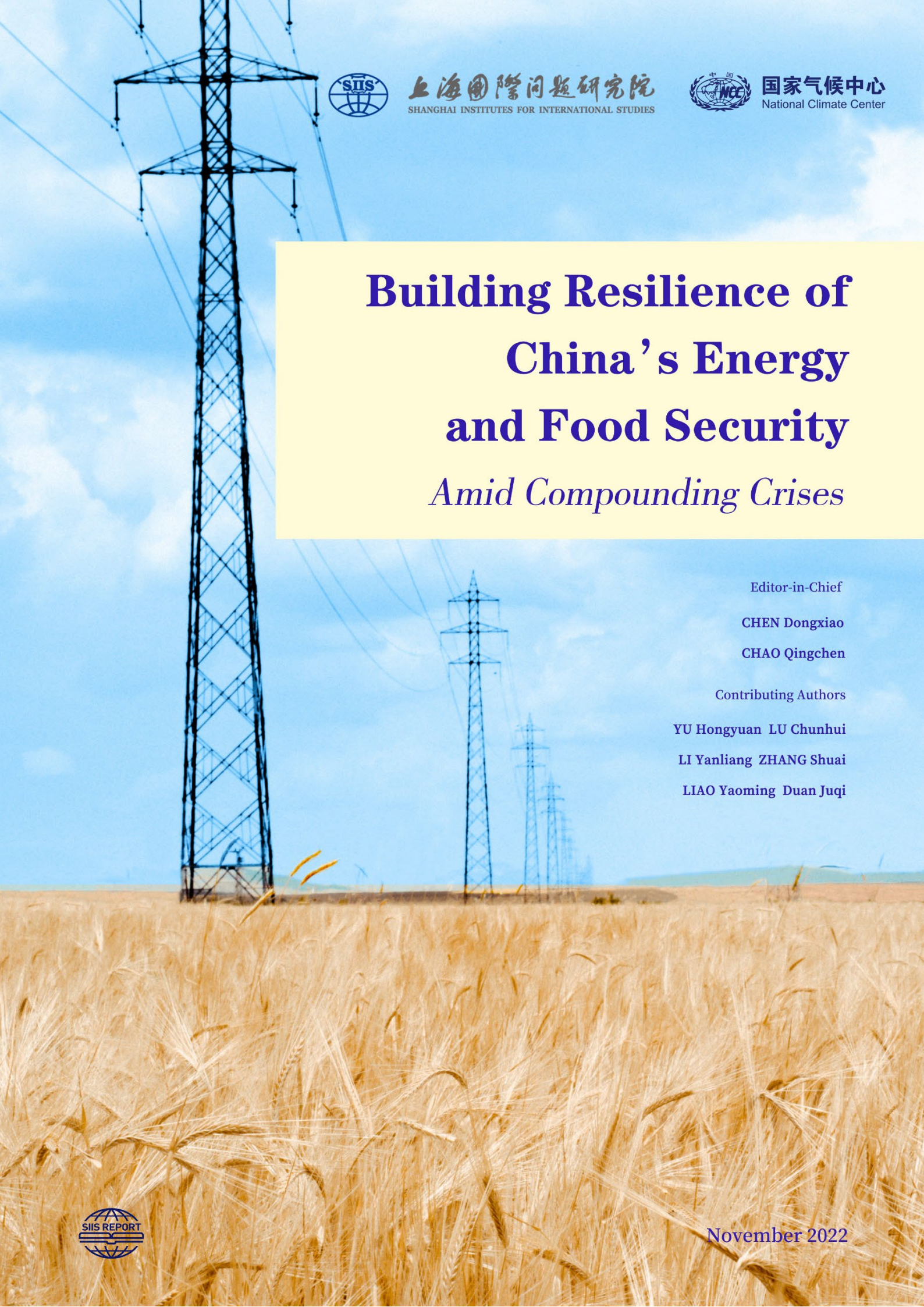

上海国际问题研究院
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国家气候中心
National Climate Center

Building Resilience of China's Energy and Food Security

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Abstract

Energy and food security are the key issues of Global Development Initiative. In 2022, global governance takes another major blow amid the still raging Russia-Ukraine conflict, a persistent global pandemic, and multiple extreme weather events. The compounding crises are also slowing the progress toward meeting the 2030 development goals. Global energy and food supplies are bearing the blunt of the economic, political, and humanitarian impacts of the crises. As a beneficiary of the past smooth operation of the global energy and food systems, China in recent years has stepped up efforts to improve the governance of the two systems as it has increasingly felt the greater negative externalities arising from the fluctuations in the energy and food markets. With reckless disregard for the worsening global governance deficit and widening South-North gap, the United States continues to ramp up geopolitical competition with China by teaming up with its ideological allies, launching an information war around the food crisis, and imposing unjustified "moral" sanctions. In response, Beijing needs to build its energy and food resilience and help insulate global energy and food governance from geopolitical impacts. At the same time, it needs to operationalize its Ecological Civilization concept, improve energy-climate-food governance, and lessen the compounding effects of global crises.

Introduction

Given a deepening global climate crisis, energy and food issues have a direct bearing on sustainable human development. The persistent pandemic, compounded by geopolitical tensions since the beginning of 2022, has sent shock waves throughout global energy and food chains. Reports released by agencies under the UN system, such as the Food and Agriculture Organization, World Meteorological Organization, and Intergovernmental Panel on Climate Change have all highlighted the growing threats to global energy and food security exacerbated by extreme weather events, ongoing pandemic, and raging armed conflict between Russia and Ukraine. Decreases in crop yields and energy demands as a result of climate change and Covid-19 have plunged developing nations into deeper development dilemmas. Energy and food are two of the top concerns of developing nations and priority areas for the implementation of the United Nations' 2030 agenda. Soaring oil prices—hovering above $120 since late April 2022—have dimmed the prospect of rapid economic recovery and roiled bulk commodity markets around the world. Amid a growing hunger crisis, the United Nations released a global report on food crisis in May 2022, projecting that some 200 million people would suffer from varying degrees of food shortages, three million among them might even die from starvation.[1]

Energy supply and food security are not immune to geopolitical tensions. Links between domestic and international energy and food markets have expanded. Market fluctuations invariably influence domestic supply and demand. In recent years, the Group of Seven advanced economies are exploring the possibility of establishing a club-style governance architecture for food and energy in an attempt to reduce the West's dependence on Russian energy and shorten the global clean energy supply chains. A Partnership for Global Infrastructure and Investment has been forged to step up the competition with China over standard setting and rule making. Intensifying geopolitical tensions are threatening the interdependent relationship between global energy and food, impeding trade and investment, and may further divide the world economy into separate blocs. A "supply chain iron curtain" could not only affect the lives and livelihoods of millions of people in the developing world, but also undermine the global bid to meet the goals in the 2030 agenda.

At the St. Petersburg International Economic Forum in June 2022, after highlighting the epochal changes in today's world that may set back the globalization that had benefited hundreds of

[1] World Food Programme: "Global Report on Food Crises – 2022", May 4, 2022, https://www.wfp.org/publications/global-report-food-crises-2022.

millions of people over the past decades and hamper the international efforts to advance the 2030 agenda, Chinese President Xi Jinping called for a concerted global response to the growing food, energy, and economic crises.[2] And meanwhile，energy and food security are the key issues of Global Development Initiative. As the world's largest developing country and leading importer of energy and food, Beijing has to step up and contribute more to global governance to better ensure its own energy and food security. **Faced with greater vulnerabilities among energy and food crises, Beijing should give priority to building its own resilience even as it ramps up efforts to defend the development right of developing nations, and focus on improving global collaboration on energy and food governance by implementing its Ecological Civilization concept.**

[2]《习近平出席第二十五届圣彼得堡国际经济论坛全会并致辞》,《人民日报》2022 年 06 月 18 日，第 1 版

Energy and Food Security: Systemic Crises

Since the beginning of 2022, the compounding impact on the global economy and society caused by the systemic crises of climate change, coronavirus pandemic, and the conflict between Russia and Ukraine has caught widespread attention. Among the many areas affected, global energy and food are the hardest hit, which is manifested in the disruptions in energy and food supplies, increased vulnerabilities of energy and food systems, and sharp fluctuations in strategic resource prices. The compounding crises have seriously disrupted the world economy, severely damaged the global governance system, hindered the implementation of the 2030 agenda, and triggered humanitarian crises in some fragile countries.

Threats from Climate Change, Covid-19 Pandemic and Russia-Ukraine Conflict

Climate change is a long-term variable affecting global energy and food security. Food security is the area most directly affected by climate change. This is mainly because "material resources" such as water, arable land, soil, and light required for food production are important components of the ecological environment system, linking food security and ecological security as an interdependent system. Any negative changes in the ecological environment will directly affect the food system, increasing the negative impact of food supply. The climate science assessment report released by the Intergovernmental Panel on Climate Change (IPCC) in August 2021 stated that unless global emissions of carbon dioxide and other greenhouse gases are significantly reduced in the coming decades, the magnitude of global warming will surely exceed two degrees Celsius in this century, reaching the internationally agreed dangerous level.[3] A good natural environment is a prerequisite for agricultural production. Extreme weather and natural disasters caused by aggravated climate change have reduced crop yields and the destruction of

[3] Intergovernmental Panel on Climate Change, *Climate Change 2021: The Physical Science Basis*, Online Publishing, 2021, p.5.

agricultural infrastructure has left millions of people in dire food shortage.[4] As the global climate crisis worsens, the combined impacts of extreme weather and climate-induced disasters will continue to weaken the climate resilience of food systems.

In the energy sector, not only can climate change lead to a significant increase in energy consumption demand due to extreme weather, but the increase in natural disasters also poses security risks to energy infrastructure. In the context of an increasingly severe climate crisis, the promotion of low-carbon transformation of the energy structure has become a major global consensus, but radical energy policies have also exacerbated the fragility of the global energy and food system. The tightening of emission targets and industry norms in various countries has led to the suppression of the traditional fossil fuel supply side far greater than the demand side. Major financial institutions have shifted their investment to the field of renewable energy, resulting in insufficient investment in the transitional fossil fuel industry and weakening the resilience of energy supply system against short-term shocks. In addition, disorderly development of clean energy such as biofuels, solar energy, and hydropower may crowd out agricultural production resources and negatively affect food supply.

The Covid-19 pandemic and its fallout are medium-term variables affecting global energy and food security. Since the end of 2019, the outbreak of the new coronavirus has brought a serious impact on the global economy and society. Energy and food production and supply systems have been severely hit by factors such as labor shortages, disrupted supply chains, and severe global economic recession. International grain and energy prices keep rising. After experiencing a sharp drop in energy demand due to the economic recession in 2020, the economies of various countries rebounded sharply from a suppressed state in 2021, resulting in a surge in global energy consumption demand. Extreme weather events and climate disasters have triggered an energy supply crisis in many countries, which has become an important challenge to economic recovery and social stability. In response to the surge in energy prices caused by the surging energy demand, countries around the world have resorted to increasing coal production and coal power generation, resulting in a 6 percent increase in energy-related carbon emissions in 2021 (reaching 36.3 billion tons). Carbon emissions caused by coal burning reached 15.3 billion tons, the highest in history, presenting new challenges to the goal of net zero emissions by mid-century.[5]

At the same time, Covid-19 has further exacerbated economic inequality within and between countries, and a large number of low-income groups have lost their livelihoods. Low- and middle-income developing countries have fallen into more serious economic and social crises due to insufficient medical and epidemic prevention capabilities, high public debt, and loss of foreign exchange earning ability. This can be seen from the development situation of countries in West Asia and Africa. In the context of rising food prices, weak economic development will undoubtedly further deteriorate the food availability among vulnerable groups. In 2020, due to the impact of the pandemic, about 3.1 billion people in the world cannot afford healthy meals, an increase of 112 million people over 2019, especially among rural areas, poor families, and women.[6] In 2021, 31.9 percent of women globally are already moderately or severely food insecure, compared with 27.6 percent of men, a gap of more than 4 percentage points and an increase of 1 percentage point from 2020.[7]

The Russia-Ukraine conflict is an immediate variable affecting the global energy and food system. Given the serious problems in global energy and food systems, the virus outbreak and

[4] IPCC: "Climate Change 2022: Impacts, Adaptation and Vulnerability",
[5] IEA: "Global Energy Review: CO2 Emissions in 2021", March 2022, https://www.iea.org/reports/global-energy-review-co2-emissions-in-2021-2.
[6] 联合国粮农组织等编著：《世界粮食安全和营养状况：调整粮食和农业政策，提升健康膳食可负担性》，罗马：联合国粮农组织，2022年，第21页。
[7] 同上，第16页。

continuous escalation of the Russia-Ukraine conflict will further deepen the global energy and food crisis, and may have a long-term impact on global energy and food supplies. Russia and Ukraine are the main stakeholders in the global energy and food supply market, among which Russia is the world's largest exporter of petroleum products and natural gas and a major coal exporter, as well as the world's largest wheat exporter and major fertilizer exporter; Ukraine is the world's largest exporter of petroleum products and natural gas, the second largest exporter of grain, known as the "granary of the world." The supply chain disruptions caused by the conflict between Russia and Ukraine and the sanctions and countermeasures between Russia and Europe around energy trade have caused the world prices of energy, food, and other commodities to soar in the short term. In terms of energy, after the outbreak of the Russia-Ukraine conflict, WTI and Brent oil prices soared to $123.7/barrel and $127.98/barrel respectively on March 8, 2022, and Brent oil prices continued to hover at $120 in May and June. International natural gas prices were also impacted. The Dutch TTF natural gas futures price shortly reached a peak of 227 EUR/MWh in March, and started to soar up again in June after the reduction of gas provision via Nord Steam-I pipeline, and reached a historical high of 339 EUR/MWh on August 26. The volatility in European gas market has also contributed to the rise of natural gas prices in Asia, the other major energy importer. In addition, the United States may take an additional set of measures against Russia's possible bypassing of sanctions, causing Russia and other countries to face the pressure of secondary sanctions and long-arm jurisdiction in energy economic and trade cooperation, which will further weaken the integration of the international energy system.

In terms of food, in August 2022, the average FAO price index was 138.0, down 1.9 from July, but still 7.9 higher year-on-year, of which the cereal price index dropped 1.4, driven mainly by the fall of wheat price of 5.1[8] month-on-month. While global cereal price slipped, the impact of the Russia-Ukraine conflict continues to haunt the global food system. The continued escalation of the Russia-Ukraine conflict will continue to expand the number of food-insecure groups. According to FAO's forecast, the conflict between Russia and Ukraine will increase the number of people facing hunger in the world by 7.6-13.1 million, with the largest increase in the Asia-Pacific, sub-Saharan Africa, Near East and North Africa.[9] In addition, since food is the basic resource needed for human survival and is irreplaceable, the shortage of food will become a trigger for social unrest. The Arab Spring that swept across West Asia and North Africa at the end of 2010 has an important relationship with the regional food crisis. The intensified confrontation between Russia and Ukraine may become the flashpoint of regional turmoil, causing regional countries to fall into a vicious circle of "shortage of food supply - public protest - disorderly development of the country - damage to agricultural production - deterioration of food security."

China's Energy and Food Security amid Compounding Crises

As mentioned above, as a long-term, medium-term, and immediate complex systemic crisis, global energy and food security are affected by the combined impact of the climate, the pandemic, and the Russia-Ukraine conflict. As the world's largest importer of energy and food, China's energy and food security are deeply affected by the international energy and food system. Although China has long attached great importance to its own energy and food self-sufficiency, and tried to reduce its dependence on the international market, due to the large domestic demand, it is difficult to completely break away from this dependence, which poses significant challenges to China's energy and food security in a complex international environment.

[8] FAO, "World food Commodity Prices Dip for Fifth Month in a Row in August", https://www.fao.org/newsroom/ detail/world-food-commodity-prices-dip-for-fifth-month-in-a-row-in-august/en.
[9] FAO, "The Importance of Ukraine and the Russian Federation for Global Agricultural Markets and The Risks Associated with The Current Conflict", https://www.fao.org/3/cb9236en/cb9236en.pdf.

In terms of energy, rising energy prices have had an impact on China's energy supply system. Although China's renewable energy power generation capacity has increased year by year, it is still not enough to cope with the surge in energy demand. Coal still plays an indispensable role in China's energy security. In 2021, China's coal prices continued to rise, surpassing 1,000 yuan per ton in September, and rising to more than 2,000 yuan per ton in October.[10] The price of coal far exceeded the affordability of power companies, causing the coal power industry to fall into an overall loss and a serious shortage of power supply. Some areas were subject to rolling blackouts, a situation that had not been eased until after November.[11] Under the pressure of ensuring energy supply, increasing coal power production has become an inevitable way to fill the short-term energy gap. The installed capacity of thermal power and engineering investment have all shown an increasing trend. The utilization hours of thermal power equipment have risen sharply to 4,448 hours after declining for three consecutive years.[12] After 2022, the rise in global energy prices made China's energy imports show a state of "volume reduction and price increase." From January to May, China's crude oil import volume was 216.714 million tons, a year-on-year decrease of 1.7 percent; the import value was 967.18 billion yuan, a year-on-year increase of 53.0 percent; the import volume of natural gas decreased by 9.3 percent year-on-year, and the import value increased by 54.5 percent; the import volume of coal and lignite decreased by 13.6 percent year-on-year, and the import value increased by 77.5 percent.[13] With the easing of the epidemic situation in major cities and the recovery of energy consumption demand due to rising temperatures across the country, China may once again face the risk of insufficient energy supply during the peak electricity season in summer.

China's food security faces the dual pressures of domestic production and international trade. From the perspective of grain production, climate change will reduce grain production, increase the price of agricultural products, increase the net import of most grains, and reduce China's grain self-sufficiency. Research shows that for every 0.1 degree Celsius increase in temperature, the yield of China's three major food crops will drop by about 2.6 percent.[14] Since June 2022, the continuous high temperatures in North China and other places have affected the timely planting and growth of summer corn and summer soybeans. There have been multiple rounds of heavy rainfalls in many places in the south, which is not conducive to rice, corn, cotton, open field vegetables and non-wood forest products and fruits. Early rice growth process has also been delayed.[15] The price of chemical fertilizers has also been rising due to the impact of the pandemic and Russia-Ukraine conflict. According to data from the Price Monitoring Center of the National Development and Reform Commission, the average ex-factory prices of urea and compound fertilizers in China in the first quarter of 2022 increased by 32 percent and 43.64 percent respectively year-on-year. In early April, the sales price of imported potassium chloride and the delivery price of domestic potassium chloride rose by 102.72 percent and 65.40 percent respectively year-on-year, which had a direct impact on grain output and costs. From the perspective of international trade, the continuous spread of the coronavirus and the outbreak of the conflict between Russia and Ukraine have blocked the global food supply chain and affected China's overseas imports. For example, as a major importer of Ukrainian corn, China imported 11.39 million tons of corn from January to May 2022, down 2.9 percent year-on-year, and imported 4.82 million tons from Ukraine, down from 4.99 million tons in the same period last year.[16] Under the influence of price fluctuations in the international grain market, the domestic

[10] 中国煤炭工业协会：《2021 年煤炭行业发展年度报告》，2022 年 3 月。
[11] 中电联规划发展部：《能源转型中的电力燃料供需格局研究》，2021 年 12 月 27 日，https://cec.org.cn/detail/index.html?3-305186。
[12] 国家能源局发布 2021 年全国电力工业统计数据
[13] 国家能源局：《前 5 个月中国能源产品进口量减价增》，2022 年 6 月 24 日，http://www.nea.gov.cn/2022-06/24/c_1310631923.htm。
[14] 中国环境与发展合作国际委员会，《可持续农食系统——实现中国粮食和气候安全目标》，2021 年，第 7 页。
[15] 《北方高温！南方暴雨！对"三夏"生产影响几何？》，中国新闻网，2022 年 6 月 25 日，https://www.chinanews.com.cn/sh/ 2022/06-25/9788381.shtml。
[16] 《中国 5 月份从乌克兰进口玉米数量持续下降》，新浪财经，2022 年 6 月 21 日，https://finance.sina.com.cn/ money/future/agri/2022-06-

corn price increased from 2.8 yuan per kilogram in January to 2.94 yuan in May; the domestic wheat price increased from 3.08 yuan per kilogram in January to 3.48 yuan in May.[17]

In addition, the United States and some Western countries have created exclusive small circles based on strategic competition considerations, taking advantage of the Russia-Ukraine geopolitical conflict to increase pressure on China. Since the outbreak of the Russia-Ukraine conflict, the United States has tried to strategically bind China and Russia, asking China to take responsibility for preventing Russia's actions, hyping up topics such as Russia's use of China to bypass international sanctions, and creating pressure on China's normal international cooperation in energy and food. Taking advantage of the humanitarian crisis, the United States and the West have launched an information war around food, not only attributing the current global food crisis to Russia, but even making groundless accusations against China, linking China's overseas food purchases to the global food crisis, and ascribing unjustified responsibilities to Beijing. The United States and Europe ignore the differences in energy infrastructure between themselves and China, unilaterally hype the issue of stopping coal industry investment, try to build a climate club, and put pressure on China to further strengthen climate action. These actions not only put additional pressure on China's energy and food security, but also ignore the underlying causes of the current global energy and food crisis, causing further damage to global energy and food security.

21/doc-imizmscu7923162.shtml。

[17]《农产品供需形势分析月报》，农业农村部网站，http://www.moa.gov.cn/ztzl/nybrl/rlxx/202206/P0202206 23336175478594.pdf.

International Response to Energy and Food Security

As two key issues that bolster national prosperity and security, energy and food are priority areas on the agendas for governments of all countries. The Russia-Ukraine conflict, coupled with the Covid-19 pandemic and extreme climate events, have propelled countries around the world to formulate strategic plans to tackle the challenges to energy and food security based upon their practical needs for safeguarding national interests and promoting national development.

Responding to Challenges of Food Security

First of all, Ukraine as one side of the conflict, has banned the export of significant food crops including wheat, oats, millet and buckwheat, to ensure domestic food supply. Likewise, Russian Prime Minister Mikhail Mishustin signed an order in March banning the export of wheat, rye, barley and maize exports to neighboring Eurasian Economic Union (EEU) states until June 30 and white and raw sugar until August 31.[18] In contrast, what Russia has implemented is a temporary ban with expiration dates and specific targets. For example, the Russian export ban on EEU member states has already been lifted. Meanwhile, the Russian government issued a decree in early July, stipulating that the export tax of agricultural products such as wheat, corn and sunflower oil should be settled in rubles. Moreover, in the face of the deterioration of food crisis as well as accusations from Western countries, Russian President Vladimir Putin has publicly stated that Ukrainian grain could find its export routes via Ukraine-controlled ports, mainly Odessa and its nearby ports in the Black Sea. While as a prerequisite for the transportation, Ukraine should first clear the mines near these ports. Russia would neither launch any attack from the sea, nor would it prevent Ukraine's grain shipments when Ukraine was performing mine clearance.

Second, the G7 group, together with other developed countries as stakeholders, have coordinated

[18]"Russia Temporarily Bans Grain Exports to Ex-Soviet Countries", https://www.reuters.com/business/russia- may-suspend-grain-exports-until-june-30-interfax-2022-03-14/?taid=622f82a3e9b02100012293ba.

their positions to lead global actions in response to the food crisis. Their main purpose is to create an exclusive governance club, enhancing the G7's leadership and getting a bigger say in global governance of food security. Another motivation of the G7 countries is to earn support from the United Nations in terms of the Russia-Ukraine conflict and other geopolitical issues. Notably, the United States is the mastermind behind the G7 food club and manipulator of collective actions by developed countries. The United States advocates cooperation between the G7 and international financial institutions on food governance, emphasizing the necessity of incorporating climate topics into global food actions and actively lobbying Indonesia under its G20 presidency to facilitate the US-led Global Agriculture and Food Security Program (GAFSP). And meanwhile, the United States chaired a United Nations Security Council meeting on conflict and food security in May and issued chair's statement, providing a roadmap for global food security. In addition, the United States and other Western countries have never stopped the blame game. As US Secretary of State Antony Blinken and European Commission President Ursula von der Leyen claimed, Russia is employing food as a "weapon". Unfortunately, this accusation selectively ignores the underlying causes of global food crisis.

Third, other grain-importing countries have taken restrictive measures in light of their domestic situation. For instance, Egypt planned to allocate 36 billion Egyptian pounds to procure six million tons of wheat from local farmers during harvest season.[19] The country has also approved additional subsidy programs for farmers and negotiated wheat imports with India, France, the United States and Argentina; Iraq decided to receive all domestic wheat of the season and would also provide sufficient liquidity for farmers to borrow; The United Arab Emirates (UAE) and New Zealand signed a memorandum of arrangement (MoA) to form strategic food security partnership in a bid to ensure the continuity and stability of the food supply chains.[20] Lebanon has opened credit lines for wheat imports, while banning the export of its own food products without special permits. Nevertheless, it is worth mentioning that most grain importing countries are still faced with the risk of food shortage due to their weak economic growth and limited capital reserves.

Finally, Brazil as a food exporter, launched the National Fertilizer Plan[21] and is in negotiation with Canada and North African and Gulf countries to ensure fertilizer supply; Argentina suspended export licenses for soybean oil and soybean meal; India announced a ban on wheat exports while allowing shipments of wheat using a letter of credit already issued; Turkey imposed a temporary export ban on some agricultural products. Admittedly, all these restrictive measures are conducive to guaranteeing domestic food supply of respective countries. They, however, imposed new restrictions on global food trade which could help a little in easing the pressure on global food supply. Overall, countries around the world have implemented a variety of preventive measures to address food crisis, tapping the maximum potential of domestic food market and making full use of the international market to fill in the gap between domestic supply and demand. With skyrocketing food prices across the globe, countries will find it extremely difficult to achieve food security if betting on foreign imports. On the contrary, it is rather helpful to fully mobilize domestic resources to manage and control risks.

Besides the above-mentioned efforts, cooperation amongst conflicting parties, stakeholders and international organizations to abate pressure on global food supply and avoid the outbreak of global food crisis is also worth mentioning. In late July, Russia, Ukraine, the United Nations and Turkey reached an agreement to resume food transportation at ports in the Black Sea, which allowed grain ships to enter and leave Ukraine with joint inspections of the four parties. According to Ukrainian officials, the country is ready to export three million tons of food

[19] "LE 36B Allocated to Procure Wheat from Local Farmers during Harvest Season-Minister", http://egypttoday.com/Article/3/114006/LE-36B-allocated-to-procure-wheat-from-local-farmers-during.
[20] "UAE, New Zealand Sign MoA to Form Strategic Food Security Partnership", https://www.wam.ae/en/details/ 1395303029190.
[21] "Brazil Launched National Fertilizer Plan", https://anba.com.br/en/brazil-launched-national-fertilizer-plan/.

products, and is expected to export four million tons monthly in the future.

Responding to Challenges of Energy Security

First, Russia and the EU are engaged in fierce competition over energy trade, exacerbating the ongoing trend of "weaponizing" energy. On February 22, 2022, German Chancellor Olaf Scholz announced the suspension of the construction of the Nord Stream II natural gas pipeline. And so far, the EU has adopted six packages of sanctions in response to the Russia-Ukraine conflict, covering sectors such as bank settlement, energy investment and trade. Particularly in the sixth package of sanctions announced on June 3, 2022, the EU decided to prohibit the purchase, import or transfer of crude oil and certain petroleum products from Russia into the EU. Also, the EU would ban European companies from insuring and financing Russian oil shipments to third countries after six months.[22] To reduce its dependency on Russian gas and oil as soon as possible, the European Commission officially published the "REPower EU" action plan in May 2022, proposing three goals of saving energy, producing clean energy and diversifying energy supplies, and increasing liquified natural gas (LNG) deliveries from the United States, Canada, Norway and Egypt to tackle the short-term impact of Russian oil and gas supply cutoff.[23] As a countermeasure to the sanctions imposed by the West in general and the United States in particular, Russia demanded on March 23 that "unfriendly countries" should only pay rubles for settlement in natural gas transactions. Again on June 17, Russia cut gas flows to 40 percent of the Nord Stream I pipeline's total capacity, citing the delayed return of equipment. In July, Russia temporarily closed the pipeline for 10 days starting from July 11 due to annual maintenance in summer, and further reduced the gas flows. On September 2, Russia announced indefinite shutdown of the pipeline.

Second, the United States attempted to court its allies to create a new landscape of energy trade. Long before the outbreak of Russia-Ukraine conflict, the United States had every intention of increasing its own weight in the international energy market, and one approach to achieve this end is to persuade the EU to phase out its energy trade with Russia. The Russia-Ukraine conflict seemed to be an ideal opportunity for the United States. On March 8, US President Joe Biden announced that his country would ban imports of Russian oil, gas and other energy products, as well as release 60 million barrels of oil from US joint oil reserves.[24] What's more, the United States exerted enormous pressures on its European allies to stop buying Russian oil and gas, and terminate investment and technological cooperation in Russia's energy sector. Meanwhile, the United States endeavored to rally its non-European allies such as Australia, Canada and Japan to increase coal and gas exports to Europe. Since June, the United States has actively been lobbying its European allies, Japan, India and some other countries to set a price cap on Russia oil exports.[25] Multinationals of the United States and Europe under mounting public pressure, have also conducted self-censorship and cut off business ties with Russia. As a result, numerous international oil and gas companies have withdrawn their investment from Russia. In addition, the United States has strengthened coordination with its European and Asia-Pacific allies in the development of clean energy industry with the aim of building an alliance of clean energy supply chains through "mini-lateral" platforms including the US-EU Energy Council as well as the Quad and the G7 summits, and announced in June the establishment of the Minerals Security Partnership with other nine countries and the European Union.

Last but not least, other energy importers and exporters are more concerned about the economic impact of energy trade and oppose making international energy cooperation a geopolitical topic.

[22]https://www.consilium.europa.eu/en/policies/eu-response-ukraine-invasion/.
[23]https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe_en.
[24]https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/03/08/remarks-by-president-biden-announcing-u-s-ban-on-imports-of-russian-oil-liquefied-natural-gas-and-coal/.
[25]https://www.reuters.com/business/energy/g7-leaders-agree-study-russian-energy-price-caps-officials-2022-06-28/.

Despite the ongoing Russia-Ukraine conflict, the OPEC+ group insisted that it would not end ahead of schedule its joint production cuts since the beginning of Covid-19 pandemic simply due to geopolitical shocks. Not until this June did the group announce that it would increase oil production in July and August by 648,000 barrels per day. Against the backdrop of Russia-Ukraine conflict, India saw its substantial increase of Russian oil imports, which has made Russia as India's second largest source of oil imports. Japan followed suit of the United States to impose sanctions on Russia and began exporting natural gas to Europe from February. Nonetheless, it would proceed with investment in the Sakhalin-1 and Sakhalin-2 natural gas projects in Russia. In a similar vein, Indonesia announced that it would continue to promote the joint oil refinery project with Russia.

China's Solution to Safeguarding Global Energy and Food Security

The impacts of climate change, the Covid-19 pandemic and the Russia-Ukraine conflict on the global energy and food security are systemic. In the short run, the surging energy and food prices have triggered economic shocks and humanitarian crises; in the long run, they will chronically destabilize the energy and food supply system, especially exacerbating energy and food insecurity facing the developing countries. Although the developed countries' current solution to the energy and food crises can, to a certain extent, relieve the short-term impacts, the increasing geopoliticization may not help with eliminating the long-term risks harassing the energy and food system, even aggravating the governance deficit in this area.

As a vital stakeholder in the global energy and food system, China, as always, handles the energy and food security issues from the perspective of fostering socio-economic development and people's well-being. While striving to strengthen the resilience of its own energy and food system, China also actively takes on international responsibility by seeking to improve the global energy and food governance on the basis of common security.

First, strengthen the resilience of China's own energy and food system. As a major economy with a large population, China's efforts to stabilize its own energy and food supply is not only key to preserving security and well-being of its own people, but also a vital contribution to safeguarding the global energy and food security. When facing the compounded crisis engendered by climate change, the Covid-19 pandemic and the Russia-Ukraine conflict, China needs to increase its resilience against the risks and improve its energy and food security by amplifying energy and food production, further enhancing self-supply capability, widening and deepening international cooperation.

In terms of food security, first is to safeguard food production. China needs to further activate the domestic factors of food production and raise quality and quantity of food production by rationally arranging the natural resources, shoring up the fiscal and financial system's support for agricultural and rural areas, boosting research on agricultural technologies to elevate food quality and quantity, and cultivating human resources. Second is to ensure a smooth supply of food. China needs to ameliorate food storage and transportation and secure an adequate supply in times of crisis by diversifying food transportation routes, improving cold-chain logistics, and upgrading food storage facilities. Third is to mobilize overseas food supply chains, for example, establishing a monitoring and early-warning system for global grain production in order to provide the domestic decision-makers with precise analyses on food imports trend; promoting common food security by broadening overseas food sources, streamlining overseas investments in the food industry, and deeply integrating itself into the local industrial chains. Fourth is to enhance the capability of agriculture, rural areas and farmers to withstand climate risks. China needs to build both early-warning capability against climate disasters and adaptive capability to climate change, adjust the crop planting structure to adapt to climate change, expand investments on agricultural and sanitary infrastructures which are resilient to climate disasters, amend the subsidy system for disaster damages, and safeguard farmers' lives and livelihoods after disasters.

In terms of energy security, first is to diversify the energy system. China needs to increase the proportion of renewable energy such as solar, wind and hydro power in energy consumption, develop safe nuclear power and alternative energy technologies including clean hydrogen energy and bio-energy, encourage relevant parties to participate in clean energy markets, and reduce dependence on external markets for energy consumption; moderately expand domestic production of fossil fuels such as coal, oil and gas, for the purpose of safeguarding energy supply when facing short-term external shocks. Second is to enhance energy supply capability. China needs to set up and upgrade domestic energy production, storage and transportation system, build an integrated domestic market for electricity power and carbon trading, improve the early-warning system and the dynamic monitoring and control mechanism, ensure efficient allocation of energy resources, and enhance the capability to manage and distribute energy reserves in times of emergency. Third is to foster international energy cooperation, broaden the types and channels of energy imports, diversify energy transportation lanes, speed up cross-border grid construction, safeguard the international supply chains of mineral resources and products that are used to develop clean energy, and promote energy and resources security. Fourth is to strengthen the ability to address risks. China needs to build the capability to protect its energy infrastructures from threats such as climate disasters and cyberattacks, put in place emergency energy supply systems in key cities, expand the international influences of RMB-denominated energy futures products to hedge against the international oil price volatility, and establish a supply chain and risk monitoring system that covers all parts of the energy sector.

Second, delink geopolitics with the global energy and food governance system. On the one hand, China needs to play a major power role and actively take part in the global level emergency actions to address the current food crisis. Out of humanitarian concerns, China should be fully engaged in the current international efforts to coordinate and tackle the global food crisis. China can increase food assistance to the most crisis-stricken countries under the framework of international organizations such as the FAO and the WEP. China can also urge the Group of Friends of the Global Development Initiative to summon a meeting of agriculture ministers, while inviting representatives from relevant international organizations, regional organizations and international research bodies. During this kind of meeting, China could propose an action plan to address the food crisis, and encourage participants to reach consensus on how to resolve the food security dilemma. The involving parties should work along with the UN to stop the endless "sanctions" on food trade and transportation. What's most urgent is to cleave a "well-being path" to allow production and transportation of summer grain crops, avoiding disruptions of the food supply chains.

On the other hand, China needs to urge various countries to communicate and coordinate on energy and food policies, to avert fracturing of global governance. In the backdrop of the Russia-Ukraine conflict and climate change, the west has dropped a "supply chain iron curtain" against Russia, which has also increased the west's demand for self-reliance and energy independence from Russia. China, as a strategic partner of Russia and a country who has profoundly integrated into the US-led supply chains, can play an intermediary role to preserve the integrity of global energy and food system. For one part, China needs to help keep Russia within the globalized system by further developing its comprehensive strategic partnership of coordination with Russia for a new era, while promoting concerted governance on food and energy issues at global level to curb world inflation and resolve humanitarian crisis. For the other, China needs to continue to work with the US and the EU to cement cooperation on policy, technology, industry and resources, in order to safeguard global energy and food security and facilitate a global green and sustainable transformation. Besides, China also needs to make the regional mechanisms more solid and effective, leverage regional consensus to enable more inclusive multi-lateral platforms on energy and food security governance, enlarge cooperation sphere, and mitigate the ramifications of resource nationalism and trade protectionism on the global energy and food markets.

What's more, on the multilateral and regional platforms, China needs to highlight the deep-rooted causes of the recurring global energy and food crises, contribute knowledge public goods, and promote reform on both the system and the underlying ideology of the global energy and food security governance. China needs to help the developing countries to build the related capabilities under the framework of the "Belt and Road Initiative" and the "Global Development Initiative". By participating in regional agriculture ministers' meetings organized by regional organizations, China could enhance communications with regional countries on agricultural policies, broadening cooperation on food security, and introducing China's experience on food security governance to regional countries. China could impart knowledge and technologies to the developing countries by promoting overseas demonstration centers and agricultural parks. China could also further expand energy investment cooperation projects under the framework of the "Green Silk Road" and the BRI, for the purpose of helping the developing countries to acquire affordable and sustainable energy and resources and to achieve sustainable development goals. Apart from these, China could energetically push for the reform of the global energy and food governance system, and build a fair and just international legal order for energy and food.

Third, promote systemic governance on energy, food and climate security. The current inter-linkage of energy, food and climate crises demands a change in the governance system from the traditional "separate and govern" mindset to a holistic approach. Multilateral frameworks including the UN have played a role in rule-making and cooperation facilitation. For instance, the World Trade Organization has made global rules on food trade, and the FAO and the WEP are committed to food aid and development. However, due to a lack of interaction, they could not provide integrated governance on food, energy and climate issues. To align with the UN's sustainable development vision such as "coordinative effect" and "no one will be left behind", and in the context of climate change and increasing geopolitical risks, the international community should enhance coordination and provide an effective institutional supply. In this regard, the green BRI can serve as a paradigm for systemic governance. The green BRI platforms do not only provide support for projects and international cooperation in the countries along the routes of the Belt and Road, but also internalize the green concept by assisting the above countries to achieve sustainable development in agriculture, clean energy and ecological environment.

The Chinese characteristic ecological civilization vision emphasizes the balanced development among human, nature, the international system and its various internal factors, featuring

harmonized coexistence of many "sub-balanced" systems. This sheds light on how to promote coordinative development and security governance on food, energy and ecological environment, and serves as an ideological basis for holistic governance on food security. When facing the interwoven risks brought by the Russia-Ukraine conflict, the Covid-19 pandemic and climate change, China's solution is to promote holistic governance by building a common security network encompassing food, energy and climate security issues, and to call on stakeholders including enterprises, societies, governments and local entities around the world to collaborate in the coordinative governance on food, energy and climate.

Conclusion

Against the backdrop of the many increasingly interwoven factors such as geopolitical risks, climate change and economic downturn, and confronted with energy and food security challenges, countries around the world are in the same boat and share a common future. Unilateralism will only lead to a dead end. Energy and food security, which interacts with numerous factors like water resources, environment and climate, biodiversity and sanitation, is an integral part of the eco-system and is embedded in the whole process of building an ecological civilization. Global governance and multilateralism are tools and measures to promote sustainable development of energy and food. On both domestic and global level, safeguarding energy and food security requires holistic and comprehensive governance. China needs both to cultivate global development partnerships and weaken the effect of the "supply chain iron curtain", a product of the geopolitical and Cold War mindset, and to collaborate with the developed and developing countries to enhance resilience of the global energy and food supply chains.

Looking into the future, China's solution and contribution to the global cooperation can offer a pathway to addressing the current global energy and food crisis. All humans share a common future, and development is our common goal. Guided by this shared value, China is now playing a constructive role in transforming the global governance system and promoting the global ecological civilization by mobilizing its own financial resources, technologies, experiences, and delivering development assistance to help tackle the energy and food security challenges. As the biggest developing country and a responsible power, China will promote the global ecological civilization and "a community of a shared future for mankind" by expediting its own ecological progress, taking a leading role in supplying food and energy public goods and reforming the related global governance system, and encourage the adoption of "ecological civilization" as a mainstream norm in the realm of global environment governance. China will continue to promote "Global Development Initiative" and "Ecological Civilization Value", cooperate with other countries to push for comprehensive and holistic governance on climate, energy and food issues, prevent the combination of these factors from dealing a profound blow to the global energy and food system, work with other countries to address the increasingly severe food and energy crisis, and build a community of a shared future for mankind in the area of energy, food, and climate change.

About SIIS

Founded in 1960, the Shanghai Institutes for International Studies (SIIS) is a government-affiliated high-caliber think tank dedicated to counseling government decision-making by conducting policy-relevant studies in international relations and China's diplomacy. SIIS also aims to help bolster mutual understanding between China and international community by maintaining intensive and extensive exchanges and cooperation with think tanks, research organizations and institutions of higher education in China and around the world. For years, SIIS has been ranked as one of the most influential think tanks in international studies and foreign policy in China.

SIIS comprises six institutes and six research centers, namely, the institute for international strategic studies, institute for global governance studies, institute for foreign policy studies, institute for world economic studies, institute for comparative politics and public policy, institute for Taiwan, Hong Kong & Macao Studies, center for American studies, center for Asia-Pacific Studies, center for Russian and Central Asian Studies, center for West Asian and African studies, center for European studies, and center for maritime and polar studies. SIIS has also set up eight in-house research platforms: the center for the study of Chinese diplomatic theory and practice, center for world politics and political parties, center for China-South Asia cooperation, center for BRI and Shanghai studies, center for China-Japan relations studies, center for international cyber governance (in partnership with the Office of the Central Cyberspace Affairs Commission), research base on people's diplomacy of Shanghai (in partnership with the Shanghai People's Association for Friendship with Foreign Countries). SIIS has also launched a center for international communications to help strengthen Chinese think tanks' international standing.

The two flagship publications of SIIS, *Global Review* (bimonthly and in Chinese) and *China Quarterly of International Strategic Studies* have become prominent scholarly journals at home and abroad.

About NCC

National Climate Centre (NCC) was established by China Meteorological Administration on the basis of its National Climate Center, to better perform its functions as a WMO Regional Climate Centre (RCC). Designated as a WMO RCC in RA II (Asia) at EC-LXI in June 2009, BCC undertakes the obligation of delivering climate services to neighboring and surrounding countries in Asia and the international climate community in general.NCC incorporates functions as a WMO East Asian Monsoon Activity Centre (EAMAC, since 2006), a WMO Global Producing Centre for long-range forecasts (GPC, since 2006), and a Centre for Extreme Events Monitoring in Asia (CEEMA, since 2010).NCC organizes and coordinates research efforts on regional climate, operational predictions and climate application and services, among others. It also provides climate services to China and other Asian countries for disaster prevention and mitigation and for socio-economic development.

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