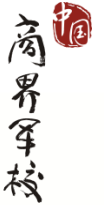


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PHBS

# The Road to Green Transition in China

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# **The Road to Green Transition in China**

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## **Abstract**

China's reform and opening-up drive has catalyzed a series of transformations in society, economics and politics. Specifically, China's economic transformation is taking place in terms of an economic system, structure, and development model that includes shifts from planned to a market economy, agricultural to industrial land-use, rural to urban settlement, semi-closed to open society, ", businesses, "for-profit" to "people, planet and profits" businesses, exclusion to inclusion of more and more segments of the population, and brown to green models. From a historical point of view, the shift from traditional to modern society is not unique to a socialist country but forms an integral part of a nation's modernization process. China differs from other nations in historical, cultural, economic, political and resource landscapes. Moreover, its socioeconomic transformation is distinguished by close linkage to economic system reforms. Presently, China's socioeconomic transformation remains in a transition stage and represents the continuous pursuit of the epitome of modernization.

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The progression of the industrial revolution into the 20<sup>th</sup> century improved people's lives. But this economic development model has raised many questions because of the widening wealth gap and increasing depletion of resources. Gandhi once said: "I'm not an economist, but I'm growing concerned about resources being controlled by fewer and fewer people." Humankind is being compelled to tackle the issues relating to its own development because of global environmental-degradation. The need to effectively bridge the economic divide, mitigate ecological damage, tackle environmental risks as a result of economic development, and balance development and resource utilization is becoming increasingly recognized. This is why research on economic transformation is growing in importance. A few decades ago, the Club of Rome published *The Limits to Growth*, arguing that economic growth since the start of the industrial revolution had wreaked havoc on earth and mankind (Meadows, Randers, & Meadows, 2005). Today, Chinese economists are saddled with the crucial task of transforming China's economic growth model to address a series of huge challenges such as sustaining economic growth and environmental security, while building a strong ecosystem as part of the "Chinese Dream".

### **1. Reshaping the global economic model**

To address the challenges facing China, we must fundamentally rethink our original economic growth model. Unfortunately, the GDP-oriented value proposition has resulted in overexploitation of natural resources and a growing global wealth gap over the past few decades, which in turn has upset the balance between generations and posed a serious threat to the lives of modern people. The "treatment after pollution" model, widely known as the "Business as Usual" (BAU) model, is generally regarded as being unsustainable (CCICED Policy Report, 2007, pp. 75-78).

Economic transformation requires us to shift the focus away from a quantity-centric model that produces large amounts of pollution, emissions and consumption toward an economic model that centers on quality, environmental protection and improvement, and harmony between people and nature. In October 2008, the United

Nations Environment Program (UNEP) launched a green initiative aimed at embracing the future with a fair, inclusive and sustainable economic growth model and building a new platform for different nations to increase their green competitiveness (UNEP, 2012, pp. 6-7).

## **2. Exploring China's approach to economic development**

American poet Muriel Rukeyser remarked that "The Universe is made of stories, not atoms." Similarly, as a key part of today's world economy, China's economic transformation comprises a myriad of exciting stories. The remarkable past 30 years have nurtured several generations of new-fashioned people. The pioneering ethos of the era has inspired us to keep pace with the times and improved our abilities to think and solve problems from different perspectives. Without doubt, China's economic transformation represents a road of reform, innovation, and new development model practice. As the world's largest developing country, China has followed a unique path of economic reform. The related systems, management practices, policies and methodologies combine to form a "China Road," which attracts worldwide attention. Growing numbers of academics are beginning to realize that a clear definition of China's economic transformation path will contribute to the economic theories of China and the world (for example, see the work being done at Simon Fraser University (2013) in Canada).

## **3. Studying the basic theories of economic transformation**

China's reform and opening-up drive has catalyzed a series of transformations in society, economics and politics. Specifically, China's economic transformation is taking place in terms of an economic system, structure, and development model that includes shifts from planned to market economy, agricultural to industrial land-use, rural to urban settlement, semi-closed to open society, "for-profit" to "people, planet and profits" businesses, exclusion to inclusion of more segments of the population, and brown to green models. From a historical point of view, the shift from traditional to modern society is not unique to a socialist country but forms an integral part of a nation's modernization process. China differs from other nations in historical, cultural,

economic, political and resource landscapes. Moreover, its socioeconomic transformation is distinguished by close linkage to economic system reforms. Presently, China's socioeconomic transformation remains in a transition stage and represents the continuous pursuit of modernization. China's economic transformation will take a long time and also represents a long-term complex systematic project, the success of which will determine the nation's economic sustainability (Liu, Ness, & Huang, 2011).

Economic transformation depicts fundamental changes in a country's or region's economic structure, system, and development model over a given period of time. All countries have to address these issues, and mature economies also need to evolve their existing economic systems, structures and development models toward sustainable and healthy economic approaches. The issue of economic transformation has been explored widely and deeply around the globe and also represents an urgent priority for China (see the CCICED (2013) website for numerous documents on this subject).

Western academia usually relies on theories of neoclassic economics and the traditional theory of property rights to approach economic transformation. Most of these theories examine western economic systems and consider a clearly-defined property rights system as the optimal economic system. Based on this argument, rapid privatization is believed to be the first step of the move from planned to market economy. However, the complex landscape in which reforms are taking place today have demonstrated that these theories are insufficient to explain economic transformations, especially those in socialist countries. Therefore, some economists attempt to approach transformation and interpret related phenomena from the angle of institutional economics. Developing countries may also draw upon the theories of growth and economic systems (Myant&Drahokoupil, 2011).

#### **4. Exploring the Chinese characteristics of economic transformation**

China's economy has experienced shifts from closed to open, planned to market, and monism to pluralism, which have spawned a surge of innovative terms such as "family-contract responsibility system," "special economic zone," "commodity

economy," "primary stage of socialism," "double-track price system," "autonomous right of enterprises," "contract responsibility system," and "state sector out, private sector in." These terms have taken center stage during different phases of the liberalization of China's economy.

The following four models have influenced China's reform policies and impacted societal changes on different levels:

1) Improved Soviet model: the planned economic model in the post-Stalin period, i.e., giving more freedom to state-owned enterprises;

2) Eastern Europe model: market socialism implemented by eastern European countries such as Hungary;

3) East Asia model: government-led market-based economic systems in East Asian countries such as Japan and Singapore;

4) American and European model: economic system transition and economic restructuring under a free-market economy mechanism (Hong, 2013).

Different theories for different development models also have far-reaching effects on economic transformation. Leading American expert Zi Zhongyun (2011) cites views from American analysts in her book, *America in the 20<sup>th</sup> Century*, believing that the American economy is powered by the theories of the following four economists:

1) The "invisible hand" proposed by Adam Smith: self-adjustment, specialization, restriction on government, and free trade;

2) John Maynard Keynes's theory of state intervention: implement proactive fiscal policies to solve the problems of recession and unemployment through government intervention;

3) Free-market theory proposed by Friedrich August von Hayek: oppose socialism and any form of governmental intervention;

4) "Entrepreneurial society" championed by Joseph Alois Schumpeter: drive the economy through creative thinking and technology innovation, also known as entrepreneurship.

Over the past century, the American economy has swung between laissez faire

and government regulation. It has drawn on its advantages and, for the most part, avoided negative consequences and continued to innovate, thus creating the U.S. “economic miracle.” By contrast, China's economic transmission has gathered strength from the theories of the following four leading economists:

- Gu Zhun's(2010) "market price" theory: socialist economy being driven by floating market prices, which has laid the theoretical foundations for China's later shift toward a market economy;
- Yu Guangyuan's (2013) theory of "distribution according to work," which has steered China away from leftist thoughts(like radicalism, adventurism, and opportunism);
- Sun Yefang's (1984) view of "increasing the autonomy of enterprises" and Xue Muqiao's(2011) "commodity economy," which have fueled China's economic system reforms;
- Wu Jinglian's (2005) "market economy" perspective, which hails the free market as the most efficient way to allocate resources and emphasizes the importance of creating an effective legal framework to protect private enterprise.

China's reforms go hand-in-hand with its economic liberalization. The ultimate aim of economic transformation is to create powers suited to deal with societal changes, implement reforms and productivity improvements, establish an economic system geared to the trends of economic development, and profoundly liberalize and improve production capacity. From the point of view of Wang Yiming, former vice chairman of the All-China Federation of Industry and Commerce:

The success of a government's or party's policy is gauged by whether the policy maker's target has been achieved, whether the policy has won support from the general public, and whether the policy has boosted societal progress. By these standards, China's reform and opening-up policy implemented between 1978 and 2008 would be the world's most successful one of its kind in modern history (All-China Federation of Industry and Commerce, 2013).

China's sustained economic boom demonstrates that economic transformation will play a decisive role in shaping China's fate and paves the way to the great renaissance of the Chinese nation. During more than 30 years of reform and opening-up, China has accomplished industrialization, urbanization, and socioeconomic transformation that took developed countries 100 years to reach. Amid the adjustment, China has slashed its population of the poor from 250 million to 20 million , contributing significantly to the progress of human civilization.

However, China's extensive development model, which combines high investment, consumption and emissions coupled with its export-oriented strategy lacking in global technological patents, standards and brands, has caused China to pay a high price for environmental degradation. This has also undermined the nation's economic viability, as its exports products outside at the cost of pollution inside (Liu, Ness, & Huang, 2011).

This extensive development model and export-oriented strategy have presented a huge challenge for China's economic viability. Wu Xiaoqing (2005), vice minister of the Ministry of Environmental Protection, states

Rapid economic growth has caused depletion of resources, environmental pollution, and ecological damage, and the environment problem has become a key factor that affects the sustainability of economy and society. China's socioeconomics is currently exposed to the most serious resource and environmental constraints when industrialization, urbanization and modernization processes are still underway and the challenges of economic development and livelihood improvement remain tough. To sustain the economy, it's an imperative for China to reduce its heavy dependence on resource and energy consumption for rapid economic development, break through the resource and energy bottlenecks, and promote low-carbon development.

In addition, most Chinese enterprises stay at the low-to-medium end of the global manufacturing industry chain due to low technical ability and a lack of innovation and



market competitiveness. China has become a "world factory" largely thanks to a low-cost strategy that sacrifices resources, environment and labor for development. The "world factory" grapples with a series of problems when raw material prices rise, energy-saving and environmental requirements tighten up, and the labor cost soars. Combined, these factors have the potential to threaten China's economic security.

### **5. Identifying the key areas of focus for economic transformation**

Some academics describe changes to China's economy as follows: From the perspective of economic systems, China is in transition from a planned to market economy; from the perspective of economic models, China is moving from a closed to open economy; from the perspective of economic trends, China is departing from shortages and trending toward gluts; from the perspective of economic characteristics, China is shifting from a production-led to distribution-led model; from the perspective of economic dynamics, China is in transition from supply to demand constraints; from the perspective of economic drivers, China is heading towards innovation instead of imitation; from the perspective of economic levels, China is breaking away from the extensive model and embracing an intensive model; from the perspective of economic management models, China is moving from a government-directed to a market-driven one; and from the perspective of quality of economy, China is in transition from fast growth to healthy development (Naughton, 2006).

Studies on China's economic transformation focus on the following two areas:

1) Economic restructuring. China has created an economic restructuring model set against a new societal structure and system, laying a strong foundation for its economic viability. China has established fundamental economic institutions that incorporate a diverse range of ownership types led by public ownership and seeks to create a symbiosis and synergy between various forms of ownership; China has developed a system led by distribution according to work and combined with other forms of distribution continues to improve the mechanism that enables different facets of production such as labor, capital, technology, and management to share profits in proportion to the contribution of each.

2) Transformation in development model. As a response to China's industrialization landscape, which is characterized by high input, high consumption and high pollution but leading to low output, low quality and low benefit, the theory of economic transformation gives prominence to the change of the economic development model. Specifically, the new model trims the previous heavy dependence on resources, exports and investment and gradually shifts away from economic construction to economic civilization and from a quantity-driven to a quality-driven model. Moreover, the new model departs from the practices that place GDP above environment and land utilization efficiency and aims to incorporate the government initiative to build an environmentally-friendly and energy- and resource-efficient society through public action. Amid intensifying resource and environment constraints, China's 11<sup>th</sup> and 12<sup>th</sup> Five-Year plans proposed the target of cutting energy consumption per unit of GDP by 20% and underscored the need to "strengthen awareness of crisis, cultivate green and low-carbon development concepts, improve incentive and restriction mechanisms with a focus on energy saving and emission reduction, step up efforts to build resource-efficient and environmentally-friendly production and consumption models, enhance sustainability, and improve the conservation culture" (British Chamber of Commerce in China, 2013).

China has highlighted the following six areas of focus for the transformation of its economic development model as part of its green development strategy: respond effectively to global climate change, strengthen resource conservation and management, accelerate the recycling economy, increase environmental protection, promote ecological protection and rehabilitation, and step up the construction of water conservation and disaster prevention and mitigation systems. This marks China's entry into a transition period of green development. Of course, China must continuously improve its market economy system during the present shift from rural areas to cities, coastal to inland areas, and domestic to overseas markets, and it must draw upon the achievements of civilizations from around the world to explore ways of economic transformation that suit China's conditions (British Chamber of Commerce in China,

2013).

Moreover, Chinese enterprises have significantly improved their core competencies by tapping into emerging markets, eliminating outdated industrial capacity, optimizing the product structure, developing innovative management practices, and moving up the industry value chain. China's business models, huge market, and extensive talent base have attracted many global partners. As leading global strategists . Gupta and Wang (2009), , stated,

The evidence on whether China can innovate is already beginning to come in. One of the most conservative measures of technological innovation is the number of patents granted by (not just filed with) the US Patent & Trademark Office (USPTO). From 2004-07, China-originated patents granted by the USPTO grew at a 27 percent annual rate, compared with virtually zero growth in the number of all patents granted. If current trends continue, by 2020, the number of China-originated patents granted by the USPTO will exceed the number of patents from Germany, Britain, France, and Italy combined.

Gernot Gutmann, former president of Koeln University and a leading German economist interested in China's reforms (see China's Research Center for Economic Transition, 2004), believes that China's economic transformation should properly address the problems of environmental protection, inflation, and regional economic imbalance. He expects China to sustain rapid economic growth if it can successfully solve these problems.

## **6. Measures of Environmental Innovation in China**

The Chinese Ministry of Environmental Protection announced four new specific targets enabling environmental innovation policies, market mechanisms and technology innovation. First, China must increase its ecological performance by upgrading key industries. Second, it should recycle waste with a strong emphasis on recycling electronic waste. Third, it needs to develop a regional circular economy policy, and last, review the key economic policy matrix to benefit from the sound development of the circular economy (State Environmental Protection Administration

[SEPA] 2007).

### **6.1 Innovation of the environmental technology and management system**

In 2002 the Science and Technology Ministry released its *Sustainable Development Program (2001-2002)* which defined the principle of technology innovation, whereby national targets should adapt to market demand, overall layout and individual analysis should be carried out together, and technological breakthrough should be combined with technological integration. Both independent innovation and international cooperation were regarded as important to developing technological innovation. In 2005, China first announced its future intention to be an "innovation-oriented country" with a statement that it will take China about 20 years to catch up with moderately developed countries in the fields of science and technology. Hence, the *Chinese Strategy Report on Technology Development Targets for the Early 21st Century* calls for the establishment of a technology innovation system by 2010. The report proposed "a reasonable and appropriate development strategy" for China. In the meantime, certain enterprises have made profitable green initiatives involving environmental management innovation. For example, the China National Offshore Oil Corporation maintains a corporate culture of environmental protection, and Lenovo Group encourages its staff to live a "green lifestyle" and takes measures on energy saving and waste recycling. Lenovo also offers consumers and/or commercial clients end-of-life management solutions for their computer equipment through voluntary programs and regulatory programs in which Lenovo participates; and Suning Appliance Corporation has adopted a paperless office policy by investing RMB 300 million to establish the SAP/ERP Information Technology Management System. Other private enterprises have become the main body of environmental innovation of technology and management (The Sustainable Development Project Group on Chinese Academy of Science, 2006).

### **6.2 Innovation of environmental regulation**

As China's environmental regulations mainly include executive orders and end-of-life product resource disposal, marketing mechanisms do not currently play a big

role (Qin & Xu, 2007; Wang, 2008). The central government has issued a series of policies such as the *Pollution Prevention Law*, *Clean Production Law*, *Energy Conservation Law*, and *Circular Economy Promotion Law*. However, the gap between the effectiveness of these policies and their objectives seems to be widening. The laws tend to be vague and hard to implement. With a general lack of policy innovation and weak enforcement of environmental pollution taxes, China is falling behind its goals. However, the government has increased its support for green taxes, environmental fees, green credit and securities, ecological compensation, emissions trading and green insurance – and its scope is growing. Environmental policy now addresses all sectors, industries and regions. In particular, it has begun to strengthen the cooperation between the environmental protection sector and the financial sector.

The Ministry of Environmental Protection has joined with the Central Bank to prepare an environmental performance report for China's stock market index. Judgment will be based on the verification of environmental protection of listed companies, assessment of their environmental performance, and their performance in promoting environmental responsibility.

### **6.3 Innovation in environmental marketing mechanism**

- *Clean Development Mechanism (CDM)*

During recent years, CDM has developed rapidly in China. Since November 2004, the Chinese government has approved an increasing number of CDM projects according to the requirements of the Kyoto Protocol and other regulations. As of March 31, 2008, there were 1,197 such projects in China (Gao, 2008).

- *Green Capital Market (GCM)*

The GCM is defined as a financial system that incorporates the development of green credit, securities and liability insurance. The goal of the GCM is to provide capital for environmental activities. The Chinese GCM now includes environmental protection funds, bonds and protection insurance. The cost of financing will be lower under this marketing mechanism compared with the current Chinese financing channels. In July 2007, the country issued 1.5 billion corporate bonds to help the

environmental management of Dianchi Lake, which is the largest freshwater lake in Yunan Province. On August 27, 2008, CITIC Securities underwrote RMB 8 million in corporate bonds to control pollution emission reduction projects. This is the first time Chinese GCM has been used to directly finance the introduction of water pollution abatement.

- *Environmental Exchange (EE)*

Under conditions of limited trade and information exchange, pollution abatement and other environmental improvements will usually cost more in time and money. On August 5, 2008, the Beijing Environmental Exchange and the Shanghai Environment and Energy Exchange were set up, as the country increases efforts in cutting emission and energy conservation. Their main functions were to establish the trading of energy saving technologies to reduce pollutants such as SO<sub>2</sub> and COD. The exchange also provides a consultancy service, project design and evaluation, fund-raising and technical support for customers such as energy reservation integrators, research companies and investment institutions. This indicates a trend towards fair and open environmental trading in China.

- *Energy Management Contract (EMC)*

EMC is an energy-saving system linked to marketing mechanisms and derived from policies of developed countries in the mid-1970s. Under EMC, a company signs a contract with clients to install energy-saving equipment, and the savings from the decreased energy consumption offset the cost of the project. In China, EMC has great potential for development. In 2007, the Comprehensive Energy Reduction Program began to promote the development of the energy services industry to foster an energy services market and to expedite energy management contracts. In 2008, departments in Shanghai were slated to promote the city's nearly 500 energy management project contracts with a projected savings of 500,000 tons of standard coal. Hunan, Henan, Shaanxi, Shanxi, and Qinghai provinces were to actively explore energy management contracts as well (Shanghai Government, 2013).

#### **6.4 Environmental culture innovation**

Chinese environmental culture is at its initial stage, although there are communities and organizations with voluntarily initiated environmental culture initiatives to encourage energy-saving campaigns, such as driving a day less each week and monitoring indoor temperature controls. Environmental problems have also attracted increased attention from the media, such as Chinese Enterpriser Magazine, the Daonong Enterprise Institute, China's Green Corporation Project, and the Guanghua School of Management of Peking University, and the Green Transformation Project under China's Research Center for Economic Transition of Beijing University of Technology. In 2007, China convened a series of environmental innovation conferences. Following these activities, organizations were established to promote global networks and knowledge exchange.

## **7. Looking into the future of economic transformation**

As the world's second largest economy, China has considerably strengthened its competitive power in recent years. At the same time, China is grappling with a growing number of challenges. Its per capita GDP ranks as the world's 90<sup>th</sup> and issues such as aging population and imbalanced, uncoordinated and unsustainable development still loom large. The globally economy is in transition yet generally on track to recovery but faces mounting downward pressure. The profound transformation covers economic models and structures as well as global economic and financial government structures. The performance of China's economic transformation will shape the future of China in terms of economic development in the global context.

China's economic transformation is actually an issue of great complexity. Research in the field should capture the historical woes and innovative ideas since the Self-Strengthening Movement (1861-1895) but depart from stereotypes of the existing ideology. China's economic transformation provides a rich array of intricate and unique case studies unmatched in history, presenting exciting challenges to western economists, and contributing enormously to the global drive for a green economy (CCICED Policy Report, 2007).

Futurologist Alvin Toffler predicted decades ago that human society would

embrace the IT-driven "Third Wave" after agriculturalization and industrialization. Similarly, the world economy will ride the "Fourth Wave" as it moves towards ecological and green development, low-carbon and recycling models during the 21<sup>st</sup> century. Economic transformation is set to become one of the most dynamic academic fields and have far-reaching influence on the world's economic outlook. This research paper has examined China's economic transformation around economic development models There's still a long journey ahead, but today we've taken the first step, just like sowing seeds in the spring. Finally, to quote Zhang Ruimin, CEO of the Haier company, "If we don't challenge ourselves, someone else will" (*Economist*, Oct. 12, 2013).

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