

# Review The Shift to Synergies in China's Climate Planning: Aligning **Goals with Policies and Institutions**

Qianyi Cai <sup>1</sup>, Eric Zusman <sup>2,3,\*</sup> and Guobi Meng <sup>4</sup>

- 1 Institute of International Law, Wuhan University, Bayi Road 299, Wuhan 430072, China; fxycqy@whu.edu.cn
- 2 The Institute for Global Environmental Strategies, Kamiyamaguchi, Hayama 240-0115, Kanagawa, Japan 3
  - National Institute for Environmental Studies, Onogawa 16-2, Tsukuba 305-8506, Ibaraki, Japan
- 4 School of Law, Guangdong University of Finance and Economics, Luntou Road 21, Guangzhou 510320, China; mengguobi@gdufe.edu.cn
- Correspondence: zusman@iges.or.jp

Abstract: China has long sought to address climate change in line with other development goals. However, research supporting this alignment often employs data-driven models that downplay the policies and institutions needed to achieve the multiple benefits that studies feature in their analyses. This oversight is troubling because it neglects gaps between goals and the actual integration of climate and development or co-control of air pollution and greenhouse gases (GHGs). Additionally, this oversight may overlook growing implementation challenges as China pursues synergies between net-zero emissions, biodiversity, and circularity. This article illustrates these challenges by tracing the goals and policies/institutions in China over three phases: (1) integration (1979-2010), (2) co-control (2011-2019), and (3) synergies (2020-present). This article argues that China needs to strengthen the science-policy interface and ensure that new market-based policy instruments (such as emissions trading programs) as well as the leadership responsibility system incentivize reductions in overall GHG emissions while shrinking ecological footprints in the shifts to synergies.

Keywords: synergies; co-benefits; co-control; science-policy interface



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# 1. Introduction

As it does for much of the world, climate change presents a sizeable threat to sustainable development in China. Over the past four decades, China has made strides in addressing that threat. One of the reasons for the headway is that China has not looked at climate change as an isolated problem. Rather, China has often sought to address climate change as part of a broader effort to achieve other developmental priorities. In fact, China has been one of the more forward-thinking countries in the international drive to align climate change with other sustainability objectives.

Reflecting this progressive outlook, China's approach to alignment has not been static but has evolved over three roughly different stages. In an initial "laying the foundation" stage, China adopted high-level goals and policies/institutions that forged nominal connections across environmental and some development issues. In a second "co-control" stage, China placed a stronger emphasis on the linkages between GHGs and air pollution. In a third "synergies" stage, China has sought to strengthen the dynamic between net-zero emissions, ecosystems, and the circular economy and to harmonize interrelationships between humanity and nature.

This article not only highlights the progress (i.e., reduced  $PM_{2.5}$  and carbon intensity) but challenges that have arisen in China over these three stages. These challenges merit attention because much of the research on cross-sectoral alignment in China employs datadriven models that downplay the policies/institutions needed to effectively implement solutions. These challenges could grow as China seeks to leverage synergies between a wider set of net-zero, biodiversity, and circular economy goals. Greater effort will

therefore be needed to strengthen the science–policy interface and ensure that new marketbased policy instruments (such as emissions trading programs) as well as the leadership responsibility system incentivize reductions in overall GHG emissions while shrinking ecological footprints in the shifts to synergies.

The remainder of this article is divided into three sections. The next section (Section 2) reviews the relevant literature on integration, co-benefits, and synergies, suggesting the need for greater attention to translating evidence into policy and action. Section 3 reviews the goals, policies/institutions, and challenges that have emerged over the aforementioned three stages in China. Section 4 concludes with thoughts on how to ensure data-driven modeling complements new policy instruments and existing institutions.

#### 2. Literature Review

There is no longer reasonable doubt: transformative changes are needed to avoid a climate crisis. It is also increasingly clear that efforts to address climate change cannot be divorced from those aimed at sustainable development. The realization of this need to embed climate in a wider sustainable development discussion has a long history at the global level that has had implications for China [1].

The earliest discussions of the need for alignment can be found in some of the highprofile statements from meetings where China played an important role. For example, the United Nations Conference on the Human Environment (UNCHE) held in Stockholm in 1972 concluded with references to the importance of integration and cross-sectoral coordination (UNEP). China also contributed significantly to the United Conference on Environment and Development (UNCED) and worked to support the endorsement of the concept of sustainable development at the Rio Earth Summit in 1992 with efforts to plan for Agenda 21. China has also been active in discussions over the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol and supported efforts to address climate in the wider context of sustainable development through the Clean Development Mechanism (CDM) [2].

While many of the landmark events mentioned support cross-sectoral integration, more recent efforts have focused on quantifying the size of synergies or co-benefits—especially between air pollution and climate change. In this connection, researchers have used various methods to quantify the co-benefits of environmental policies and arrive at estimated impacts on climate, air quality, health, and other developmental areas (damage to infrastructure) [3]. The initial wave of work concentrated chiefly on hypothetical climate policies (a carbon tax) in developed countries, particularly the United States and Europe [4]. In the years that followed, greater emphasis was placed on a wider variety of policies and benefits in developing countries.

Much of the work on co-benefits in developing countries has centered on China. Some of this research has focused on defining terms and detailing techniques for quantifying co-benefits [5]. Many others have quantitatively assessed efforts to mitigate climate change that also improve air quality and public health at the national level in China [6]. More recently, research has quantified the possible gains from coordinated or co-control policies for low emissions pathways in China [7,8]. A recurring theme in this work is that China could significantly offset the costs of climate action by recognizing added air quality, health, and other benefits while mitigating climate change.

Other studies have arrived at similar conclusions but have worked through different entry points or concentrated on particular regions and sectors. For example, following growing concerns over fine particulate ( $PM_{2.5}$ ) emissions over the past decade, studies have quantitatively assessed the multiple benefits from the implementation of China's clean air policy in the Jing-Jin-Ji (Beijing-Tianjin-Hebei) region [9]. Yet a related branch of studies has looked at the benefits of Guangdong's implementation of emission reduction measures with an emphasis on the transportation sector [10]. In a similar vein, researchers estimated the multiple benefits policies promoting cleaner vehicles and reductions in China's energy use (from purchase restrictions) [11]. Additionally, some researchers have modeled the climate and pollution control benefits of in energy-intensive industries [12]. Yet another branch of work has estimated co-benefits from transitions away from coal-fired power plants [13] or reforms in the power sector [14]. Though these studies have more varied regional and sectoral scopes, they also point to a similar conclusion: China has much to gain from formulating and implementing policies that can achieve co-benefits, especially between climate change and air pollution.

Though research on co-benefits continues, lately the term "synergistic" has gained a growing amount of attention in international policy discussions and Chinese government documents. In comparing the two terms, it merits underlining that synergies and co-benefits emphasize the potential for multiple wins through sectoral integration. However, "co-benefits" tend to be more concerned with a narrower set of interventions contributing to a more limited number of environmental (mostly climate and air) and health issues. On the other hand, "synergistic" tends to align more closely with recent efforts to achieve net-zero and carbon neutrality goals. As such, it also tends to imply a more dynamic interplay between climate and a broader range of sustainable development domains. Those domains include circular economy/resource circulation and biodiversity preservation/nature-based solutions.

Following the trends referenced above, there have also been studies on synergies in China. Much of the relevant work has continued to look at the potential environmental and other implications for implementing a variety of policies to achieve synergies [15]. In this connection, some scholars have taken a more focused look at synergistic case studies in key sectors [16,17]. Yet an additional relevant line of inquiry has explored how key technologies can generate synergies from Chinese industries [18]. Further, other scholars have focused on examining the impact of synergy policies on economic resilience, efficiency, and development [19,20], including adjustments to oil prices and carbon tax policies [21] and intensive development in agriculture and industry [22–24]. Last but not least, studies have also explored the synergies between decarbonization pathways or net zero transitions and the circular economy and biodiversity preservation or nature-based solutions in China [25,26].

Though studies and some public policies have featured integration, co-benefits, and synergies, there are still many challenges to translating research into action. For instance, when discussing co-benefits, some have pointed out that there is a lack of standardization of assessment methods. Another set of concerns involves differences across contexts and regions. Yet a related set of concerns is that there has been limited attention to political, social, and institutional barriers to strengthening the science–policy interface needed to translate words on paper into action on the ground [27].

Of particular concern is that much work that calls for greater sectoral integration is based on modeling scenarios that implicitly assume that the goals that they recommend will be designed well and implemented effectively. This assumption needs to be more explicit in the work on integration, co-benefits, and synergies because research has long cautioned about persistent implementation gaps that hamper the achievement of environmental and sustainable development objectives. These assumptions also require greater scrutiny because they rarely explore whether different mixes of policy instruments and institutional incentives can support the implementation of goals based on increasingly complex multidimensional logic.

The good news is that China offers fertile empirical ground to explore the relationship between goals that call for alignment between climate and other sustainable development priorities and the policies and institutions that are meant to make good on their promises. Section 3 analyzes actual trends in the goals and the policies and institutions that are intended to realize them in China.

# 3. China's Approach to Integration, Co-Control, and Synergies

The following section builds upon some of the concerns raised in Section 2 that goals might run ahead of the policies/institutions needed to achieve them in China. It further suggests that these gaps—between goals on the one hand and policies and institutions on

the other—might widen as China moves from integration to co-control to synergies. To illustrate these concerns, this section provides an overview of the goals, policies/institutions, and challenges over China's three different stages, beginning with laying the foundation for the integration stage and then moving to the co-control stages before ending with a synergies stage. It also comments on some of the challenges that have arisen during each of these stages (See Table 1).

3. Synergies 2020-Present 1. Laying the Foundation 1979-2010 2. Co-Control 2011-2019 Stage Aligning climate, Aligning climate Cross-sectoral integration biodiversity and Goals and air pollution circular economy Energy/carbon intensity targets included in Five Year Plans Co-control included in Synergies included in Five Environmental protection law and Year Plans and climate Atmospheric pollution prevention law Atmospheric pollution prevention mitigation and Kev Policies/ Creation of MEP and promotion adaptation strategies law adopted Institutional Changes Creation of NEPA and promotion of MEE Newly created MEE pushes to SEPA Leadership responsibility for stronger links with other system creates incentives for ministries on synergies achieving climate and air quality targets National policies focus on Synergies requires adaptive Limited attention to climate in energy and carbon intensity but and reflexive forms national policies not absolute emissions of governance Incentives for achieving air pollution Challenges dividing Difficult to create leadership Challenges targets limited responsibilities between MEP responsibility system for Capacity and vertical/horizontal and MEE multiple objectives coordination frustrate implementation • Poorer regions struggle to reach Emission trading may not some targets promote synergies

Table 1. Goals, Policies/Institutions, and Challenges in China's Shift to Synergies.

# 3.1. *The Laying the Foundation for Integration Phase* (1979–2010) 3.1.1. Phase 1 Background and Goals

In the early stages of China's post-Mao era, there was a tendency to lean toward growing-now-and-clean-up-later development models, sometimes resulting in gaps in the objectives and actual results of environmental policies and laws. At the same time, there was an effort to put in place foundational environmental policies and laws and coordinated multisector governance arrangements, laying the groundwork for modest levels of integration between the environment and development.

Following China's market-driven reform and opening to the outside world in 1979, the country's authorities acknowledged the importance of environmental protection. To align domestic policies with international trends, China adopted a range of environmental regulations that drew on knowledge from other countries while considering its own unique national conditions. The goals in China's earliest environmental protection policies nonetheless made nominal connections across environmental and other development priorities, often with references to sustainable development—for example, aiming to improve the efficient use of natural resources, creating a healthy living environment, and promoting economic development through environmental protection [28]. Though this phase mainly focused on formulating major policies and framing laws, there were some efforts to coordinate across different agencies and departments in the spirit of integration. At the same time, this coordination was not focused on climate change and did not seek to explicitly leverage connections between climate change and other priorities.

# 3.1.2. Phase 1 Policies and Institutions

Many of the key policies adopted during this initial phase reflected this modest interest in cross-sectoral coordination. In September 1979, for example, the "Environmental Protection Law (Trial)" was introduced, and ten years later the "Trial" designation on that law was dropped. This foundational law sought to bring together efforts to protect the environment and natural resources, prevent pollution and public hazards, provide a suitable living and working environment for humans, and safeguard people's health (Environmental Protection Law, 1989 Art.1). The "Environmental Protection Law" would not only then offer a platform for coordinated development but also lead to supporting laws targeting specific challenges, such as the "Atmospheric Pollution Prevention Law" (initially passed in 1987 and revised several times since its adoption). As the national environmental policies grew to address a wider variety of challenges, local people's congresses and people's governments would codify 600 local environmental protection regulations aimed at adapting national environmental protection laws to local conditions [29].

Some of the key policy provisions during this phase also reflected the importance of cross-sectoral integration. To illustrate, the State Council not only formulated guidelines aimed at achieving different benefits for the economy, environment, and society but also promoted what was known as the three simultaneities in an effort to synchronize environmental with three different stages of economic planning [30]. During approximately the same juncture, China would also begin to draw upon the "polluter pays principle" by including an emissions fee discharge system in revisions of the Air Pollution Prevention Law while allowing experimentation with cap-and-trade for sulfur dioxide (SO<sub>2</sub>) emissions. However, even with the inclusion of these innovative instruments, tensions between environmental and developmental objectives came to the surface when, for instance, emissions fees were set too low to encourage many sources to curb emissions. Further, at this juncture, there was limited alignment between climate actions and development.

While the number and scope of China's policies were growing, the government also began crafting administrative and legal institutions to support the formulation and implementation of relevant policies and laws. For example, the State Council's Environmental Protection Committee was formed and tasked with reviewing and overseeing the implementation of guidelines, policies, and measures that nominally integrated the environment and economic development. The National Environmental Protection Administration (NEPA) was then created to serve as the executive agency for the State Council's Environmental Protection Committee; NEPA initially had nine functional departments working on various and often connected environmental issues.

Another wave of institutional reforms over this period was also introduced to elevate the importance of environmental protection in China. One of the main reforms was a decision to upgrade NEPA to the State Environmental Protection Administration (SEPA) in 1998—a decision that reflected the awareness of the economic impacts of costly floods during that period. SEPA was not only given a new designation but more authority to supervise environmental protection in different agencies and oversee the activities of a vast network of local environmental protection bureaus (EPBs). The creation of the Environment and Resource Protection Committee under the National People's Congress, which was responsible for organizing the drafting and reviewing of legislation related to the environment, similarly reflected the need to place a greater emphasis on the environment and build connections with broader development goals.

Approximately a decade later, the interest in raising the profile continued to grow. Reflecting this growth was the decision to once again boost the status of SEPA and rename it the Ministry of Environmental Protection (MEP) in 2008—a decision that reflected the growing awareness that sustainable development required attention to the interrelationships between development and the environment. With the creation of the MEP, there was more attention to the importance of horizontal and vertical collaborative governance. However, even with this added attention, the MEP and its predecessors would still struggle

to assert themselves in policy discussions over the climate where institutions that focused on foreign affairs and energy planning took the central stage.

## 3.1.3. Summary and Challenges

In general, this initial stage showed that China recognized the connection between the environment and development. This awareness is evident in some key policies, laws, and early institutional and governance arrangements, and it had some non-negligible impacts on China's environment. For example, China saw reductions in sulfur dioxide and smoke from exhaust gases. There were also decisions to close some high-energy-consuming and heavily polluting enterprises, promote energy technology upgrades in businesses, and make initial investments in clean energy (see Figures 1 and 2) (new energy sources rose from 3.8% to 6.4%, and PM<sub>2.5</sub> fell nearly 10  $\mu$ g/m<sup>3</sup>) [31–33]. However, there was still visible room for strengthening integration that, to some extent, required a reorientation of priorities and the realization that protecting the environment could also help achieve objectives like creating jobs or maintaining social stability [8]. The integration limits also stemmed from a lack of funding/staffing as well as shortages of data for multidimensional evidence-based decision making [34]. Finally, the limited integration with climate was attributable to relatively weak horizontal and vertical coordination mechanisms that often left the climate outside of the remit of key environmental agencies [29].



Figure 1. China's Carbon Intensity (2011–2019).



Figure 2. China's Average Annual Population-Weighted PM<sub>2.5</sub> (2011–2019).

# 3.2. The Co-Control Phase (2011–2019)

# 3.2.1. Phase 1 Background and Goals

In the previous phase, China's focus was on creating a foundation of high-level environmental protection policies and legislation that made some nominal connections across sectors and set the stage for sector-specific environmental policies such as those targeting air pollution. In this phase, those initial efforts would enable regulators to concentrate on the twin goals of co-controlling air pollution and greenhouse gases. The interest in co-control would grow as China began to align its climate and energy goals in Five-Year Plans and recognize the potential to lower emissions and save energy while remaking the economic structure.

#### 3.2.2. Phase 2 Policies and Institutions

One of the clearest differences between the first and second phase was the amount of attention to relevant policies and key documents devoted to climate change. The interest in crafting a domestic climate policy became evident in 2011 when China's State Council released a white paper on climate change. The white paper was remarkable in that it not only highlighted the importance of strategic studies on new issues (low-carbon development, adaptation, and emissions trading) but also the coordinated control of greenhouse gases and air pollutants [35].

A similarly motivated set of provisions focusing on co-control would follow China's climate white paper. In 2015, for instance, amendments to the aforementioned Air Pollution Prevention and Control Law emphasized the coordinated control of multiple pollutants [36]. To provide a scientific basis for these efforts, the Ministry of Ecology and Environment formulated a plan for the construction of ecological and environmental big data and strengthened environmental monitoring [37,38]. Subsequently, the Greenhouse Gas Emission Control Work Plan was released, accelerating the promotion of energy-saving and emission reduction technologies [39]. In 2018, the Three-Year Action Plan for Defending the Blue Sky was issued, requiring multiple departments to jointly control mobile source pollution [40]. Following local institutional reforms, attention was focused on the relationship between carbon monoxide and carbon dioxide, with co-control prioritized for future work [41].

Yet another indication of the added attention placed on climate were efforts to make links with energy policy and Five-Year Plans. This became most apparent when China's 11th Five-Year Plan included energy intensity targets; the 12th Five-Year Plan would then concentrate even more closely on the inclusion of carbon intensity targets. The 13th Five-Year Plan would then include targets on not only carbon intensity but also reductions in fine particulates. The inclusion of these targets in high-level planning documents was important in its own right. It was arguably even more influential in that it was accompanied by a decision to align China's leadership responsibility system with these targets. By making connections to this system, China's local leaders would have their performance and promotional incentives based on how well their region did on climate and environment-related targets.

During the stage of building, China's environmental institutions also underwent a series of reforms. This included greater sharing between the environmental regulatory agencies and the National Development and Reform Commission (NDRC) over the climate agenda. The NDRC has previously dominated domestic climate policy as it oversaw the energy portfolio; however, there was some effort to reassign climate to the MEP. In addition, to address overlapping responsibilities, China integrated the responsibilities of the Ministry of Environmental Protection and six other departments into the new Ministry of Ecology and Environment (MEE) in 2018. Subsequently, local agencies also initiated a series of parallel reform measures, such as incorporating climate change functions into the ecological and environmental departments and prioritizing the co-control of pollutants and GHGs [42].

Over this period, China's objectives shifted from broad-based integration to co-control of pollution and GHGs. The data suggest that some of these efforts have helped the climate and air quality. For example, there was a slowdown in the growth rate of CO<sub>2</sub> emissions and a sustained decrease in CO<sub>2</sub> emissions per unit of GDP (see Figures 3 and 4) [43,44]. Moreover, China narrowed the gap between its unit GDP CO<sub>2</sub> emissions and global unit GDP CO<sub>2</sub> emissions from 1.4 to 0.2. However, not all of the efforts to control air pollution led to reductions in CO<sub>2</sub> and vice versa. For example, end-of-the-pipe pollution controls could require additional energy and more GHGs, while some decarbonization technologies could lead to increases in air pollution over their lifetime [45]. Further, there was limited public participation in environmental governance [46–49] and regional disparities in environmental law enforcement that could result in higher pollution and GHGs from poorer regions moving forward [50].



Figure 3. China's Carbon Emissions (1979–2021).



Figure 4. China's Ecological Footprint (1979-2021).

3.3. Phase 3: Synergies (2020–Present)

3.3.1. Phase 3 Background and Goals

After 2021, the Chinese government began to look beyond the co-control of air pollutants and GHGs and to feature synergies. The shift to synergies suggested China would devote more attention to capturing dynamic interactions across a wider range of development needs. This was evident when China's leadership pointed to "synergies" as important to adjusting social structures and promoting green transformation in high-level policy statements [51]. The emphasis on synergies was partially motivated by the interest in making links between net-zero or carbon neutrality goals and building connections to nature-positive and circular economy solutions. The potentially positive interactions between climate, nature, and the circular economy held promise to achieve more ambitious climate goals. It could simultaneously increase resource efficiencies, preserve ecosystems, and shrink material footprints. However, arguably more than any of the above two stages, it also required policies and institutions that were more reflexive and adaptative and that cut across multiple dimensions of sustainable development [52].

## 3.3.2. Phase 3 Policies and Institutions

One of the clearest indications that China's policies would emphasize synergies came with the adoption of the "14th Five-Year Plan". The newest Five-Year Plan highlighted the need for ecological restoration and made "synergies" a cornerstone of efforts to address that need. China's MEE followed the adoption of the Plan with more focused policy documents such as the "Guidelines for Coordinating and Strengthening Work Related to Climate Change and Ecological Environment Protection", which detailed steps to making progress on the 14th Five-Year Plan. Importantly, support synergies also found their way to the "National Climate Change Adaptation Strategy 2035"—a strategy that was jointly released by the MEE with 17 other ministries. In yet another indication of the backing of synergies, China's State Council would also adopt a "2030 Peak Carbon Emissions Action Plan" that held that synergies could improve resource use, reduce resource consumption, and lower  $CO_2$  emissions [53].

As implied above, the MEE would spearhead efforts to bring synergies into relevant policies and plans. It would similarly aim to learn lessons from past efforts at alignment—for instance, it called for governance arrangements that would enable a transition from "limited" to "strong synergies." In a related effort, the MEE would work with eight other departments to launch pilot projects that channeled investment for ecological and environmental development. These projects aimed to encourage businesses to support ecological and environmental protection as well as the creation of a circular economy [51]. Finally, MEE and several agencies would also support the use of emissions trading to underscore intentions to cap emissions and create clear incentives for businesses to invest in low-carbon technologies.

#### 3.3.3. Phase 3 Summary and Challenges

Though it is early to assess the effects of the shifts to synergy, some evidence suggests moderate levels of success in this regard. For instance, a new ecological damage compensation system issued 132,800 penalty decisions, and inspections for ecological and environmental protection have been carried out in 17 provinces and/or autonomous areas [54]. In addition, perhaps reflecting carryover from previous stages, air pollution emissions continued to decline while the growth rate of  $CO_2$  emissions fell. However, there remain some significant challenges on the horizon. Many of these hurdles, which are also suggested by the expansion in China's ecological footprint and continued growth in overall  $CO_2$  emissions, involve closing the gap between the ideal visions and actual implementation. They also relate to ensuring that data-driven assessment models inform goal setting and the design of policy incentives and institutional arrangements.

In fact, three sets of challenges stand out as China places a greater emphasis on synergies. One group of challenges involve updating the aforementioned leadership responsibility system so that subnational leaders have incentives to achieve not only climate and air pollution but objectives associated with biodiversity and the circular economy. Creating promotional incentives that support multidimensional assessment criteria promises to be difficult. A second set of challenges involves emissions trading. There is no guarantee that companies will be motivated to invest in technologies that reduce  $CO_2$  while also contributing to nature-positive and circular economy goals. By design, the market-based incentive built into emissions trading would seem to favor investments that do not necessarily deliver additional benefits. Finally, there will also be a need for greater flexibility and collaboration across and within institutions steering the shift to synergies. This includes not only the MEE, NDRC, and other line ministries but also local-level agencies that may lack the capacities and resources to respond quickly and creatively to multiple mandates [55].

## 4. Discussion and Way Forward

This article began by underlining that China has sought to address climate change as part of a broader effort to achieve other development goals. It further stressed that there has been a significant amount of research demonstrating the potential for China to align its climate with other development goals. Yet, it also cautioned that one of the limitations of much of this research is its failure to systematically analyze the policies and institutions that would be needed to achieve multiple objectives at once. This gap in understanding could nonetheless be filled with a more systematic assessment of how China's approach to working across climate and other objectives has evolved. Toward that end, the article developed a simple analytical framework to trace shifts in China's goals and the policies and institutions that were intended to achieve them.

The analysis suggested that there have been three distinct stages in China's efforts to work across climate and other development priorities: (1) the laying the foundation phase from 1979 to 2010, (2) the co-control phase from 2011 to 2020, and (3) the current synergies phase from 2021 to present (see Table 1). It further noted that though there have been notable strides during each of these stages, there have also been challenges in crafting policies and institutions that can support the alignment between climate and other sustainability imperatives. In addition, there is a real risk that those challenges could grow more formidable as China pursues synergies between net-zero and biodiversity and circular economy goals. Yet, viewed from another perspective, that risk may also represent an opportunity.

There are a few steps that China's policymakers and researchers working on China can take to capitalize on that opportunity. One of the most important steps is to strengthen the interface between policy and research on themes covered in this article. That would entail ensuring that those analyzing the potential benefits for more integrated solutions are connected to the institutions that are designing policies capable of achieving those benefits. This will entail more data sharing and dialogue across elite universities and government-supported research centers in Beijing as well as with more remote areas and provinces with fewer resources. It will require greater efforts to engage policymakers and researchers in co-design processes wherein they can focus on, for instance, crafting scenarios that are tailored to local needs and capacities. For example, it will be important to design scenarios for synergies that account for some of the unique features and constraints in areas with abundant natural resources as well as in locales where such resources are under threat.

A related step forward for China involves the kind of research that is conducted on synergies and related themes. As highlighted in this article, it is critical that China does not limit the scope of this study to modeling research that assumes perfect implementation. Rather it is important that there is also active engagement with social scientists who have insights into the policy and institutional incentives required to pursue multiple objectives simultaneously. In this connection, there is vibrant literature on environmental policy integration, sustainability transitions, and policy mixes that could enrich China's efforts to achieve synergies.

Yet a third step China could take to move the work on synergies forward is to share its experiences with other countries. The push for synergies is not limited to China; rather there is a surge in global interest in this theme, and China's experiences could contribute nicely to those discussions during negotiations over the Paris Agreement, the new Global Biodiversity Framework, and even a possible Plastics Treaty. By the same token, China could learn from other countries that are confronting similar struggles and finding suitable workarounds. Sharing and listening to other countries would further reaffirm China's status as a country that has worked on climate change as part of a broader effort to sustain development.

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