中国环境与发展国际合作委员会
China Council for International Cooperation
on Environment and Development

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CCICED Phase VI（2017–2021）
Capstone Report
Outcomes and Impacts

CCICED secretariat
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Contents

Overview

Introduction

Since 1992, China Council for International Cooperation on Environment and Development (CCICED) has supported inter-disciplinary research with leading Chinese and international experts which, in turn, have supported recommendations related to environmental protection, pollution abatement, biodiversity conservation, and sustainable development. CCICED recommendations have focused both on opportunities within China as well as through international cooperation, and have included a two-way exchange of innovative approaches, systems, and tools. While the outcomes and impacts cited in this report are not solely attributed to the work of CCICED, the China Council has contributed to numerous substantive outcomes cited. Moreover, because major policy initiatives often take several years between initial research and formal adoption, outcomes and impacts are often linked to outputs from years prior.

This report outlines the key outcomes and impacts of CCICED's work during its Phase VI (2017-2021) period. This period has been characterized by an array of important shifts in environmental policy and enforcement, including the notable inclusion of "ecological civilization" in the constitution in 2018. Because the changes are many and they appear in a wide variety of sectors, accounting for all of them is outside the scope of this report. Nevertheless, the following narrative will account for some of the most notable outcomes and impacts, with a particular emphasis placed on those related to carbon neutrality, climate change commitments, greening of the Belt and Road Initiative, nature protection, and domestic governance shifts in policy and enforcement. A more comprehensive accounting of Phase VI outcomes and impacts can be found in Annex I.

Climate change and carbon neutrality

National carbon trading scheme

In 2021, China's National Carbon Trading Scheme is officially launched. More than a decade in the making, the scheme is the world's largest carbon market, with an initial coverage of 2,225 power sector producers. The official launch is the culmination of a series of pilot carbon market schemes, which had been in the planning phase since 2011 and active since 2013. The pilot markets were successful in reducing emissions, boasting a trade volume of 330 million tons of CO2 (worth RMB 7.11 billion). While it is still too early to gauge the full impact of the scheme, the success seen in the pilot projects suggests that there will be measurable impacts—including in the short term. China has noted that the scheme will be important in helping it achieve its goal of reaching peak carbon dioxide emissions before 2030 and carbon neutrality before 2060.

CCICED has conducted research on market-based carbon pricing for more than a decade and put forward a series of recommendations related to the top-level design, coverage, monitoring, regulatory enforcement, and other aspects. CCICED's 2008 Interim Report of the Task Force on Economic Instruments for Energy Efficiency and the Environment in China noted that a carbon market would help "achieve a win-win situation between environmental protection and economic development." That same year, CCICED's Annual Policy Recommendations proposed that ETS or pilot projects be launched in seven provinces (Tianjin, Jiangsu, Zhejiang, Shanghai, Shanxi, Henan, and Guangxi). In addition to CCICED's policy recommendations that helped guide China's policy making in this area, the Ministry of Ecology and Environment's press release announcing the official launch specifically notes the opinions of CCICED's International Chief Advisor.

The carbon trading scheme represents a significant contribution to China's efforts to follow through on increasingly ambitious international commitments to help tackle climate change. CCICED has recommended establish long-term climate mitigation targets together with short-term, interim and sector-specific targets in order to track progress. For example, CCICED's 2020 Policy Recommendations include the adoption of ambitious climate targets with energy transition at their core to build a low-carbon society and note that China's Nationally Determined Contributions (NDCs) need to be updated to take into account "actual circumstances." Other recommendations include the enhancement of multilateral climate coordination with Europe and with other developing countries through the Ministerial Climate Action (MOCA) and other initiatives to help forge new global climate leadership.

International climate governance

China's international climate commitments have become ambitious and specific in recent years. Since President Xi Jinping announced at the General Debate of the 75th Session of the United Nations General Assembly in September 2020 that China will achieve carbon neutrality by 2060, work on decarbonization pathways have accelerated across key economic sectors—leveraging green technology innovation and focusing on opportunities like green, low-carbon urban clusters. At the December 2020 UN Climate Ambition Summit, China announced some further commitments for 2030 including around 25% for non-fossil fuels in primary energy consumption. The 14th Five Year Plan reiterates and provides some additional details in mainstreaming China's carbon peaking and carbon neutrality pathway.

Domestic climate governance

Since the 2015 Paris Agreement, China has increased its alignment of domestic climate mitigation with global governance. In 2017 and 2018, CCICED recommended an upgrade of China's contribution to global climate governance through enhanced action on climate change mitigation domestically. The 2019 Recommendations include a call for an acceleration of China's climate action, including the development of a clear vision of China's low-carbon development, the implementation of total carbon emissions control and indicators, and the activation of a national carbon market. In another 2019 publication, CCICED's Global Climate Governance and China's Role report calls China's 14th Five-Year Plan "a key stage for China to achieve its carbon emission reduction commitments and the low-carbon transformation of its economy."

In 2018, the Ministry of Ecology and Environment (MEE) was established, underscoring the importance of an integrated approach linking the war on pollution with ecological protection. Importantly, this change brought climate change (including greenhouse gas emissions in regulatory compliance, enforcement, and inspections) under the auspices of MEE, the subject of CCICED's work and past recommendations.

Restructuring domestic governance in this way is indicative of a general shift in the approach of the central government toward taking environmental issues—particularly enforcement—more seriously. CCICED has been recommending such an approach since 2013, when policy recommendations included reference to the establishment of a mechanism that could provide "unified supervision of all pollutants, all emission sources."

Starting in 2016, the central government launched central environmental inspections and began strengthening the enforcement of environmental laws and regulations at the provincial level by deploying cross-ministerial/departmental teams tasked with that purpose. This new approach was made even more apparent in January 2021 when China's National Energy Administration was subjected to an environmental disciplinary inspection and was told that it must take the energy transition much more seriously. The report by the Central Environmental Inspection Team further underscored the seriousness of climate mitigation, emphasized that environmental considerations must be incorporated into all relevant lawmaking, and was also highly critical of the National Energy Administration's failure to apply environmental standards to coal expansion.

Energy efficiency

With the ability to help reduce some 30% of greenhouse gas emissions from the world's building sector, energy efficiency is an essential tool for helping to achieve climate mitigation outcomes. In this area, CCICED has recommended promoting multiple high-quality energy sources such as natural gas, low-sulfur diesel, liquefied petroleum gas (LPG), and electricity to replace coal. Starting as early as 2011, CCICED has been pushing for progress on energy-efficient building construction through its publication "China's Low Carbon Industrialization Strategy," which recommends increasing the construction of smart buildings as a way to reduce emissions. In 2013, CCICED's annual policy recommendations included improving urban energy efficiency with the active promotion of green building standards, green architecture design, and green community construction. By 2018, recommendations emphasized the need to fully modernize China's approach to green urbanization by moving beyond simply investing in green buildings, plans, and technologies and toward a deep transformation of both content and approach.

On the ground, China has made great strides in renewable energy generation and implementing green building standards. Between 2016 and 2018, China saw an increase in the use of clean and efficient energy for basic power consumption needs. In 2019, national electricity generation from renewable energy accounted for 27.9% of total electricity generation. Green buildings—particularly those newly constructed in urban areas, such as Beijing, Tianjin, Jiangsu, and Zhejiang—have been an area of considerable progress. By 2018, 56% of new buildings had met China's green standards, exceeding the target set out in the 13th Five-Year Plan. According to estimates, China's energy consumption per unit of GDP decreased by 3.1% in 2018 over the previous year and energy efficiency has continued to improve.

With regard to energy-efficient transportation, China now leads the world in the promotion of new-energy vehicles. Public transportation has been an area of considerable progress, with China now boasting the largest number of buses powered by clean energy worldwide, leading to more than 1.6 million tons of fuel saved every year. These new-energy bus fleets more than tripled in size between 2015 and 2019, moving from 116,300 buses in 2015 to 409,700 in 2019.

Nature-based climate solutions

Nature-based solutions to climate change have been boosted through a series of deliberate policy changes in recent years, as well as through afforestation and nature protection initiatives in years prior. In 2007, CCICED's annual Policy Recommendations emphasized the importance of carbon sequestration, including through afforestation. In 2011, CCICED called for forest management and other land and water uses to be developed as ecological enterprises for services such as carbon sinks. CCICED's work on the Belt and Road Initiative included recommendations to advance the UN's Sustainable Development Goal 15 (SDG 15) on terrestrial ecosystem protection, including through financing and other safeguards that prevent deforestation and protect valued ecosystems.

At the 2019 UN Climate Action Summit in New York, China signalled its strong international leadership on the issue by co-leading (along with New Zealand) the Summit's Nature-Based Solutions Coalition, which launched the NBS for Climate Manifesto. The Manifesto has the support of more than 70 groups, including governments and private sector, civil society and international organizations, and is accompanied by nearly 200 initiatives and best practices from around the world. China also issued the Policy Proposition on Nature-Based Climate Solutions at the Summit, proposing that a new Group of Friends for NBS be formed.

These efforts are already showing demonstrable results. Carbon sinks have been increased significantly through afforestation projects. According to the World Bank, the national forest coverage rate in China was 21.37% in 2010 and 22.35% by 2016. By 2018, this figure had risen to 22.96%, making China one of the largest contributors to increases in global green space.

Success has likely spurred additional plans for action on this front. This year has already seen China step up its efforts on nature-based solutions. On January 11, 2021, the MEE issued a policy on coordinating climate and environmental protection work. According to the policy, nature-based solutions to climate change and synergies between climate, nature, and pollution control will be prioritized.

Nature protection

Pollution control

In addition to the National Carbon Trading Scheme, significant advancements have been made to achieving carbon neutrality through China's War on Pollution and specific efforts to reduce the impacts of coal emissions. CCICED has been recommending that China consider adopting a targeted approach to pollution as early as 2013, when policy recommendations proposed concentrating on prominent environmental problems such as air, water and soil pollution. In March of the following year, Premier Li Keqiang declared the country's War on Pollution at the annual meeting of the People's Congress. In his speech, he denounced smog as "nature's warning against inefficient and blind development." The government made several regulatory changes as a response to this declaration, including launching a nationwide air quality monitoring and disclosure program and launching pilot carbon trading schemes (see the section on the National Carbon Trading Scheme earlier in this report).

Since the launch of the War on Pollution, China has made significant progress on this front. Levels of air pollution dropped precipitously, far outpacing similar efforts undertaken in the United States. CCICED's recommendations eventually included a further suggestion to add marine pollution to the list of three types of pollution and, by 2019, the Council recommended leveraging the War on Pollution to help optimize industry, the energy sector, transportation, and land-use planning. That same year, MEE published the Priorities of National Air Pollution Prevention and Control, a publication setting an overall goal for atmospheric environment air pollution prevention and control.

With regard to coal, specifically, several advancements have been made to convert traditional coal-fired power generation units into ultra-low-emissions facilities with energy-saving upgrades and initiatives aimed at curbing coal consumption. A series of CCICED policy recommendations focused on reducing the impacts of coal use have been put forward over several years.

In particular, CCICED's 2012 Annual Policy Recommendations call for "multiple high-quality energy sources such as natural gas, low-sulfur diesel, LPG and electricity to replace coal" and for growth in coal consumption to be "strictly controlled." Later, the 2014 Annual Policy Recommendations suggest studying and developing a comprehensive total emission control system for primary pollutants, coal consumption and CO_2 emissions. The Recommendations also call on China to promote the clean, efficient, and sustainable use of coal, and accelerate the adjustment of the energy structure in such a way that coal is only used "in large-scale facilities with high-efficiency end-of-pipe control technologies."

Clean coal policy changes in this area can be seen in a 2018 joint notice from the National Energy Administration (NEA) and the Ministry of Ecology and Environment entitled Issuing the Provincial (Regional and Municipal) Targets of Ultra-Low Emission and Conservation Transformation of Coal-fired Power Generation in 2018. Efforts like this have resulted in a 5.2% decrease in coal consumption (from 325 g/kWh at the end of 2012 to 308 g/kWh in 2019) for in-service coal-fired power generation units. China believes it now has the most efficient clean coal-fired power generation system in the world. With regard to coal consumption, in July 2018, the State Council issued the Three-Year Action Plan on Winning the Battle for the Blue Sky, with an aim to curb coal consumption in key areas. Funding was made available to local governments to carry out initiatives aimed at eliminating coal-dependent boilers and implementing clean heating solutions.

The coal-related policy changes have resulted in impacts on the ground. Between 2016 and 2018, consumption of coal in China declined considerably—particularly in coal-production-heavy regions—with 810 million tons of outdated coal capacity withdrawn from the country per year. At the same time, China saw an increase in the use of clean and efficient energy for basic power consumption needs. In 2019, national electricity generation from renewable energy accounted for 27.9% of total electricity generation. CCICED's 2020 policy recommendations called for a roadmap for the phase-out of coal.

Ocean management and planning

With its massive coastline, enormous shipping fleet, and some of the world's most important port cities, China's economy is inextricably linked with the planet's oceans. In 2019, China's proportion of the world's ships surpassed Japan to rank second, only behind Greece. Moreover, China COSCO Shipping is by far the largest shipping company in the world.[ii] In addition to the potential for environmental impacts from shipping, some 80% of marine pollution is estimated to come from land sources in the form of runoff.[iii] If also looking at China's significant role in global fisheries—where it is by far the largest fishing nation—it is clear that much of the health of the blue economy is dependent upon responsible Chinese marine policy.

CCICED has been making recommendations on multiple fronts, including in 2017, when policy recommendations included language for china to "create a national strategy that will more clearly provide for green development of its Blue Economy." Shortly thereafter, in February 2018, the State Oceanic Administration issued the National Marine Environmental Protection Planning (2017-2020). Additionally, all 11 of China's coastal provinces have established "Red Lines" to protect 30% of coastal waters and 37% of the coastline.

In 2018, CCICED honed in on the increasingly urgent need to reduce the amount of plastics accumulating in the oceans. On this, CCICED recommended that China "mobilize international partnerships for action on plastic pollution and invite such platforms to take shape in China." International cooperation on this issue has been particularly active with both meetings taking place and joint statements being signed. In December 2018 China held a high-level symposium with the UK on marine plastic pollution, where more than 50 Chinese and British policy makers, scientific experts, representatives of the plastics industry, plastics processing industry, and NGO's gathered to discuss issues, including the status of plastic pollution and the protection of the marine environment.

In November of 2018, Canada and China issued a joint statement on marine litter from plastic pollution which endeavoured to, inter alia, reduce the unnecessary use of single-use plastics, increase domestic capacity to prevent plastics leakage into the marine environment from all sources, and increase domestic capacity to prevent plastics leakage into the marine environment from all sources. A similar joint statement, including language to strengthen existing multilateral mechanisms like the Basel Convention, was also inked between China and France in March 2019.

Water resources and river basin management

China has been working to overcome decades of water resource challenges caused by pollution, drought, and wastage. CCICED has recommended a series of measures that could be undertaken, including the establishment of a water resource tax (2014), the development of an integrated environmental risk prevention system (2015), and the creation of a Yangtze River Protection Law to help clarify rights and responsibilities over all river basin management work (2018).

Over this period, China has implemented notable policies aimed at addressing water issues, many of which are closely linked to CCICED's recommendations. In 2016, resource tax pilot projects were launched at the local level and quickly demonstrated results. China's water consumption dropped from 610 billion cubic metres to 604 billion cubic metres, and consumption per 10,000 yuan of GDP dropped by 7.2%. In Hebei, where water shortages are a perennial issue, total water consumption was reduced by 460 million tons after only 18 months. By 2019, Chinese legislature adopted the Resource Tax Law and authorized the State Council to impose a trial water resource tax.

Additionally, China implemented the Yangtze River Protection Law. The law prohibits vessels from carrying highly toxic and other dangerous chemicals in the Yangtze River Basin, with those found in breach penalized by the confiscation of cargo and fines ranging from RMB 200,000-2,000,000 for companies and RMB 50,000-100,000 for individuals. Additionally, an unprecedented 10-year fishing moratorium was implemented in January 2020.

A series of water protection policy documents were also produced as a means to address flooding and drought in regional areas of concern, such as the Yangtze River Basin and areas in the north-east.

Green value chain

Researches show that there is increasing pressure on the world's forests from certain soft commodities, such as palm oil, soybeans, and pulp and paper.

CCICED drew attention to the issue in a 2016 Special Policy Study Report on China's Role in Greening Global Value Chains, which recommends that the State Council "encourage companies to join voluntary international efforts, such as the growing effort to reduce deforestation." The report further notes that "illegal deforestation continues to underpin commodity production, including an estimated 39% of palm oil and 19% of soy."

CCICED's 2018 Policy Recommendations call for reduced climate and biodiversity impacts from imports of commodities such as timber, palm oil, soybeans, and fish. It also recommends adopting supply chain standards for procuring products that avoid deforestation by integrating "deforestation-free" language into its Green Public Procurement program. The standards could also be adopted for all timber products that China imports.

On December 28, 2019, Chinese legislators moved to revise the country's Forest Law to ban the purchase, process or transport of illegal logs. It was later confirmed that the revision to the Forest Law, in fact, applied to all sources of timber, including imports. In 2020, a new Green Value Chain Institute was launched to further examine ways to ensure both legality and prevented deforestation in supply chains.

Ecological conservation and protected areas

In recent years, China has initiated a series of important steps related to ecological protection, including initiating a national system for protected areas and wilderness areas in a coordinated, top-level design. CCICED's work has underscored the opportunities to advance a holistic, integrated approach to ecological protection within the wider vision of an ecological civilization. CCICED has recommended the expansion of protected areas to include medium- and longer-term timelines for biodiversity and green development projects, and recommended that the 14th Five-Year Plan anticipate and support Beautiful China 2035, climate change targets, and the 2050 Vision for Biodiversity.

In 2014, CCICED recommended the continued advancement of a National Ecological Conservation Red Line (ECRL) system, launched in 2011. Conceptually, the Red Line refers to the base-level lifeline required for safeguarding and maintaining national ecological security. It includes a range of key indicators such as those for ecological protection, key species, natural disaster mitigation, freshwater management, and others within a large-scale landscape or spatial planning context.

In 2014, State Council recommendations included the continued implementation of the ECRL. Once it is fully established, more than 2.4 million square kilometres will be protected—about one-quarter of mainland China. This includes some 28,995 square kilometres around the Yangtze River, an area that is home to about 11% of China's population and responsible for 20% of its GDP.

Since the launch of the Ecological Red Line, 15 provinces have had their ecological conservation red lines preliminarily delineated, and the remaining 16 provinces have formulated delineation plans. By 2019, more than 11,800 protected areas were established at all levels, with national parks being a major component. The protected areas accounted for 18% of the national land area and 4.1% of the jurisdictional sea area.

Crosscutting issues

Green financing

Green financing—especially climate financing—is an area that has seen significant progress in recent years. CCICED has played a leading role in the introduction, encouragement, and demonstration of green finance. In 2014, CCICED set up a Green Finance Task Force, and annual policy recommendations have consistently called for progress in this area based on policy research. Early examples include establishing a National Green Development Fund; promoting green credit, green bonds and green insurance; and establishing cross-department green finance coordination mechanisms. These important studies and policy recommendations, which were well ahead of their time in terms of China's context, were not only adopted by the central government, but also incorporated into the G20 Summit agenda in 2015.

More recently, recommendations have focused on green financing opportunities linked to the Belt and Road Initiative. In 2018, CCICED's Policy Recommendations highlight opportunities for green project financing through the recommended launching of a "Greening the BRI" fund to test and demonstrate the business case for selected sustainable infrastructure investments. By 2020, CCICED recommendations included adopting world-class standards and safeguards for BRI projects, increasing green bilateral and regional green Overseas Development Assistance, and other steps aimed at shifting investments away from carbon-intensive sectors in geographic areas that are of importance to biodiversity and to local and Indigenous communities.

While the outcomes and impacts of CCICED's work on green finance are difficult to gauge, our activity in this area has coincided with remarkable growth in terms of policy changes and decisive action. In 2012, the China Banking and Insurance Regulatory Commission (CBIRC) first began introducing green credit guidelines for banks to provide credit to companies. By 2014, green financing in China was really just starting to get underway, with initiatives such as green liability insurance, green bonds, green credit (i.e., medium and long-term financing services for sustainable infrastructure projects), and green pricing.

China now boasts a massive green finance market, with RMB 12 trillion in green credit available and about RMB 800 billion in green bonds issued in 2020. The issuance of green bonds has expanded particularly rapidly in recent years in China. In 2016, China's first year issuing green bonds, the green bond market had a value of RMB 205.2 billion; by 2019, this number was RMB 360 billion.

Green Belt and Road Initiative

China’s massive Belt and Road Initiative has the potential to generate remarkable economic benefits, but without careful consideration it could have profound environmental impacts also. Since 2015, CCICED’s annual policy recommendations have identified opportunities and tools to mitigate the ecological risks of the Belt and Road Initiative including through consultation and cooperation with partner countries. This concern was reiterated in CCICED’s 2018 Policy Recommendations with encouragement to carry out the greening of the Belt and Road Initiative, as well as in the 2020 CCICED recommendations in the adoption of standards and safeguards.

In 2017, China issued its Guidance on Promoting Green Belt and Road [sic], noting the intent to build pragmatic and efficient eco-environmental protection, cooperation and exchange systems; to create support and service platforms and industrial technological cooperation bases; to formulate and execute a series of eco-environmental risk prevention policies and measures; and to lay a solid foundation for a green Belt and Road Initiative within three to five years. In 2019, China and other BRI partners launched the Belt and Road Initiative International Green Development Coalition, and in 2020, the BRI Green Development Institute was launched. Clearly these initiatives are generating results, as for the first time ever, the first half of 2020 saw a majority of non-fossil fuel energy investments under the BRI.

Green technology

For some time, CCICED has placed an emphasis on the importance of green technologies for some time in the development of China’s economy as a tool for sustainability. Most recently, CCICED partnered with the World Economic Forum in 2020 to publish an in-depth paper entitled “Major Green Technologies and Implementation Mechanisms in Chinese Cities.” In 2014, CCICED recommended green technologies as a means to achieve a number of positive environmental outcomes, including (but not limited to) clean coal technologies (see the related section on Pollution in this paper). In 2015, CCICED’s Policy Recommendations included the establishment of a National Green Development Fund, including “demonstration projects of clean energy, environmental technology and environmental industries.” The fund was subsequently established in July 2020. The 14th Five-Year Plan calls for the development of a green technology system to drive green development innovation.

China has been adopting new green technologies over the past few decades, but this has accelerated in recent years. Increased government investments in energy-efficient and emissions reduction technologies aim to generate public interest and increase adoption. In 2018, China’s Ministry of Industry and Information Technology (MIIT) promoted their Special Action on Power Demand-Side Management in the Industrial Field (2016–2020), prepared the Guides for Power Demand-Side Management of Industrial Enterprises, and released the third batch of demonstration enterprises and demonstration parks in power demand-side management in the industrial field.

At the December 2020 UN Climate Ambition Summit, China agreed to increase the proportion of non-fossil fuels in primary energy consumption to around 25% and increase total installed wind and solar energy to over 1.2 billion kilowatts. And these investments are demonstrating results. Estimates indicate that between 2012 and 2019, clean energy consumption increased by 8.9 percentage points to account for 23.4% of the total energy sector. Also, starting in 2019, the Chinese government has issued a procurement list for preferred or mandatory green products. Certified products will receive policy support.

Green urbanization and consumption

The rapid advancement of urbanization is an important driving force for China's economic development. Green urbanization will play an important role in promoting the green transformation and high-quality development of China's economy. The 2018 CCICED Policy Recommendations proposes to shift traditional thinking, fully integrate green standards into green urban planning and bring forward innovative solutions in combination with local realities. In December 2018, the General Office of the State Council issued the Plan for Pilot Development of Solid Waste-Free Cities. At the end of April 2019, MEE published a list of pilot solid waste-free programs. In May 2019, MEE issued the Guidelines for Compilation of Implementation Plan of Solid Waste-free Cities Pilot Programs and the Indicators for Solid Waste-Free Cities (tentative). NDRC promulgated the Key Tasks of New Urbanization 2019, which sets forth working requirements in 2019. It also puts forward that new urbanization should take into full consideration of the actual bearing capacity of resources and the environment, stress coordinated development, make full use of intelligent IT means, conduct lean management and coordinate with the control of air pollution and other environmental problems.

Green consumption can play a huge role in guiding the green transformation of production and promoting the formation of a green lifestyle. The 2019 CCICED Policy Recommendations stated that the green consumption is one of the key measures for ecological civilization, and should be included as a key task for the national-level 14th FYP. On March 2020, NDRC and MOJ released Opinions on Accelerating the Establishment of a System of Regulations and Policies for Green Production and Consumption, which stipulates multiple tasks such as promoting green design, enhancing clean industrial production, developing recycling industrial economy, strengthening control of industrial pollution, advancing the development of clean energies, facilitating the green development of agricultural and service industries, boosting consumption of green products and advocating green lifestyles. In 2021, the Standing Committee of National People’s Congress adopted the Anti-Food Waste Law.

Annex I: Comprehensive overview of outputs, outcomes, and impacts

Climate change and carbon neutrality

Carbon neutrality

Outputs

- CCICED Interim Report of the Task Force on Economic Instruments for Energy Efficiency and the Environment in China, 2008, Pgs. 37, 45.
- China should implement a carbon market to "achieve a win-win situation between environmental protection and economic development."
- CCICED, Policy Recommendations, 2008.
  - Recommendations for implementing an ETS or pilot projects in seven provinces (Tianjin, Jiangsu, Zhejiang, Shanghai, Shanxi, Henan, and Guangxi) along with coordinating groups comprised of relevant provincial governors.
- CCICID, Energy, Environment and Development, 2009, Pg. 11, 15.

Outcomes

- Preparations for pilot carbon markets began in 2011.[4]
- Pilot carbon markets began in 2013.[5]
- China's national carbon emissions trading system officially comes online in 2021.[6]

Impacts

- Current trade volume of 330 million tons of CO_2 (worth RMB 7.11 billion).[7]
- Pilot projects show there will be measurable impact—even in the short term.
- The Emissions trading system is a key to goals to achieve peak CO_2 carbon dioxide emissions before 2030 and carbon neutrality before 2060.

International climate governance

Outputs

- Among other recommendations, CCICED 2020 Policy Recommendations note "It will be necessary to update China's Nationally Determined Contributions targets based on the actual circumstances; encourage key regions and sectors to set plans for carbon emission peaking as soon as possible; mainstream climate resilience into national/local government planning and budgets; accelerate a national carbon pricing system; incorporate climate indicators into the Central Environmental Inspection Program;

enhance multilateral climate coordination with Europe and with other developing countries through the Ministerial Climate Action (MOCA) and other initiatives, to forge new global climate leadership; eliminate fossil fuel subsidies and avoid stranded assets by gradually phasing out fossil fuel investments; include environmental and climate protection aspects in financial risk assessments and further include sectors in the Chinese emissions trading system (ETS) to internalize external costs; reinforce economic evaluation of coal power generation and prepare a roadmap for the reduction and eventual phase-out of coal- fired electric power generation."

Outcomes

- General Debate of the 75th Session of the United Nations General Assembly in September 2020: Xi Jinping announces that China will aim to achieve carbon neutrality by 2060.

Impacts

- If China succeeds in achieving neutrality by 2060, experts estimate that:
  - it would drive dramatic reductions in its own CO_2 emissions
  - it would lower the cost of clean energy and create a positive "spillover" effect in other countries
  - it could mean that global warming in the 21st century reaches only 2.35°C (about 0.25°C lower than the level expected in our baseline).
  - Previous CCICED noted methane, HFCs – worth noting included in 14th FYP

Domestic climate governance

Outputs

- CCICED's 2020 Policy Recommendations
  - push for the pursuit of ambitious climate targets with energy transition at their core to build a low-carbon society.[8]
- CCICED's 2019 Policy Recommendations
  - broadly recommend green development projects with medium and longer-term timelines.
  - recommend that the 14th Five-Year Plan should anticipate and support Beautiful China 2035, climate change targets, and 2050 Vision for Biodiversity.
  - calls for an acceleration of China's climate action, including the development of a clear vision of China's low-carbon development, implementation of total carbon emissions control and indicators, and the activation of a national carbon market.[9]
- CCICED's 2018 Policy Recommendations
  - call on China to upgrade its contribution to global climate governance through enhanced action on climate change mitigation within China.[10]
- CCICED's 2017 Policy Recommendations
  - urge the upgrading of China's contribution to global climate governance through enhanced action on climate change mitigation within China.
- CCICED's Global Climate Governance and China's Role report (2019)
  - calls the 14th Five-Year Plan "a key stage for China to achieve its carbon emission reduction commitments and the low-carbon transformation of its economy."[11]
- CCICED's 2013 Policy Recommendations
  - recommends establishing "an environmental governance system for unified supervision of all pollutants, all emission sources."

Outcomes

- In 2018, the Ministry of Ecology and Environment (MEE) was established.
  - The MEE brought climate change under the auspices of the national environmental ministry.
  - Greenhouse gas emissions in regulatory compliance, enforcement and inspections are also now under its responsibility.
- In January 2021, China's National Energy Administration was subjected to an "environmental disciplinary inspection," and was told that it must take the energy transition much more seriously.

Impacts

- Need some specific impacts and/or expected ones

Energy efficiency

Outputs

- CCICED's 2018 Policy Recommendations
  - call for fully recognizing the impact of the digital age and green development on urbanization.
  - emphasis on fully modernizing China's approach to green urbanization by moving beyond simply green buildings, plans and technologies mode and toward a deep transformation of both content and approach.[12]
- CCICED's 2013 Policy Recommendations
  - improving urban energy efficiency with the active promotion of green building standards, green architecture design and green community construction.[13]
- CCICED's 2012 Policy Recommendations
  - promote multiple high quality energy sources such as natural gas, low-sulfur diesel, LPG and electricity to replace coal.
  - strictly control growth in regional coal consumption
  - continuously increase the percentage of high-pollution fuel forbidden zones in urban built-up areas." [14]
- CCICED's China's Low Carbon Industrialization Strategy (2012), recommends construction of smart buildings for reducing emissions.[15]

Outcomes

- China leads the world in promoting the use of new-energy vehicles.
- China has implemented green building standards, particularly in new buildings constructed in urban areas, such as Beijing, Tianjin, Jiangsu, and Zhejiang.
- MIIT
  - promoted the "special action on power demand side management in the industrial field (2016-2020),"
  - prepared the "Guides for Power Demand Side Management of Industrial Enterprises,"
  - launched 40 demonstration enterprises and three demonstration parks (three in power demand side management in the industrial field).

- The National Development and Reform Commission (NDRC), the NEA, and the Ministry of Finance (MOF) jointly released the Plan for Winter Clean Heating in Northern Areas (2017–2021), proposing that by 2019 the clean heating rate in northern areas should have reached 50% with 74 million tons of bulk coal replaced (including coal for low-efficiency small boilers), and by 2021 the clean heating rate in northern areas should have reached 70% with 150 million tons of bulk coal replaced (including coal for low-efficiency small boilers).

Impacts

- By 2018, 56% of new buildings met China's green standards, exceeding the target set out in the 13th Five-Year Plan.[16]
- According to estimates, in 2018 China's energy consumption per unit GDP decreased by 3.1% over the previous year, and energy efficiency continued to improve.[17]
- Between 2016 and 2018, China saw an increase in the use of clean and efficient energy for basic power consumption needs.
- In 2019, national electricity generation from renewable energy accounted for 27.9% of total electricity generation.[18]
- In the industrial sector, China's 2018 total production capacity of cement clinker (which emits the largest amount of CO_2 in the cement-making process) decreased by 54 million tons year-on-year.
- China now boasts the largest number of buses powered by clean energy worldwide, with more than 1.6 million tons of fuel saved every year. The number of new-energy buses in China has more than tripled over the years, rising from 116,300 in 2015 to 409,700 in 2019.
- A national policy aimed at promoting commerce while restricting industry in urban areas resulted in a small number of coal-fired boilers being eliminated. [19]
- Through the winters of 2017–2018 and 2018–2019, a total of 3.6 billion square metres of clean heating area was increased in the northern areas, with a clean heating rate reaching approximately 50.7%, and 100 million tons of bulk coal were replaced.[20]

Nature-based climate solutions

Outputs

- CCICED's 2007 Policy Recommendations
  - note that the new "coordinate and cooperate to protect our only earth" international environmental cooperation principle that was put forward by the Party's 17th Congress is an encouraging development.
  - Also single out China's effort in protecting global environmental conditions, such Ozone Depleting Substances reduction, carbon sequestration through afforestation, and its 2007 Climate Change Program.
- CCICED's 2011 Policy Recommendations
  - call for agricultural land and water use planning to be improved overall and for forest management and other land and water uses be developed as ecological enterprises for services such as carbon sinks.

Outcomes

- China accelerated the implementation of the "Outline of National Afforestation Plan (2016-2020)."
- China formulated and issued the "2018 Key Work Arrangement and Division Plan of Forestry to Address Climate Change."
- Issued the "Opinions by the National Afforestation Committee and the National Forestry and Grassland Administration of China on Actively Promoting Large-Scale Land Greening Action."
- At the UN Climate Action Summit in New York on September 23, 2019, China co-led (along with New Zealand) the Summit's Nature-Based Solutions Coalition, which launched the NBS for Climate Manifesto. The Manifesto has the support of more than 70 governments, private sector, civil society and international organizations, accompanied by nearly 200 initiatives and best practices from around the world.
- At the 2019 UN Climate Action Summit, China also issued the "Policy Proposition on Nature-Based Climate Solutions," proposing that a new "Group of Friends for NBS" be formed.[21]
- On January 11, 2021, the MEE issued a policy on coordinating climate and environmental protection work. Nature-based solutions to climate change, and synergies between climate, nature, and pollution control will be prioritized. Carbon will be included into central environmental inspections, the environmental permitting system, and environmental impact assessments. China will also seek to better align global governance on both topics, through the UNFCCC and the Convention on Biological Diversity (CBD).
- At the 2018 UN Biodiversity Conference in Sharm El-Sheikh, Egypt, China together with Egypt launched the Action Agenda for Nature and People, an initiative aimed at promoting nature-based solutions to counter global challenges.

Impacts

- Carbon sinks were increased significantly through afforestation projects. According to the World Bank, the national forest coverage rate in China was 21.37% in 2010 and 22.35% by 2016. By 2018, this figure had risen to 22.96%, making China one of the largest contributors to increases in global green space.[22]

Nature protection

Pollution Control

Outputs

- CCICED's 2019 Policy Recommendations
  - urge China, by giving full play to the National Leading Group on Climate Change, Energy Conservation and Emission Reduction, use the war on pollution to accelerate the optimization of industrial structures, the energy mix, the transportation system and land-use planning to complement climate action.[23]
- CCICED's 2017 Policy Recommendations
  - call for the creation of a Fifteen-Year Strategy for War on Pollution Action Plans. "Clean coal and synthetic natural gas for power generation should be transient technologies, bridging from old to new during China's green transition."[24]
  - suggest it would be helpful to develop an overall plan that incorporates all three categories (water, air, and soil), plus one other—marine pollution. Ideally, an integrated rollout should be ready by 2020 with targets up to 2035, the pivot point when China expects to be a "basic modern country."
- CCICED's 2014 Policy Recommendations
  - recommendation 2.3.a to study and develop a comprehensive total emission control system for primary pollutants, coal consumption and CO_2 emissions
  - recommendation 3.2-3: to adopt total energy consumption control targets and build demand-based energy policies
  - recommendation 5.3.a to promote the clean, efficient and sustainable use of coal, and accelerate adjustment of the energy structure (suggesting that China "use coal only in large-scale facilities with high-efficiency end-of-pipe control technologies."
  - propose to strengthen coordinated control of multiple sources and multiple pollutants.
  - recommends the development of a broader regional air pollution control mechanism robust enough to stop severe air pollution and to restore air quality.[25]
- CCICED's 2014 Special Policy Study on Performance Evaluation on the Action Plan of Air Pollution Prevention and Control.
  - notes that it is preferable to use coal in large-scale facilities with high-efficiency end-of-pipe control technologies and recommends that small-scale boilers and stoves be phased out gradually, while promoting the use of district heating.[26]
- CCICED's 2013 Policy Recommendations
  - propose to concentrate on practically solving prominent environmental problems such as air, water and soil pollution, and meet the basic demand of the public for good environmental quality.[27]
- CCICED's 2009 publication "Sustainable Use of Coal and Pollution Control Policy in China" recommends that China.
  - recommends that China "guarantee policies for effective and cleaner distributed coal combustion," such as for central heating and optimizing industrial boilers.[28]

Outcomes

- China has been pushing to ensure that traditional coal-fired power generation units are transformed into ultra-low emissions facilities with energy-saving upgrades.
- In 2018, the National Energy Administration (NEA) and the MEE jointly issued a "Notice on Issuing the Provincial (Regional and Municipal) Targets of Ultra-Low Emission and Conservation Transformation of Coal-fired Power Generation in 2018."
- In July 2018, the State Council issued the "Three-Year Action Plan on Winning the Battle for the Blue Sky," with the aim of curbing coal consumption in key areas.
- Funding was made available to local governments to carry out initiatives aimed at eliminating coal-dependent boilers and implementing clean heating solutions.
- In 2018, hydrofluorocarbons from China's industrial sector were addressed by initiatives such as the MEE's "Notice on Launching Relevant Work on the Disposal of Hydrofluorocarbons in 2018" and specific disposal verification projects.
- Emissions from agricultural activities were addressed through an initiative to achieve zero growth of chemical fertilizer use.
- Residents in Northern China have been encouraged to give up their stoves and switch to natural gas or electricity for winter heating.
- On 25 January 2021, China's pollution discharge permit regulation was released by China State Council. The revamped permitting system will become the cornerstone of ensuring industry compliance with all environmental laws and regulations, and places responsibility for accurate reporting and disclosure squarely on the polluter.[29]
- In 2019, MEE specially printed and issued the Priorities of National Air Pollution Prevention and Control, which sets forth the overall goal for atmospheric environment Air pollution prevention and control.[30]

Impacts

- Coal consumption for in-service coal-fired power generation units has decreased 5.2% (from 325 g/kWh at the end of 2012 to 308 g/kWh in 2019).
- According to the MEE, China now has the most efficient clean coal-fired power generation system in the world.[31]
- Between 2016 and 2018, consumption of coal in China shrank considerably, particularly in coal-production heavy regions, with 810 million tons per year of outdated coal capacity withdrawn from the country per year.
- In the agricultural sector, the goal of achieving negative growth in the use of chemical fertilizers was achieved ahead of schedule.
- Official data show that after three years of continuous effort, the average PM2.5 concentration in the Beijing-Tianjin-Hebei region and surrounding areas in autumn and winter was reduced by 32.7%. Meanwhile, the number of heavy air pollution days plunged by 62% from 37.4 to 14.1.[32]
- In Northern China, many steel mills and coal-fired power plants, major emitters of air pollutants, were closed or underwent renovations to ensure low-pollution emissions.
- Recent years have seen the rapid emergence of a Payments for Ecosystems Services (PES) system, whereby nature protection activities are compensated financially.[33]
- An amendment to the Constitution of the People's Republic of China was adopted at the First Session of the Thirteenth National People's Congress on March 11, 2018.
  - Article 26 The state shall protect and improve living environments and the ecological environment, and prevent and control pollution and other public hazards.

- To address the environmental crisis, policymakers in China are constructing a new governance strategy with major reforms across all social sectors to better balance development with ecological protection. It seeks to promote environmental quality and human livelihoods by enhancing and sustaining natural capital (ecological assets and ecosystem services).
- In the waste disposal sector, a three-year action plan to improve the quality and efficiency of urban sewage treatment was launched in 2018.
- For waste disposal, 4,332 sewage treatment plants were built in cities and counties in 2018 with a sewage treatment capacity of 195 million cubic meters per day.[34]

Ocean management and planning

Outputs

- CCICED's 2017 Policy Recommendations:
  - "China should create a national strategy that will more clearly provide for green development of its Blue Economy."[35]
- CCICED's 2018 Policy Recommendations:
  - China should "mobilize international partnerships for action on plastic pollution and invite such platforms to take shape in China."[36]

Outcomes

- In February 2018, the State Oceanic Administration issued the National Marine Ecological Environment Protection Plan (2017~2020)
- In November 2018, Canada and China issued a "Joint Statement of the Government of the People's Republic of China and the Government of Canada Marine Litter and Plastics," which endeavoured to, inter alia, reduce the unnecessary use of single-use plastics, increase domestic capacity to prevent plastics leakage into the marine environment from all sources, and increase domestic capacity to prevent plastics leakage into the marine environment from all sources.[37]
- In December 2018, China held a high-level symposium with the UK on marine plastic pollution, where more than 50 Chinese and British policy makers, scientific experts, representatives of the plastics industry, plastics processing industry, and NGO's gathered to discuss issues, including the status of plastic pollution and the protection of the marine environment.[38]
- In March 2019, a joint statement between China and France included language to "strongly support international action to fight plastic pollution, at sea and on land, by strengthening existing mechanisms, particularly the Basel Convention."[39]

Impacts

- In 2010, it was estimated that some 76% of China's waste was "mismanaged." This number was reduced to 25% of mismanaged waste in 2016. Experts say that mismanaged waste results in plastics being introduced into the marine ecosystem. While there is some dispute in the accuracy of the numbers, there appears to be a clear downward trajectory in terms of waste mismanagement.[40]
- China has targeted making some 30% of its coastal waters completely off-limits to development as part of a national "ecological red line" scheme.[41]

Water resources and river basin management

Outputs

- CCICED's 2018 Policy Recommendations
  - adopt an integrated approach in environmental protection planning across the Yangtze River Economic Belt
  - develop a Yangtze River Protection Law to clarify rights and responsibilities over all river basin management work.
- CCICED's 2015 Policy Recommendations
  - propose the development of an environmental risk assessment and prevention system for major national macro-strategies, such as one for the Yangtze River economic belt, to form an integrated environmental risk prevention system.
- CCICED's 2014 Policy Recommendations
  - propose the establishment of resource tax, including water resource tax.

Outcomes

- In 2021, the Yangtze River Protection Law was adopted and entered into force.[42]
- China implemented an unprecedented 10-year fishing moratorium in January 2020.
- Resource tax pilot projects launched at the local level in 2016.[43]
- In 2019, Chinese legislatures adopted the Resource Tax Law, authorizing the State Council to levy a water resource tax on a trial basis.[44]
- A series of water protection policy documents were produced as a means to address flooding, drought, and water conservation. Many initiatives addressed regional areas of concern (e.g., Yangtze River Basin, areas in the Northeast prone to drought, etc.). However, the strictest water resource management systems were implemented nationwide, incorporating provincial, municipal, county, and township authorities in planning water resources management and protection.

Impacts

- By June 2019, the South-to-North Water Diversion project had supplied 20.9 billion cubic meters of water to drought-prone areas in the north, including 1.96 billion cubic meters of water specifically for ecological replenishment. Water security issues have been addressed to the point that the MEE believes that rural drinking water security has "been basically addressed." Urban sewage treatment rate increased from 82.3% in 2010 to 95.49%.
- Water consumption pilot projects have already shown promising results. In Hebei, where water shortages are a perennial issue, total water consumption dropped by 460 million tonnes after only 18 months.[45]
- In 2016, China's water consumption dropped from 610 billion cubic meters to 604 billion cubic meters, and consumption per 10,000 yuan of GDP was down by 7.2%.[46]
- The Yangtze River Protection Law prohibits vessels from carrying highly toxic and other dangerous chemicals in the Yangtze River Basin. Any breach will result in the illegal cargo being confiscated and a fine of not less than RMB 200,000, but no more than RMB 2 million. Individual persons found directly responsible for illegal activity shall be fined RMB 50,000, but not more than RMB 100,000.

Green Value Chain

Outputs

- CCICED's Special Policy Study Report on China's Role in Greening Global Value Chains (2016) recommends that the State Council "encourage companies to join voluntary international efforts, such as the growing effort to reduce deforestation" and notes that "illegal deforestation continues to underpin commodity production, including an estimated 39% of palm oil and 19% of soy."
- CCICED's 2018 Policy Recommendations
  - call for reduced climate and biodiversity impacts from imports of commodities such as timber, palm oil, soy beans, and fish.
  - urge to adopt supply chain standards for procuring products that avoid deforestation by integrating "deforestation-free" language into its Green Public Procurement program. The standards could also be adopted for all timber products that China imports.

Outcomes

- On December 28 2019, Chinese legislators revised the country's Forest Law to ban "purchase, process or transport" of illegal logs.
- Anyone who purchases timber that was harvested in a Chinese forest needs a timber harvest permit
- At a National Forest and Grasslands Administration workshop on September 25, 2020, Li Shuxin, Deputy Director of General Office, National Forestry and Grassland Administration (NFGA), emphasized that the law covers all sources of timber, including imports. This is backed up by a notice on the Government of China's website.[47]
- A new Green Supply Institute was created in 2020.
- An amendment to the Constitution of the People's Republic of China was adopted at the First Session of the Thirteenth National People's Congress on March 11, 2018.
  - Article 26: The state shall state shall organize and encourage afforestation and protect forests.

Impacts

- Acknowledgement of the inclusion of imports under China's Forest Law suggests that Chinese companies can be held liable if they import timber that is known to come from illegal sources. Lisa Handy, Senior Policy Advisor with the Washington, DC-based Environmental Investigation Agency, says the Forest Law revision "could be a massive game changer."[48]

Ecological conservation and protected areas

Outputs

- CCICED's 2019 Policy Recommendations
  - broadly recommend green development projects with medium and longer-term timelines
  - suggest that the 14th Five Year Plan should anticipate and support Beautiful China 2035, climate change targets, and 2050 Vision for Biodiversity.
- CCICED's 2018 Policy Recommendations
  - play a strong leadership role in developing effective post-2020 global biodiversity goals under the Convention on Biological Diversity (CBD)
  - develop an ecological civilization approach for China in national and global ocean governance by implementing "a high-tech monitoring system for marine science assessments to combat corrupt and illegal activities and that will highlight responsible fisheries, habitat and environmental protection. Such a system will enable China to expand monitoring to nearly all of its domestic fishing vessels, landing sites, aquaculture facilities and coastal and marine protected areas."
- The 2014 CCICED Policy Recommendations
  - call on China to implement a National Ecological Conservation Red Line (ECRL) System by
    - setting ECRL into law and relevant systems;
    - improving spatial land use planning and marine use planning system with clear identification of EPRLs
    - establishing a new national coordinating mechanism for ecological conservation and for monitoring and enforcement
    - improving the nature protection area system
    - improving eco-compensation and incentive mechanism based on EPRLs.

Outcomes

- China has been working to establish ECRL since 2011.
- 2014 Council Recommendations include the implementation of a ECRL system.
- The MEE climate report calls for pilot projects to be introduced to strengthen ecosystem protection and spatial planning through redline protection, permanent basic farmland and urban development boundaries.
- The MEE conducted the "Green Shield 2018" nature reserve inspections. Article 26: The state shall protect and improve living environments and the ecological environment, and prevent and control pollution and other public hazards. The state shall organize and encourage afforestation and protect forests.
- China creates a national-park system, piloting 10 national parks to protect ecosystems and endangered animals, including national parks for giant pandas.[49]

Impacts

- Once established, the ECRL will protect more than more than 2.4 million square kilometres—this is about one-quarter of the Chinese mainland.[50] This includes
  - some 28,995 square kilometres around the Yangtze River (an area that is home to about 11% of China's population and responsible for 20% of its GDP).
  - the Bohai Economic Rim region (including Beijing), which covers about 37% of marine areas and 31% of its adjacent coastline and inland.[51]
- Since the launch of the Ecological Red Line, 15 provinces have had their ecological conservation redlines preliminarily delineated, and the remaining 16 provinces have formulated delineation plans.[52]
- Up to the end of 2019, a total of more than 11,800 protected areas at all levels and of different categories were established with national parks as a major component. The protected areas accounted for 18.0% of the national land area and 4.1% of the jurisdictional sea area. Among them, 10 national park pilot areas for Northeast Tiger Leopard, Qilian Mountain, the Giant Panda and so on were established, involving 12 provinces including Jilin, Heilongjiang, Sichuan and other provinces. The total area covers more than 220,000 km_2, accounting for about 2.3% of the total national land area.[53]
- In 2019, the State Council approved 11 new national nature reserves.[54]

Crosscutting issues

Climate financing

Outputs

- CCICED's 2020 Policy Recommendations
  - state that China's "New Infrastructure Stimulus" program should be well designed to strengthen green development by including renewable energy, low-carbon and resilient infrastructure, building efficiency and upgrading, green urban centres, green technologies, and other relevant areas.
- CCICED's 2020 Policy Recommendations
  - call for the mainstreaming of conservation finance and the development of financial tools to support ecological conservation in strategic environmental impact assessment, and in the assessment of large-scale infrastructure projects.
- CCICED's 2019 Policy Recommendations
  - caution that the Belt and Road Initiative's infrastructure-heavy development requires a precautionary mechanism for green finance.
- CCICED's 2018 Recommendations
  - call for priority to be given to green project financing and recommend launching a "Greening the BRI" fund to test and demonstrate the business case for selected sustainable infrastructure investments.
- CCICED's 2017 Policy Recommendations
  - call for the establishment of a digital green economy for the future through a new green stimulus plan with a focus on investment in next generation digital infrastructure, new eco-environment, culture, and other nonconventional green infrastructure intended to create demand for green goods and services.

- CCICED has played a leading role in the introduction, propelling and demonstration of green finance. In 2014, it set up a Green Finance Task Force. Thus the year of 2014 was really the beginning of green finance in China, including green liability insurance, green bond, green credit (including providing medium and long-term financing services for sustainable infrastructure projects; green financing reached 9 trillion RMB by end of 2017), and green pricing.
- In 2015, CCICED put forward several specific policy recommendations based on policy research on green finance. These were not only adopted by the central government, but also incorporated into the G20 Summit agenda.
  - establishing a National Green Development Fund
  - promoting green credit, green bonds and green insurance
  - establishing cross-department green finance coordination mechanisms.

Outcomes

- In 2012 the China Banking and Insurance Regulatory Commission (CBIRC) introduced green credit guidelines for banks to provide credit to companies.
- In 2015, the People's Bank of China, the country's central bank, issued green bond guidelines.
- In 2016, seven ministries issued a document entitled Guiding Opinions on Building a Green Financial System.
- On October 26, 2020, the MEE, the National Development and Reform Commission (NDRC), the People's Bank of China (PBOC), the China Banking and Insurance Regulatory Commission (CBIRC) and the China Securities Regulatory Commission (CSRC) jointly published the Guidance on Promoting Investment and Financing to Address Climate Change, which spells out the need for financial intuitions to mitigate climate risk via the Belt and Road Initiative.
  - "Financial institutions are encouraged to support the low-carbon development of the Belt and Road and South-South cooperation and to promote the implementation of climate mitigation and adaptation projects abroad."
- In 2016, the People's Bank of China (PBC) announced the publication of guidelines for the issuance of green bonds by non-financial companies

Impacts

- China now boasts a massive green finance market
  - RMB 12 trillion in green credit is available and about RMB 800 billion in green bonds has been issued in 2020.
- The issuance of green bonds has expanded particularly rapidly in recent years in China. In 2016, China's first year issuing green bonds, the green bond market had a value of RMB205.2 billion—by 2019, this number was RMB360 billion.
- Under the Belt and Road Initiative (BRI), China has taken a number of mutually accepted measures to increase financial support for relevant countries and expand the channels of diversified financing. Asian Financial Cooperation Association (AFCA) already has more than 100 members, and its earmarked loans equivalent to RMB 380 billion has provided strong support for infrastructure, capacity and financial cooperation within the framework of jointly building the BRI, while the Silk Road Fund has received new capital of RMB 100 billion.

Green Belt and Road Initiative

Outputs

- In 2019, China and other partners launched the BRI International Green Development Coalition.
- CCICED's 2018 Policy Recommendations
  - propose to "Carry out the greening of the Belt and Road Initiative (BRI)"
- CCICED's 2015 Policy Recommendations
  - calle on China to "pay close attention to the ecological risks of the Belt and Road Initiative and achieve a green BRI with consultation and cooperation among involved countries"

Outcomes

- In 2017, China releases its Guidance on Promoting Green Belt and Road
  - "We aim to build a relatively complete eco-environment protection service, support and guarantee system, implement a cohort of key eco-environment protection projects and achieve favorable results within 5 to 10 years."
- 2019: Launch BRI International Green Development Coalition
- 2020: Launch BRI Green Development Institute

Impacts

- The first half of 2020 saw—for the first time—a majority of non-fossil fuel energy investments under the BRI.[55]

Green technology

Outputs

- The Inception Meeting of CCICED's Special Policy Study (SPS) on Global Green Value Chains was held in Beijing on October 23, 2019. The two-year study puts forward policy recommendations to the Chinese government on further promoting green and sustainable trade policies from the perspectives of "greening soft commodities supply chains" and "circular economy of hard commodities."
- CCICED's 2015 Policy Recommendations:
  - call for the establishment of a National Green Development Fund, including "demonstration projects of clean energy, environmental technology and environmental industries."

Outcomes

- December 2020 UN Climate Ambition Summit:
  - Increase the proportion of non-fossil fuels in the power sector consumption to around 25%;
  - Increase total installed wind and solar energy to 1.2 billion kilowatt hours.
- Starting in 2019, the Chinese government has issued a procurement list for preferred or mandatory green products. Certified products will receive policy support.[56]
- China adopts a National Green Development Fund on July 15 2020.[57]

Impacts

- There was an increase in public investments in energy efficient and emissions reduction technologies aimed at generating public interest and increased adoption.[58]
- Estimates show that in 2019, the consumption of clean energy accounted for 23.4% of total energy consumption, an increase of 8.9 percentage points over 2012. Coal consumption accounted for 57.7% of the total, down 10.8 percentage points from that in 2012.
- Adaptation technologies introduced to increase agriculture production; irrigatable farmland increased by 25% from 2005 to 2018.

Green urbanization and consumption

Outputs

- CCICED's 2018Policy Recommendations:
  - shift traditional thinking, fully integrate green standards into green urban planning and bring forward innovative solutions in combination with local realities.
- CCICED's 2019 Policy Recommendations:
  - green consumption is one of the key measures for ecological civilization, and should be included as a key task for the national-level 14th FYP.
- CCICED's 2020 Policy Recommendations:
  - green consumption sectors should be prioritized. To accomplish this, it will be necessary to increase the supply of green products and green services, including clothing, green food, green housing, transportation, and tourism.

Outcomes

- In December 2018, the General Office of the State Council issued the *Plan for Pilot Development of Solid Waste-Free Cities.* At the end of April 2019, MEE published a list of pilot solid waste-free programs. In May 2019, MEE issued the *Guidelines for Compilation of Implementation Plan of Solid Waste-free Cities Pilot Programs* and the *Indicators for Solid Waste-Free Cities (tentative)*.
- NDRC promulgated the Key Tasks of New Urbanization 2019, which sets forth working requirements in 2019. It also puts forward that new urbanization should take into full consideration of the actual bearing capacity of resources and the environment, stress coordinated development, make full use of intelligent IT means, conduct lean management and coordinate with the control of air pollution and other environmental problems.
- On March 2020, NDRC and MOJ released Opinions on Accelerating the Establishment of a System of Regulations and Policies for Green Production and Consumption, which stipulates multiple tasks such as promoting green design, enhancing clean industrial production, developing recycling industrial economy, strengthening control of industrial pollution, advancing the development of clean energies, facilitating the green development of agricultural and service industries, boosting consumption of green products and advocating green lifestyles.
- In 2021, the Standing Committee of National People's Congress adopted the Anti-Food Waste Law.

Impacts

- The "11+5" cities and regions covered in the waste-free city pilot programs have prepared implementation plans, arranging more than 900 tasks and more than 500 engineering projects, involving an investment of more than 120 billion yuan.
- In 2020, 40,300 old communities in urban areas will be renovated nationwide, benefiting about 7.36 million households.

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