

'ECOLOGICAL PROGRESS': UNDERSTANDING CHINA'S NEW FRAMEWORK FOR SUSTAINABLE DEVELOPMENT

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KEY POINTS

- The concept of 'Ecological Progress' has emerged in recent years as China's underpinning theory for sustainable development in the country.
- The government is now seeking to put the concept into practice as a means to curb its record levels of pollution, consumption and dependence on resource imports.
- Issues to be addressed include incentives for local governments and the structure and responsibilities of central government departments.
- Giving the private sector a greater role is seen as a key factor in making Ecological Progress work. It will lessen the financial load on government, diversify sources of capital for investments and provide the incentives for business to shoulder greater responsibility for environmental protection.
- Strengthening the top-level design of the system, coordinating decision-making between departments, establishing pilots, and expanding international cooperation and dialogue will also help Ecological Progress move quickly from theory to practical impact.

INTRODUCTION

This time next year, China will release its 13th Five Year Plan – the blueprint that will guide the country's economic and political progress between 2016 and 2020.

There can be little doubt that the targets and policies that are set in the Plan will have global implications, as China moves to become the world's largest economy. But crucially, and for the first time, this master plan will also be guided by the concept of 'Ecological Progress' – the Chinese government's unique and evolving framing concept for sustainable development.

The incorporation of such a concept into China's central planning process is timely. During a year in which the international community will announce new UN Sustainable Development Goals and agree a new global climate treaty, China's ambition and direction on environmental and sustainability issues is more important than ever.

Based on the views and research of leading Chinese academics, this briefing looks at China's plans for 'Ecological Progress' its origins, development, challenges and potential impact on the country's sustainable development.

HISTORY AND DEFINITION

China today is now one of the world's driving global powers – economically, politically and environmentally. This position is the result of nearly four decades of economic reform that has transformed the country and brought prosperity to hundreds of millions. But it has also created problems, not least in terms of unprecedented levels of pollution and increasing dependence on imports of strategic resources, including oil, gas and key minerals. From China's leaders to its academics and citizens, there are doubts about China's sustainable economic development model.

Such concerns are by no means recent. Since 2002 a number of sustainability concepts have been introduced by the government. These include its 'Scientific Development Concept' of 2003 and its proposal for an 'Energy Efficient and Environmentally Friendly Society' in 2004. These concepts reflect evolving government thinking. But they are also recognition of the fact that, as it enters the mid to late phase of industrialization, China's competitive advantage in traditional factors of production is diminishing. At the same time, serious population, resource and environmental challenges mount.

The unique concept of Ecological Progress represents the evolution in the government's theory on "sustainability with Chinese characteristics". First announced as an idea at the 17th National Congress of the Communist Party (NCCP)¹ in 2007, Ecological Progress was then fully incorporated in national development planning at the 18th NCCP in 2012.

Despite this official endorsement, Ecological Progress still lacks an official definition. This explains why Chinese academic opinions on the subject differ, with no clear thread running through related research. One Chinese academic, however, has described it as a "conceptual innovation at a high level to effect change", with development occurring through "a process of trial and error".² In this respect it is similar to other broad concepts of sustainable development that have helped embed ideas of environmental protection in other countries, and in turn driven the development of specific laws. What is clear from Chinese academic research, however, is that the term is also understood to embrace far more than the scientific study of ecology, and encompasses "greenness, environmental protection and the harmony between men and nature".³

CHINA'S ENVIRONMENTAL CHALLENGES

The importance of Ecological Progress as a guiding government principle is clear whenever China's environmental challenges are considered. Over the past four decades, China has adopted a resource-intensive industrialization, defined by a "treatment-after-pollution" approach to development. The impact has been pollution of river basins and lakes, high levels of smog in cities and a looming long-term shortage of strategic resources and energy. These problems are unprecedented in severity and complexity.

As Professor Wang Yi of the Chinese Academy of Sciences has put it:

"When conventional pollution problems remain unresolved, new types of environmental pollution keep cropping up and the effects of many pollutants occur together. In recent years pollution caused by both volatile and persistent organic compounds, along with soil and mercury pollution and electronic waste pollution have been emerging from one another."

The environmental challenges China faces today reflect its position as the world's industrial factory. While this economic output has brought wealth, the pollution it has generated and the consumption of resources entailed, is more often than not out of proportion to China's share of global GDP and population, as Table 1 indicates.

¹The NCCP is the highest body within the Chinese Communist Party. It is the body which officially approves all party policies.

²Prof. Wang, personal communication

³Professor Wang Yi, Chinese Academy of Sciences, personal communication.

Table 1. China's share of global resource use and pollution production⁴

	China's global share	Global ranking
GDP	11.4%	2
Population	19.2%	1
Coal consumption	50.2%	1
Cement consumption	56.2%	1
Iron ore consumption	55.4%	1
Greenhouse gas (GHG) (CO ₂ e) emissions	22.3%	1
Ozone depleting substances consumption	49.0%	1
Mercury production	75.8%	1

This is only a snapshot of China's resource use. In addition to the above figures, China is also the number one global consumer of steel, copper, aluminium, zinc, nickel, cadmium and all major fertiliser types. And in a number of key sectors, especially oil, natural gas and iron ore, it faces severe imbalances between supply and demand, relying heavily on imports.

The consequences of China's contribution to global pollution levels and resource demand has not gone unnoticed. The government is well aware the country is perceived negatively abroad due to its pollution and resource impacts. It also recognizes the growing expectation that China should shoulder greater global environmental responsibilities.

These are all reasons for embedding Ecological Progress within the country's development strategy, and underline that the execution of the concept – for good or bad – will have global consequences.

EMBEDDING ECOLOGICAL PROGRESS: CHALLENGES, ACTION AND EXPERIENCES

Although the concept of Ecological Progress has been part of official government doctrine for nearly eight years, barriers still exist and important changes are still required before the concept is likely to have its intended impact. Key decisions and ongoing actions, however, underline the seriousness of the government's intent.

Government structures and incentives

Critical issues to be addressed are the incentives that drive decision making by local government officials, together with the structure and responsibilities of central government departments.

As a consequence of China's long period of national reform, local governments have become major investors and business operators. This has established an economic growth pattern driven by competition between local authorities. For this reason, boosting growth and increasing fiscal revenues have become the major indicators for evaluating officials' performance. This means that when a conflict arises between environmental protection and economic development, the former almost always makes way for the latter.

This problem is compounded by an imperfect bureaucratic and legal system, a major cause of China's resource and environmental problems. Although China's work on environmental protection started in the 1970s, the system remains inadequate for the task. The Environmental Protection Law provides a legal framework for sustainable development, and basic mechanisms such as environmental impact assessments and fee-based discharge rights are in place. But despite strengthening of environmental departments in recent years, the institutional capacity to enforce various legislation and regulations is lacking.

⁴Data from BP, EIA, European Commission, FAOSTAT, IEA, International Cement Review, UNEP, World Bank and World Steel Association.

Overlapping functions, fragmented management and lack of effective coordination between central government departments explains much of the problem. Among the 53 environmental protection functions assumed by central government for example, 21 are under the authority of the Ministry of Environmental Protection (MEP), while the remaining 32 are dealt with by nine other ministries. Of those that do fall under the MEP's control, nearly half are carried out with other departments. Like many other countries, such fragmentation reflects the consequences of various restructurings over the years. The outcome has been a confusing separation of powers between central and local government, leading to reduced administrative effectiveness and coordination.

Strengthening the system

The shortcomings of the current environmental protection regime have not gone unnoticed. Academics, for example, have called for the creation of a single super-ministry to unify management of central government functions.

And more significantly, in 2012, the 18th NCCP introduced the idea of “protecting the environment with [sic] system”. In essence, this means strengthening the rule of law, and building the institutions and national governance capacity to improve enforcement, reduce costs, increase efficiency and drive behavior change throughout society. This is not a minor announcement; academics have described it as a change in the governing philosophy of China's new leaders.

The NCCP statement was followed in 2013 with a decision from the Central Committee of the Communist Party of China⁵ relating to issues of “comprehensively deepening reform”. The decision announced a complete system of Ecological Progress would be established, including the most stringent source protection mechanism, a damage compensation and accountability mechanism, and amendment to the mechanism for environment improvement and ecological restoration (see Table 2).

In January 2014, ‘The Specialised Group for Reforming the Economic System and the Ecological Progress System’ was established to implement the decision by allocating tasks and research to different departments. Crucially, this group sits under the ‘Central Leading Group for Comprehensively Deepening Reforms’, China's most powerful policy formulation and implementation body, chaired and led by President Xi Jinping.

Table 2. Ecological Progress system proposed in Central Committee decisions

Categories	Specific mechanisms	Brief introduction
Management of natural resources and assets	Property rights of natural resources and assets	Register and determine the property rights of water, forests, mountains, grasslands, wastelands, beaches and other natural ecological space. Establish a property rights system for natural resources that clearly defines rights, responsibilities and effective monitoring measures. Improve the management system of state-owned forests, and property rights system of collectively owned forests.
	Paid use of resources	Accelerate the price reform of natural resources and products. Enforce paid use of resources. Extend resource tax to all uses of natural and ecological resources. Establish a mechanism that coordinates the pricing of industrial land and residential land.
	Ecological compensation	Improve the mechanism of emission permission, and implement trading mechanisms for energy savings, carbon emissions, other emissions and water rights.
	Property transactions	Establish a spatial planning system. Specify regulations on the development and control of production, residential and ecological space. Enforce use control.

⁵Formally the party's highest organ of authority and comprising the top 200 odd leaders in the party.

Categories	Specific mechanisms	Brief introduction
Control and management of natural resources	Spatial planning and use control	Establish a spatial planning system. Specify regulations on the development and control of production, residential and ecological space. Enforce use control.
	Bottom line of ecological protection	Implement main function zone mechanism. Establish a national park mechanism. Establish a monitoring and early warning mechanism for resource and environment carrying capacity. Implement restrictive measures in areas of over-loaded environment carry capacity.
	Auditing outgoing officials for natural resources and assets	Explore how to formulate balance sheet for natural resources, and audit outgoing officials for natural resources and assets.
Ecological Conservation	Independent monitoring and enforcement	Establish and improve the monitoring mechanism of all pollutants. Conduct independent environment monitoring and administrative enforcement.
	Environment improving and ecological restoration	Establish a regional linkage mechanism that coordinates the protection, restoration and pollution prevention of land and sea ecosystems.
	Government purchasing third-party services and chartered protection	Encourage private capital to invest in the ecological protection market, and encourage third-parties to combat environmental pollution.
	Environmental reporting	Timely disclosure of environmental information, improve reporting system and strengthen public supervision.
	Environmental damage compensation	Demand compensation from those who are liable for ecological damages and even hold them to criminal responsibility.
	Control of total emissions by enterprises and government institutions	Establish a system for controlling total emissions by enterprises and government institutions.
	Permanent accountability for environmental damages	Establish a system of ensuring permanent accountability for environmental damages.

The role of the market

Another crucial component of the Ecological Progress concept is the role of the market, and the efficient pricing of resources and pollution it allows. Government support for market mechanisms is explicitly laid out in Table 2. Leading Chinese academics also see market mechanisms as a way to allocate resources in a more cost-effective way. Supporters argue establishing new rights and monetizing ecological values will create incentives for businesses to take responsibility for protecting the environment, and curb consumption of public resources. Ecological compensation mechanisms and resource taxes are also seen as vital to ensure a 'polluter-pays' system is established. Giving the private sector a greater role in environmental protection will also lessen the financial load on the

government, and diversify sources of capital for the critical investments that are required for low carbon growth.

Transforming targets

China is also trying to transform the way it sets resource conservation and environmental protection targets. It wants to move from a focus on efficiency-based targets to a more sophisticated system that considers both efficiency and quantity. For example, China has recently announced plans to move from setting efficiency improvement goals for coal use (e.g., tons per unit of GDP), to implementing an absolute cap on total coal consumption. Urban agglomerations that are better positioned to limit and reduce coal use are likely to be used as pilots.

Similar 'volume'-based targets are likely to be set in the mid to long term for greenhouse gas emissions, other fossil fuels and sources of particulate matter (e.g., PM2.5), and water pollutants. The period of the 13th Five Year Plan (2016-20) will see new indicators added and monitored, including for organic compounds. Importantly, the reform of target setting is also being accompanied by improvements to accountability and performance assessments for officials.

THE FUTURE OF ECOLOGICAL PROGRESS IN CHINA

As a new guiding concept, Ecological Progress is still in its early stages of development. Embedding it within China's planning processes will be a complex and systemic project in which various factors interact. It will not be delivered by solving a single issue or adopting a certain policy. Success will require coordinated decision-making that encompasses economic, societal, technological, resource and environmental factors. Many outcomes are possible.

However, scenario modelling by some Chinese academics provides a clear steer on the kind of policy formulation required for China to establish the basis of a sustainable economy by 2050.

The starting assumptions for this modeling are as follows:

- GDP growth will decrease from an average of 7.5% in 2010-15 to around 3.5% by 2045-50. Total GDP will exceed that of the US in 2022-25
- China's population will peak at 1.46 billion in 2030 or 1.51 billion under a two child policy
- Industrialization will be complete by about 2020
- Secondary industry will peak at 48% around 2020 and decline to 36% in 2050
- The service industry will exceed the secondary industry around 2025 and reach 61% in 2050
- Urbanization will reach around 60% in 2020 and 75% in 2050

Five policy instruments were identified with the potential to have a major impact on China's Ecological Progress through to 2050:

- Restructuring the energy mix
- Adjusting energy intensity
- Imposing a carbon tax
- Reducing dependence on imported energy
- Adjusting the ratio of investment and consumption

Some 92 policy mixes were analyzed using a variety of different scenarios, from 'business-as-usual' to the substantial expansion of renewables and energy efficiency.

The most ambitious scenario assumed the following:

- All production sectors adopt strict energy utilization and emission control policies
- Total energy use is limited to the equivalent of 5.68 billion tons of coal
- Non-fossil fuel energy exceeds 40%
- Coal consumption is below 30%
- Energy intensity reduced to 50% of 2010 level in 2050

- Carbon tax of 100Y/tCO₂ implemented from 2015
- Consumption ratio of 73% of GDP reached by 2050⁶

The key outcomes from this scenario were as follows:

- Peak CO₂ emissions: 2032
- 2050 CO₂ emissions: 11 billion tons (equivalent to 2015 reference level)
- Peak coal consumption: 2027 at 3.33 billion tons
- Peak PM 2.5: 2027 (but levels after peak are still higher than historical emissions before 2012)

Although representing an 'ambitious' scenario, these outcomes are unlikely to be sufficient from a global perspective. The Intergovernmental Panel on Climate Change's 5th Assessment Report, for example, states that a 40-70% reduction in greenhouse gases is required by 2050 from 2010 levels, for a two-thirds chance of keeping the rise in global temperature below 2 degrees Celsius. As the world's number one GHG emitter, China, by 2050, will need to – and be expected to – deliver more than a return to its 2015 baseline emission level. The good news is that the government already seems intent on taking a more ambitious pathway than assumed in the modeling scenario above. The joint China-US agreement in November 2014, for example, announced that China would peak its emissions by 2030 at the latest.

However, the scale of the long-term reduction challenge underlines that the concept of Ecological Progress will need to move quickly from theory to practical impact. Goal setting will be particularly important in this regard, according to the modelers responsible for the analysis above. The analysts propose a set of broad strategic as well as specific decadal goals from 2020 to 2050. These would establish the frameworks and institutions for enabling Ecological Progress actions as well as precise milestones to be met, such as increase in forest cover, improvements in water quality, or reduction in city haze.

PROPOSALS TO ADVANCE ECOLOGICAL PROGRESS IN CHINA AND GLOBALLY

Three other critical areas for action will also need to be addressed in the near term to ensure Ecological Progress is developed to its full potential.

1. Strengthen the top-level design of the system, along with a road map for achieving this. This is important to avoid different interpretations of Ecological Progress among departments and the tendency to focus inward rather than work in a cross-departmental manner. Introduction of a guidelines for advancing Ecological Progress would help unify understanding and cooperation between departments.
2. Establish pilot programs. Ecological Progress is a new concept without academic or theoretical inheritance. Learning-by-doing pilots will help develop a practical understanding of what does and doesn't work. Issues that would benefit from research include how to accurately calculate the asset value of natural resources and different environmental costs. Pilots programs for trading waste discharge and water use should also be considered. Because it will not be possible for China to design a complete system in one go, the process will require constant learning, adjustments and innovation.
3. Advance Ecological Progress through expanding international cooperation and dialogue. The knowledge and experience China gains from implementing Ecological Progress domestically will allow it to become an exporter of ideas. China should aim to shape ambitious environmental outcomes in key international forums, including the UNFCCC global climate talks and World Trade Organization negotiations. It should also use platforms like APEC and ASEAN to facilitate regional cooperation and carry out green dialogues with the US, EU and other bilateral partners. In short, it should share its experience in advancing Ecological Progress and sustainable development with other countries. This will improve China's soft power and contribute to global sustainable development.

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⁶The consumption ratio is the same as the US' in 2010 and reflects China's aim to shift from an investment and export based economy to one that is driven by consumption, investment and exporting.