

# UNTAPPED OPPORTUNITIES FOR CLIMATE ACTION

An assessment of food systems in  
Nationally Determined Contributions

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COUNTRY ASSESSMENT

**CHINA**



#### DISCLAIMER

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## PREFACE

Integrating food systems transformation into the Nationally Determined Contributions (NDCs) – the national climate actions at the heart of the Paris Agreement, is critical to delivering on interconnected ecological, biodiversity, health, economic, social, and cultural goals. Taking a food systems approach builds climate resilience and results in a diversity of context-specific solutions for food production, distribution, consumption, and waste. Yet, food systems are rarely prioritized in climate policy.

This country assessment is part of a suite of publications that are designed to centre food systems transformation in future climate policy:

1. Untapped Opportunities for Climate Action: An Assessment of Food Systems in Nationally Determined Contributions: A summary report providing a synthesis of the 14 country assessments with recommendations and priority actions for policymakers and climate policy advisors
2. A Practical Guide to Assessing Food Systems in Nationally Determined Contributions (NDCs): A guide with a framework designed to enable users to take a food systems approach to developing future NDCs and implementing climate policies.
3. A set of 14 country assessments examining the latest NDCs of 14 countries from around the world, outlining areas of improvement and opportunity.

Users are also encouraged to read Confronting the Climate Crisis with Food Systems Transformation: Stories of Action from 14 Countries, which provides a catalogue of global case studies that complement the suite of materials for policymakers, advisors, and advocates of climate action.

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## OVERVIEW OF CHINA'S FOOD SYSTEMS

China's food systems are of high importance to the country's economy as well as the world's food supply. Comprising nearly one-fifth of the world's population, China and its food systems feed 1.4 billion people.<sup>1</sup> China is the world's largest food producer. According to 2014 figures, China produces 50% of the world's vegetables, 29% of its meat, 70% of its fish, 30% of its rice, 17% of its corn, and 15% of its wheat.<sup>2</sup> China's annual "policy document No. 1" had agriculture and rural development as its top priority for 17 years — until 2020, when fighting rural poverty became the top priority. China's development vision 2035<sup>3</sup> underlines the fundamental role of agriculture to ensure food security, safety, and quality, as well as rural revitalization. The food systems in China — which include agriculture, agribusiness, food processing, packaging, transportation, wholesale and retail trade, food services, finance, insurance, advertising, and input supplies — account for 23% of the country's gross domestic product (GDP) and employs 30% of its population.<sup>4</sup>

China is the world's number-one exporter and importer of agricultural and food products. In 2018, China accounted for 58% of the world's aquaculture production and was the largest seafood exporter in value (137.3 billion CNY/21.55 billion USD\*).<sup>5</sup> In 2019, China's top exports included fish, crustaceans, and vegetables, while its main imports were beef, pork, and soybeans.<sup>6</sup> Globally, China is the single largest importer of soybeans, facing a surging demand for animal feed as the country has become the largest meat consumer globally.<sup>7</sup> Pork is by far the main source of meat-based protein in the modern diet, followed by fish and seafood, chicken, beef, and mutton. The consumption of meat, including fish and seafood, has been on a sharp upward trajectory for the past three decades as a result of economic growth, a rise in household income, and changes in people's lifestyles. The rise in meat consumption is mainly driven by a domestic increase in income over the past decades.<sup>8</sup> This increase in demand has made China the largest consumer and producer of pork,<sup>9</sup> despite a widespread domestic outbreak of African Swine Fever (ASF) in 2019 that almost halved China's herd size.<sup>10</sup> While China still produces the majority of the meat it consumes, meat imports are expected to continue to increase over the coming years.<sup>11</sup> Growth in imports is also driven by a middle and upper middle class that is showing a preference for imported food products that are perceived as meeting higher quality and environmental standards.<sup>12</sup>

China faces increasing challenges in maintaining its domestic food supply. China holds only 8% of the world's arable lands, and 70% of its cultivated land is classified as having low or medium fertility.<sup>13</sup> Farmland, however, has declined by 11% between 1978 and 2006.<sup>14</sup> Though China has a set red-line to keep cultivated land above 1.8 billion mu (120 million hectares), accelerated urbanization, explosive economic growth, and competition for land, water, and energy are worsening the shortage of agricultural land and hindering food production.<sup>15</sup> As such, agricultural lands are under pressure from soil and water depletion.<sup>16</sup> Over the last decade, groundwater levels across the country have rapidly decreased,<sup>17</sup> and over 40% of China's arable land has been degraded.<sup>18</sup> Unfavourable conditions for agriculture are also exacerbated by the contamination of heavy metals produced by industries.<sup>19</sup> Similarly, China's large fisheries are faced with challenges from widespread water pollution from industrial and agricultural runoff.<sup>20</sup> To be able to meet its food demand, China has significantly increased its food imports over the last decades and, with further expected economic growth and associated changes in diets, this trend will likely continue.<sup>21</sup>

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\* Conversions based on February 8, 2022, exchange rates.

Pressures on the food system will likely be further exacerbated by climate change. Rising temperatures are expected to further add to China's current struggle for land and water availability. While past temperature rise has created more favourable conditions for cultivation in the Northern regions of China,<sup>22</sup> further increase in temperature is expected to reduce precipitation, and many areas may even run dry within 30 years.<sup>23</sup> In Southern China, excessive rainfall as well as increased and prolonged droughts are likely to lessen the productive capacity of arable lands. On a national scale, increased heat is likely to cause further salinization of soils through moisture evaporation, and epidemics of pests and weeds may become increasingly difficult to deter.<sup>24</sup> Under these trends, one study estimates that 52.6% of the arable land in China will experience a significant decrease in yield for cultivated crops over the next two decades.<sup>25</sup>

Simultaneously, China's food systems are major contributors to climate change. In 2018, China's food systems emitted 1.09 billion tons carbon dioxide equivalent greenhouse gas (GHG), 8.2% of its total national GHG emissions that year and 2% of global emissions.<sup>26</sup> It should be noted, however, that, after a rapid increase in emissions between 1997 and 2012, food systems-related emissions have been slowly declining.<sup>27</sup> The main sources of emissions within food systems come from agricultural inputs, most notably fertilizer use.<sup>28</sup> Methane emissions in food production are also substantial: In 2014, methane accounted for 10.4% of national GHG emissions, 40% of which was attributed to the agriculture sector.<sup>29</sup> Additionally, China's large imports of soybean for animal feed have raised concerns regarding overseas deforestation, especially in Latin America.<sup>30</sup>

Although China ascribes to multiple international conventions on conservation, its biodiversity is under pressure from an increasing demand for food. Due to its vast territory and variation in climatic and natural conditions, China can historically be considered as one of the most biologically diverse countries in the world. The surge in population growth over the last decades, however, has caused a shift from traditional agriculture to modern intensive agriculture, and has led to large changes in the agricultural landscape and a rapid loss of biodiversity. As a response, China has ratified multiple international conventions and pledges on biodiversity conservation, most notably being one of the first countries to ratify the Convention on Biological Diversity (CBD) in 1993. While achieving some success in conservation efforts, most measures and policies only focus on natural habitats. Only recently, attention has been growing for improving the sustainability and conservation of ecosystems in agricultural landscapes.<sup>31</sup>

China must address multiple health issues that relate to food consumption. Although the prevalence of undernutrition in China dropped from 22.9% in 1990 to 2.5% in 2020,<sup>32</sup> over 130 million people are still undernourished.<sup>33</sup> Simultaneously, while fruit and vegetable consumption have more than doubled in 2018 compared to 1997,<sup>34</sup> obesity and diet-related diseases such as diabetes and hypertension have risen significantly.<sup>35</sup> The latter is mainly attributed to an increase in the overconsumption of meat, vegetable oil, and ultra-processed foods.<sup>36</sup> It is also caused by a transition from healthy cooking methods — such as steaming, baking, and boiling — toward more fried foods.<sup>37</sup> Between 2000 and 2020, the obesity rate increased by 13.9% among adult males and by 9% among females, currently standing at 34.3% and 30.1%, respectively. Among children under the age of five, 6.8% is considered obese. With the prevalence of non-communicable diseases increasing over the last two decades, health expenditure now amounts to over 4% of China's GDP.<sup>38</sup>

The Chinese government has recently adopted its first legislation on food waste. Annually, at least 203 billion CNY (32 billion USD) worth of food is thrown away in China, which is equal to almost 6% of the country's

annual food production.<sup>39</sup> Especially in China's biggest cities, such as Beijing or Shanghai, food waste has become a major issue. A 2016 study found that the amount of food thrown away by households in these cities on a yearly basis can feed 30 to 50 million people.<sup>40</sup> Furthermore, food waste accounts for more than half of all municipal waste collected across China.<sup>41</sup> Restaurants are regarded as the main contributor, accounting for 19% of all annual food waste. Additionally, poor storage facilities — both in households, canteens, and restaurants — are also regarded as a major contributing factor.<sup>42</sup> In response to this issue, the Chinese Central Government has recently adopted a food waste law, which targets and penalizes food service operators if they encourage consumers to order excessive meals that cause obvious waste. Fines for causing excessive waste could go up to 10,000 CNY (15,50 USD), while restaurants themselves are also allowed to charge patrons for excessive amounts of leftovers. Additionally, the law may also penalize broadcasting networks — including TV, radio, or web shows — that promote or incentivize food waste; for instance, by hosting shows depicting overeating.<sup>43</sup>

More broadly, the Chinese government seeks to improve its food system in a sustainable and equitable way over the coming years. The government has recently published the “Fourteenth Five-Year Plan (2021–2025),” as well as its “Fourteenth Five-Year Plan for National Agricultural Green Development.”<sup>44</sup> It has furthermore released the “National Food and Nutrition Guideline Towards 2035” under its National Strategy of Rural Revitalization. These plans and guidelines aim to engender a shift toward “a well-off society in an all-round way,” which includes greater food security and accessibility, as well as a more efficient, green, inclusive, and sustainable agriculture and food system.<sup>45</sup> There are additional previously published policy plans that aim to develop more sustainable agriculture and food systems. Mainly, these include the “Agricultural Resources and Ecological Environmental Protection Plan (2016–2020),”<sup>46</sup> and the “National Agricultural Sustainable Development Plan (2015–2030).”<sup>47</sup>

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## NDC STATUS

China submitted its updated Nationally Determined Contribution (NDC) on 28 October 2021, just ahead of COP26. This submission reiterates the Chinese Central government's earlier announced ambitions to peak CO<sub>2</sub> emissions before 2030 and become carbon neutral before 2060. The main aim is achieving a more recent commitment to reduce CO<sub>2</sub> emissions by 65% compared to 2005 levels by 2030.

**The following assessment is largely based on China's NDC and supporting documents and policies, as well as interviews with and inputs from six key stakeholders.**



# KEY FINDINGS

## NDC DEVELOPMENT PROCESS

TABLE 1: NDC DEVELOPMENT: KEY FINDINGS AT A GLANCE

### Key Findings

- The development and implementation of the NDC is coordinated between different governmental and government-affiliated think tanks at the national, regional, and sectoral level, but this may still reflect a siloed approach.
- The development of the NDC was informed by consultations with some stakeholders.

### Areas for improvement

- Include information in the NDC on its development and consultation processes to increase accessibility and transparency and to ensure representation of underrepresented groups.
- Consider supporting the participation of local communities, smallholder farmers, women, youth, and other marginalized groups in the NDC development process.
- Consider the role of food systems transformation in achieving the country's carbon neutrality goal and take a holistic approach by including all aspects of food systems in developing targets and measures in the future NDC.

**The development and implementation of the NDC is coordinated between different governmental and government-affiliated think tanks at the national, regional, and sectoral level, but this may still reflect a siloed approach.** The NDC suggests that its development and implementation is led by the National Leading Group on Climate Change, Energy Conservation, and Emissions. The latter coordinates with the Leading Groups on Carbon Peak and Carbon Neutrality, with provincial-level leading groups as well as with sectoral actors to operationalize the central government's ambitions for addressing climate change and to develop local climate action plans. Furthermore, the NDC envisages that Chinese provinces formulate regional climate plans and schemes to implement the required national targets for controlling and reducing GHG emissions. As such, this framework may indicate coherence among national ambitions and the regional policy framework. Although the information provided in the NDC suggests that its development involved a cooperative approach across government, one interviewee argues that different ministries in China still work in silos regarding policy-making: There is little inter-ministerial collaboration on how to develop measures and operationalize the policy targets set by the central government.<sup>48</sup>

**The development of the NDC was informed by consultations with some stakeholders.** General information on the development process that preceded the current updated submission is limited. However, one interviewee indicates that academia has been involved in the development of the NDC.<sup>49</sup>

At the same time, multiple interviewees stress that, in general, policy development processes in China differ significantly from those in other countries.<sup>50</sup> Often, Chinese policy development includes consultations with a cross-section of stakeholders within and beyond government, but there is also more emphasis placed on acquiring information through domestic and international studies on particular policy issues.<sup>51</sup> Interviews also point out that rather than being directly involved, women and other vulnerable groups have their own representative bodies in various government organizations at the national level.<sup>52</sup> They are, however, not necessarily engaged in each policy-development process.<sup>53</sup> Regarding agricultural stakeholders, it is more likely for agriculture industry representatives to be involved, rather than smallholder farmers.<sup>54</sup>

## AREAS FOR IMPROVEMENT

### **Include information on the NDC development and consultation processes to increase accessibility and transparency and ensure representation of underrepresented groups.**

While interviews have provided some insights into how consultations may have been carried out during the development process of China's NDC, the document itself includes no such information. In order to increase transparency and accountability, detailing what specific ministries or other governmental bodies have been involved and consulted with in developing the plans and ambitions presented in the NDC is a crucial first step. Furthermore, providing information on any external consultations, engagement processes, or efforts to incorporate the view of the public and perspectives of different stakeholders is also important. Smallholder farmers, women, youth, and ethnic minorities should be engaged directly through a crosscutting stakeholder engagement process or be represented through consultations with national representative bodies.

### **Consider supporting the participation of local communities, smallholder farmers, women, youth, and other marginalized groups in the NDC development process.**

While the policy development process for the NDC does indeed take a different approach compared to other countries, future iterations may consider supporting public participation and consultations with specific groups to develop targets and measures for the NDC. Regarding food systems specifically, proper engagement with and recognition of women while developing targets and measures will be valuable, as women are major leaders and actors within China's agriculture and food production sectors and make up the majority of the food systems labour force.<sup>55</sup>

### **Consider a holistic food systems assessment in developing targets and measures under the NDC.**

Although academia seems to have been involved in the development process, the NDC makes no mention of any food systems assessment in the context of proposed ambitions and plans, nor does it explicitly address or acknowledge food systems issues. Additionally, this means that the NDC provides no assessments of the distribution of impacts across society from proposed plans and ambitions, nor does it consider traditional knowledge or heritage. According to one interviewee, this omission is mainly because China's NDC primarily addressed the 2030 climate goal which prioritizes energy related CO<sub>2</sub> emissions. Furthermore, the lack of comprehensive action to transform China's food systems can be attributed to a persisting knowledge gap. Where plans and strategies for reducing emissions in the energy sector are informed and supported by extensive research conducted over the last decade, so far there have been no comparable efforts for addressing the food system, with only a few of such studies available.<sup>56</sup> In addition, the same interviewee also suggests that the Chinese government lacks a systems perspective when developing plans to reduce emissions in agriculture and food production.<sup>57</sup>

**Highlight measures for food systems transformation in the future NDC development process as part of efforts to achieve the goal of carbon neutrality.**

Addressing issues in China's food systems can yield important opportunities to not only address climate change but also deliver co-benefits to improve health and economic development.<sup>58</sup> Conducting a food systems assessment as part of the NDC development process may consolidate such efforts, as well as addressing the current knowledge gap on the climate change mitigation potential within food systems. Building on existing studies, such an assessment should not only identify the opportunities for additional food systems-related measures, but it should also consider the distribution of positive and negative impacts across society to ensure fairness and equity. Moreover, a food systems assessment should integrate local knowledge and traditions to inform the development of adequate measures. More broadly, to raise efforts in policy development to transform China's food systems across different ministries and governmental bodies, a dedicated agency that coordinates food systems policy development at a national level is important. Currently, the China's Ministry of Agriculture and Rural Affairs coordinates the development and implementation of food related agriculture, environment, and climate policies. However, better coordination and consultation is needed with other ministries and government bodies (e.g., Ministry of Natural Resources, Ministry of Ecology and Environment, Ministry of Water Resources, National Development and Reform Commission, and National Health Commission). One interviewee indicates that the State Council Leading Group Office of Poverty Alleviation and Development, has previously proven to be an effective means for incorporating policy action on poverty alleviation across government.<sup>59</sup> This office, recently renamed the Rural Revitalization Office,<sup>60</sup> may be an important governmental body to support the coordination of food systems measures.<sup>61</sup> However, it is unclear to what extent the Ministry of Agriculture and Rural Affairs, under which the Rural Revitalization Office operates, holds sufficient influence and authority to lead a systemic transformation of food systems.<sup>62</sup>

## CONTENT OF THE NDC

TABLE 2: NDC CONTENT: KEY FINDINGS AT A GLANCE

### Key findings

- The NDC describes multiple ambitions to reduce GHG emissions in agriculture and to enhance efforts for conservation, but no holistic action plan and sectoral targets are set.
- While the NDC mentions job creation to address climate change, it is unclear whether this includes new green employment opportunities in food systems.
- The NDC aims to develop more locally adapted agricultural production systems.
- With the NDC, China strives to embed sustainable production and consumption behaviour more strongly into society.
- The NDC states that China will link climate measures to financial support mechanisms and aims to provide financial support for development in agriculture and food systems.
- While the NDC aims to remove environmentally harmful subsidies, it is not clear if this covers subsidies for agriculture and food production.

### Areas for improvement

- Translate proposed agriculture and conservation ambitions into concrete measures, detailing roles for specific stakeholders and offering tailored support for transforming food systems.
- Expand measures for agriculture beyond efficiency gains and explicitly recognize the issue of food loss and waste.
- Include further measures and targets for building a sustainable livestock production system.
- Consider adding to current plans and ambitions for conservation by also including imported deforestation and overseas agriculture investments.
- Improve information provision on sustainability to the public and set benchmarks for what can be considered green or low-carbon products and lifestyles, and link these to guidance on sustainable and healthy diets.
- Add to measures that promote sustainable food production and consumption to consider aquaculture under the NDC.
- Integrate the commitments made under the United States–China Joint Glasgow Declaration on Enhancing Climate Action and the Glasgow Leaders' Declaration on Forests and link these to existing programs and activities being implemented.

### **The NDC describes multiple ambitions to reduce GHG emissions in agriculture and to enhance efforts for conservation but does not provide any holistic action plans and targets to this end.**

The NDC states that China will increase its efforts to reduce GHG emissions in agriculture by reducing the use and increasing the efficiency of chemical fertilizer and pesticides, as well as improving livestock and poultry

productivity and strengthening manure management. Regarding conservation, the NDC states that the government will promote biodiversity conservation and will proactively explore more opportunities to incorporate nature-based solutions to improve (agricultural) ecosystems. The NDC also stipulates the ambition to promote land saving and better land management practices, as well as forest quality improvement projects. China will furthermore encourage the integrated protection and restoration of forests, farmlands, and grasslands as well as converting more farmland back to natural vegetation. Natural ecosystems in coastal zones will be improved to boost climate change resilience. The NDC also highlights China's practices, programs and ambition in the Agriculture Biomass Recovery Project. Finally, the NDC indicates the development of agricultural carbon sinks, which will be integrated into the national carbon market. No quantified targets, measures, or broader plans are included for these ambitions, however.

**While the NDC mentions job creation to address climate change, it is unclear whether this includes new green employment opportunities in food systems.** On a general level, the NDC assures that more professional skill training will be provided for work in the field of climate change. There is no specification, however, of which employment sectors will be targeted under this ambition. One interviewee indicates that initiatives to train local communities and farmers on how to adopt new sustainable practices in rural and urban areas are NGO-led rather than being coordinated by the government.<sup>63</sup>

**The NDC aims to develop more locally adapted agricultural production systems.** The central government aims to improve agricultural climate zoning to improve production efficiency and develop characteristic agricultural products. As such, production will be adjusted according to different climate zones across the country or to alternated seasonality as a consequence of climate change.

**With the NDC, China strives to embed sustainable production and consumption behaviour more strongly into Chinese society.** The NDC states that China will expand the supply and consumption of green and low-carbon products, and that the government will advocate for a greener, low-carbon lifestyle. This intended shift in behaviour across society will be further facilitated by integrating low-carbon and green development into national education systems. The NDC does not detail, however, what should be considered green or low-carbon products and lifestyles, and if this will also imply changes in food consumption and the promotion of sustainable and nutritious diets. Interviewees confirm that there is no clarity as to what the government deems low-carbon or green lifestyles, adding that while the public is keen to contribute to the country's climate goals, little information is provided by the government on how this can be achieved.<sup>64, 65</sup>

**The NDC states that China will link climate measures to financial support mechanisms and aims to provide financial support for development in agriculture and food systems.** According to China's NDC, work in the field of climate change will be linked to economic support policies, and China foresees the use of ecological protection compensation payments. In relation to the latter, the NDC indicates that the central government will provide financial support for manure resource utilization and the substitution of chemical fertilizers for organic fertilizers. There is no mention, however, of any specific financial vehicle or instrument, and it remains unclear in what context the compensation payments will be used.

**While the NDC aims to remove environmentally harmful subsidies, it is not clear if this covers subsidies for agriculture and food production.** On a general level, the NDC states that the Central

Government will comprehensively clear existing laws and regulations that are “incompatible with the work of carbon peak and carbon neutrality.” The NDC does not, however, specify any law or regulation that may be terminated as part of this ambition, nor does it specify whether this also means that any environmentally harmful subsidy in the food sector will be removed. One interviewee suggests that subsidies within agriculture are already changing, with a gradual substitution of subsidies incentivizing overuse of fertilizer and pesticides to subsidies for support in proper land management.<sup>66</sup> Indeed, since 2017, fertilizer subsidies have been phased out entirely in China,<sup>67</sup> and such a transition may be further pursued under the commitment described in the NDC.

## AREAS FOR IMPROVEMENT

### **Translate proposed agriculture and conservation ambitions into concrete measures, detailing roles for specific stakeholders and offering tailored support for transforming food systems.**

In absence of detailed targets and measures, China’s NDC may prove ultimately unactionable, as ambitions are not guided by detailed plans to operationalize them on the ground. As one interviewee indicates, it must be noted that the general tendency in China’s policy-making is to provide general commitments at national level and allow for different interpretations for implementation on the ground. This allows regional governments to account for their specific regional social and economic circumstances in local policy-making.<sup>68</sup> Nevertheless, this still requires linking the broad ambitions to reduce agricultural emissions and increase efforts for conservation to concrete and actionable plans that also detail which actors will be involved in their implementation — even if only at regional level. It is especially important to ensure that smallholder farmers, women, youth, and other underrepresented groups play an active role in the implementation of food systems measures, also as a means to follow up on the commitment to applying a people-centred approach. Additionally, further elaboration is needed on the NDC’s proposition to expand skills training for climate change-related employment in order to develop tailor-made programs for workers in the food systems.

**Expand measures for agriculture beyond efficiency gains and explicitly recognize the issue of food loss and waste.** As the NDC currently focuses predominantly on efficiency improvements for reducing GHG emissions in agriculture, there is scope to increase ambition by facilitating the adoption of sustainable agricultural practices. For instance, research shows that China’s rich cultural inheritance of traditional agricultural management yields many environmentally friendly practices.<sup>69</sup> The NDC could draw inspiration from traditional methods in its measures and programs to promote mixed cropping systems and rice-fish farming, which improve pest control and support more diverse organisms. Support could also be provided for organic agriculture and Chinese ecological agriculture (CEA) — modern practices that mitigate the negative environmental impacts and overcome the limitations of conventional agriculture. Additionally, interviewees suggest a need for measures that support (smallholder) farmers and their communities in maintaining local genetic diversity of seeds and crops as well as general agrobiodiversity.<sup>70</sup> Moreover, food loss and waste should be incorporated into the NDC as well. This can be done, for instance, by referring to the recently adopted law that addresses food loss and waste and considering how this law can also contribute to the climate goals outlined in the NDC. China’s NDC could also align to existing policies of the Ministry of Ecology and the Environment that aim to address soil and water quality and prevent pollution from industrial and agricultural runoff.\*

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\* See <https://english.mee.gov.cn/Resources/Policies/policies/>.



**Include further measures and targets for building a sustainable livestock production system.** While the NDC indeed sets the ambition to improve manure management in livestock production as a means to lower GHG emissions, additional and more concrete steps can be taken to develop a sustainable livestock system. Specifically, manure management and efficiency can be improved by supporting and promoting integrated crop and livestock production systems where farmers and manure end-users are provided with better capacity and incentives for adapting such a system.<sup>71</sup> Beyond manure management, other research suggests more effort for disseminating information on the environmental impacts of livestock production as a means to promote sustainable practices, as well as mitigating emissions by offering farmers subsidies for biogas production from animal fermentation.<sup>72</sup> While some of these plans are already implemented outside the scope of the NDC,\* such plans could well be included in future iterations to operationalize goals for GHG emissions reduction.

**Consider adding to current plans and ambitions for conservation by also including imported deforestation and overseas agriculture investments.** While the NDC clearly indicates an ambition to pursue domestic conservation efforts as part of its commitment to reach carbon neutrality, it does not explore options to also address the issue of deforestation related to imported agriculture and food products. As explained by one interviewee, imported deforestation is not currently considered under the national carbon neutrality goal, as it would risk miscalculating emissions reduction and distract from domestic efforts.<sup>73</sup> Considering the significant environmental impacts of China's agricultural and food imports, however, the issue should not be neglected in the longer term. Decoupling it from emissions-reduction goals — one option for addressing imported deforestation — could be done by setting sustainability and environmental criteria in trade regulations, as well as for the public procurement of food. Additionally, overseas agriculture investments by the Chinese government\*\* could be accompanied with more stringent criteria that stimulate the development and application of sustainable agricultural practices.

**Improve information provision on sustainability to the public and set benchmarks for what can be considered green or low-carbon products and lifestyles, and link these to guidance on sustainable and healthy diets.** In the absence of concrete information and guidance on what low-carbon products or lifestyles entail, an effective shift in behaviour may ultimately be difficult. There is a need for an operational definition that includes criteria on what is and what is not considered to be a sustainable lifestyle or product. In setting these criteria, highlighting the importance of healthy and sustainable food consumption may be key for initiating a shift in dietary preference and improving general health. An entry point for the inclusion of these criteria could be the Code of Conduct for Environmental Protection, as this may already be considered a reference point for the public to assess its own behaviour. Additionally, the Chinese Dietary Guideline may also be used as a point of reference, as it includes recommendations for healthy diets.<sup>74</sup> Food quality and safety standards need to be incorporated for additional assurance to consumers that their food products are sustainable, healthy, and safe. Moreover, interviews highlight the importance of emphasizing the benefits of a balanced diet inspired by China's long-standing plant-based culinary tradition.<sup>75</sup> Discouraging meat

\* For example, see CEN News, "The Central Government Continues to Support the Resource Utilization of Livestock and Poultry Manure," (2020). Retrieved from: [https://www.cenews.com.cn/news/202007/t20200709\\_949305.html](https://www.cenews.com.cn/news/202007/t20200709_949305.html).

\*\* See Devex, "Understanding China's Foreign Agriculture Investments in the Developing World," (2016). Retrieved from: <https://www.devex.com/news/understanding-china-s-foreign-agriculture-investments-in-the-developing-world-92639>.

consumption is considered a politically sensitive approach easily dismissed by public and private actors.<sup>76</sup> Nevertheless, the government has previously launched a public awareness campaign to halve the intake of animal protein by the year 2030.<sup>77</sup> Moreover, a recent gradual shift toward plant-based diets<sup>78</sup> may also indicate more willingness in the public to change their lifestyles and diets.

Such criteria should also be accompanied by more governmental efforts to disseminate information among the public on what should be considered a low-carbon or green lifestyle. Interestingly, one interviewee observes a strong willingness among the society to contribute to China's goals for addressing climate change but notes that Chinese citizens are left without proper information on how they can contribute.<sup>79</sup> Current information from the government is considered too technical or high level, and often NGOs are the ones assuming the role of translating governmental guidance into action points accessible to the public.<sup>80</sup>

**Add to measures that promote sustainable food production and consumption to consider aquaculture under the NDC.** Globally, China is the largest producer and consumer of aquatic protein,<sup>81</sup> and domestic demand for seafood is expected to continue to grow over the coming decade.<sup>82</sup> As such, there is an urgent need to make aquaculture more sustainable. While the government has adopted different policies to increase environmental considerations and support for sustainable practices within production systems,<sup>83</sup> an established domestic market for sustainable aquaculture products is still lacking.<sup>84</sup> Additional measures and plans can be developed to create momentum for a domestic market for sustainable aquaculture protein. While such effort may initially come from the government, domestic NGOs are already engaging in awareness campaigns and promoting sustainable aquaculture,<sup>85</sup> which could also be further supported through policies and actions under the NDC.

**Integrate the commitments made under the United States–China Joint Glasgow Declaration on Enhancing Climate Action and the Glasgow Leaders' Declaration on Forests.** Although outside of the official United Nations Framework Convention on Climate Change (UNFCCC) regime, China endorsed key pledges announced during COP26 in Glasgow, including the pledge to end deforestation by 2030\* and a U.S. joint pledge to significantly reduce methane emissions in the coming decade.<sup>86</sup> These pledges, if fully and adequately implemented, have the potential to accelerate China's shift toward sustainable food systems, in particular through measures that promote sustainable trade and embedded methane emissions and deforestation in food imports. But to ensure progress, transparency, and accountability, it is crucial that these international commitments and respective actions be fully integrated and anchored into China's NDC.

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\* See [www.bbc.com/news/science-environment-59088498](http://www.bbc.com/news/science-environment-59088498).



## IMPLEMENTATION OF THE NDC

TABLE 3: NDC IMPLEMENTATION: KEY FINDINGS AT A GLANCE

### Key findings

- While the NDC does not describe a separate mechanism for monitoring the implementation of measures included therein, policies upon which the NDC is based have their own monitoring mechanisms.
- The NDC indicates ongoing public financial support and public investment to strengthen sustainable development and to green the agricultural and forestry sector.
- The NDC provides a general indication of previous efforts to enhance private investments in green development.
- The NDC suggests ongoing action for promoting sustainable lifestyles and educating the public on climate change.

### Areas for improvement

- Detail a monitoring process for the measures and targets included, and engage external stakeholders to increase transparency when implementing the NDC.
- Consider engaging external stakeholders and in particular smallholder farmers, women, youth, and other vulnerable groups in the implementation of NDC measures.
- Quantify costs and develop tailored financial support programs for the proposed plans and ambitions in the NDC.
- Identify and reform laws and regulations that can hamper a transition to more sustainable food systems.
- Explore additional ways to mobilize media outlets and communication channels to promote sustainable food consumption and healthy diets.

**As the targets and ambitions in China's NDC are based on domestic policies currently being implemented, the document itself does not describe a separate monitoring mechanism.** As indicated by interviewees, China's NDC reflects domestic policy plans that include their own monitoring and implementation mechanisms. As such, the NDC does not detail any additional monitoring processes or mechanisms.<sup>87</sup> It discusses potential mechanisms to facilitate the implementation of the NDC's targets and measures as part of different domestic processes, including the development of GHG inventories, monitoring mechanisms, and proper data collection. Furthermore, the NDC also provides a detailed overview of the progress that China has made toward achieving its goals for GHG reduction and carbon neutrality. It is not clear whether the progress considers measures and plans under the previous NDC, or whether the updated plans are also considered.

**The NDC indicates ongoing public financial support and public investment to strengthen sustainable development and to green the agricultural and forestry sector.** On a general level, the NDC highlights that, under the previous NDC, the central government scaled up investments in climate change mitigation and adaptation. In the forestry sector, financial support and funds have been provided for the preservation of

natural ecosystems and newly recovered lands that were previously used for agriculture. In the agricultural sector, financial capital has been made available for waste-to-resource management and increasing the use of organic fertilizer. It is unclear if these efforts continue under the current NDC. Furthermore, the description provided in the NDC does not name or quantify any specific investment or fiscal policies.

**The NDC provides a general indication of previous efforts to enhance private investments in green development.** The NDC indicates that comprehensive supporting policies for private climate investment and financing have been introduced per sector (although the sectors are not specified in the NDC itself). It aims to encourage private capital to set up green and low-carbon industry investment funds.

**The NDC suggests ongoing action for promoting sustainable lifestyles and educating the public on climate change.** The central government has introduced the Code of Conduct for Environmental Protection to encourage the public to adopt low-carbon lifestyles, including more sustainable consumption patterns. Previously, the government has encouraged media outlets to step up publicity on climate change, facilitating greater public participation and awareness in pursuing actions to address climate change. The type of campaigning being encouraged is not specified within the NDC.

## AREAS FOR IMPROVEMENT

**Detail a monitoring process for the measures and targets included, and engage external stakeholders to increase transparency when implementing the NDC.** While China's NDC reports on the progress it has achieved implementing previous measures, it does not include details on what approach is used for monitoring the policies and targets that feed into the NDC's goals. The NDC could provide information on which entities, both within and beyond government, are engaged in data collection to track progress on the implementation of the NDC as well as which type of indicators are used. Furthermore, it should be clarified if any roles and responsibilities are ascribed to external actors in both the collection of information and the provision of input and feedback on the monitoring framework itself, and whether the monitoring process is supported by any research findings.

**Consider engaging external stakeholders and, in particular, smallholder farmers, women, youth, and ethnic minority groups in the implementation of NDC measures.** While the NDC indicates that sectoral actors can develop and implement their own climate plans to contribute to China's efforts for addressing climate change, there is no role described for other stakeholders in the NDC. To further ensure implementation and achievement of China's goal for carbon neutrality, engagement with underrepresented actors and local communities, especially in rural areas, could be considered during the implementation of the NDC.

**Quantify costs and develop tailored financial support programs for the proposed plans and ambitions in the NDC.** While the NDC does indicate that the central government will provide economic support policies to address climate change, there is no further elaboration on this. To ensure proper financial support, then, there is a need to quantify the expected costs of each of the proposed ambitions and plans. Such a quantification would also allow for the better planning of sectoral financial support programs as well as for identifying key financial barriers for transformational change in food systems. For instance, an interviewee reveals that there

continues to be a need to provide financial and technical support in rural communities and farmers for the uptake of sustainable agricultural technologies, as well as implementation of agrobiodiversity conservation.<sup>88</sup>

**Identify and reform laws and regulations that can hamper a transition to more sustainable food systems.** While the NDC indicates that the central government will investigate and remove any laws or regulations that are incompatible with its ambitions for addressing climate change, such an effort should also be extended to specifically identify those laws, regulations, and especially subsidies affecting China's food systems that may obstruct progress toward more sustainable, healthy, and equitable food systems.

**Explore additional ways to mobilize media outlets and communication channels to promote sustainable food consumption and healthy diets.** Since in the NDC media outlets are given full play for promoting a low-carbon and green lifestyle, there is a possibility for the development of large-scale campaigns to promote the consumption of healthy foods across society and support a nation-wide dietary shift.

## CASE STUDY SUMMARY

### Working with Chefs to Promote Plant-based Diets

*“Our generation will set the new default in our kitchen, so that our children grow up eating healthy and sustainable food. It is time that China — which is now the world’s second-largest economy and largest consumer and producer of food — thinks about what example we can make for other parts of the world by eating well.”*

—Jian Yi, Founder, Good Food Fund

The Good Food Fund (GFF), founded by Jian Yi, a well-known Chinese filmmaker and activist, aims to facilitate shifts in food production, distribution, and consumption patterns toward a healthier and more sustainable food system, including significant reductions in China’s GHG emissions, by supporting relevant research, communication, and entrepreneurship efforts. GFF’s mission is *“one world, one health: promoting good food to improve human health, animal health, and planetary health,”* with a focus on a dietary transition making healthy and sustainable diets the norm, including a goal of increasing the consumption of a high-quality, biologically diverse plant diets by 30% by 2030.

GFF is the premier voice for plant-based diets and food systems transformation in China and has influenced Chinese citizens through the media. It has reinvented Chinese characters for plant-based food in an unprecedented effort to revolutionize the social discourse around plant-based dining. For example, the Good Food Festival supports and trains a network of chefs to drive plant leadership, animal welfare, and healthy eating with the aim of scaling up plant-based ingredient innovation, policy, and investment over the next 20 years. Chefs are viewed as key influencers and leaders shaping citizen behaviours, the food service industry, and producers.

In 2020, GFF was one of the Rockefeller Foundation’s global top ten food system vision award winners. Mama’s Kitchen, one of several GFF initiatives, works with farmers, scientists, and chefs to develop plant-leading recipes and ingredients, increasing the diversity of food produced and consumed while strengthening the links between producers and consumers. A first prototype Mama’s Kitchen laboratory has been built in Yunnan province, China — a space where professional chefs and community members interact with artists and designers in creating online and onsite events with a focus on food systems transformation and classrooms, and where young chefs and community members can gather to learn new plant-based cooking skills and recipes.

GFF has been very successful in building a broader narrative around sustainable food systems in China, introducing the concept of food systems and their importance in managing trade-offs to a wider audience. Its Good Food Pledge, for example, identifies eight key priorities to transform food systems to mitigate food systems impact on climate and health; is widely recognized across China; and has helped mainstream conversations around the importance of sustainable food consumption issues.

Further information and access to the detailed case study can be found [here](#).

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