore, the information presented is not necessarily in a form that is usable or trusted by members of the public. An Outlook on Environment and Development for China should provide a coherent picture of progress towards achieving an Ecological Civilization. This will require a thorough look at existing, generally inadequate indicators, and determine a robust set of more appropriate ones. It is essential to strengthen the quality of monitoring and analysis in order to provide much more credible information. The technical tools to do so are now much more available than in the past. In particular, spectacular gains have been made on crucial information for spatial planning and management at a very fine-grained level. A properly done national Outlook will have to rely on a combination of modeling and scenario development that has so far not been fully developed in China in relation to topics such as Ecological Civilization, and a comprehensive and finely worked out examination of the relationship for environment and economy.