



China Council for International Cooperation on Environment and Development Issues Paper 2024

Introduction: The theme of the [2024 CCICED Annual General Meeting](#) is *Open, Inclusive and Innovative Cooperation to Build a Clean and Beautiful World*. The 2023-2024 research program has been the most extensive of the 30+ years history of CCICED, involving 17 research groups and support working groups. This Note highlights some of the main themes and issues of the 2024 Annual General Meeting theme.

Part One: Connected, Cascading Risks

Environmental protection has traditionally examined specific pollutants and stressors. However, a growing body of real-world events underscores the deep interconnections among climate change, biodiversity loss, and pollution.

Climate Change: The accelerating pace of environmental degradation increases the necessity for more urgent, ambitious action at scale to build a clean and beautiful world. Over a century of [meteorological records](#) confirm that 2023 was the hottest year in the 174-year observational record, breaking previous records for ocean heat, sea level rise, disappearing Antarctic sea ice, and glacier retreat. The world has now likely passed the 1.5°C

average global warming target so vital to the Paris Climate Agreement, with global average temperatures in [2023](#) reaching an average annual value of 14.98°C, the hottest ever recorded. Some experts are preparing global overshoot scenarios, while the 2023 *Global Tipping Points report* warns that once average levels exceed 1.5°C, the risks of cascading, non-linear, and irreversible systemic climate change increase significantly.

Biodiversity Loss: Estimates of biodiversity loss vary, with recent estimates published in [Science](#) suggesting average global losses of between 2% and 11%. Among the most important drivers of biodiversity loss is land-use change, with the conversion of land for [food production](#) remaining a major driver of biodiversity loss. Underscoring the interconnection between climate change and ecosystems, recent evidence suggests that the combination of land-use change and climate change will accelerate biodiversity losses across all regions of the planet.

Pollution: Air, water, and other pollution sources are similarly exacerbated by warming temperatures and ecosystem losses. Air pollution has been linked to more than [6.7 million](#) deaths in 2019. Other studies show additional effects, such as higher [breast cancer risk](#) for women living near major motorways and higher rates of [lung cancer risk](#) for populations exposed to coal-fired energy production. Water pollution remains a major source of communicable human disease, while the increased frequency and severity of extreme weather events led by flooding affected [1.6 billion](#) people in 2022.

Part Two: Risks to Actions

Climate Mitigation: China will likely meet its carbon peaking target before 2030, thus beginning the shift from peaking to carbon neutrality before 2060. Since this shift will likely take place during the 15th Five-Year Plan and during the updated UNFCCC nationally determined contributions (NDCs), several of CCICED's 2024 studies have made recommendations in these two critical areas.

Several CCICED working groups examined different yet complementary low-carbon measures. Examples range from speeding up the use of clean power in the electric grid—which, in addition to reducing coal usage, provides additional benefits in sectors that are hard to abate, through the use of modern industrial heating and cooling technologies—to the continued modernization of the electric grid and growth of mobility electrification, supported by the world’s largest network of EV charging stations. AI is increasingly used to improve green electricity and net-zero industrial systems, while efforts need to be redoubled to reduce the growing carbon footprint of AI and data centres.

Complementary measures include the ongoing reform of China’s *Energy Law*, which is expected to enhance green energy channels, bolster inter-provincial green energy trade, and support more market-oriented pricing. Such important steps can find policy synergies with the expected expansion of the national carbon market.

Fossil Fuels and Stranded Assets: In many ways, the 2023 Conference of the Parties, or COP28, marked a breakthrough by calling for the transition away from fossil fuels. With this decision, the longer-term implications of this decision on the fossil fuel sector have been brought sharply into focus, including the widespread use of the term “[stranded assets](#)¹.” At the same time, there is a [mismatch](#) between the general use of stranded assets and its actual use via company financial accounting standards and rules. Currently, there are no specific standards for stranded assets, meaning a CEO who voluntarily devalues a company’s asset holdings could face charges of illegal activity and be fired.

Accounting standards grapple with asset valuation, focusing, for example, on current asset valuation based on historical data or more recent fair value standards. The most common accounting rule used by all companies and households involves normal asset depreciation rates, of which none come close to the COP28 fossil fuel transition that would open

¹ The [Background Note on Accounting for the Enormous Potential Lost Financial Value of Fossil Fuel Physical Assets](#) has been commissioned to examine climate-related stranded assets, including how current financial and management accounting standards and practices might cover some aspects of stranded assets through rules like asset depreciation and asset impairment. The note also explores gaps in current standards and recent relevant trends. The note has been prepared as a background technical paper in support of CCICED’s work ahead of the 2024 Annual General Meeting.

stranded assets scenarios. The closest proxy are standards for impaired assets, that is, a devaluation of an asset due to three drivers: technological innovation that renders an incumbent technology obsolete, change in consumer demand to new goods and services, and mandatory government regulations that require the phase-out of the older technology.

All three are underway in the transition to carbon neutrality. However, with oil supermajors insisting that their total output will continue to increase to 2050, the role of more stringent mandatory standards covering energy efficiency, automotive fuel efficiency standards, and the planned phase-out of internal combustion engines is likely to become more important.

The international community can act together to control methane emissions. Cutting methane offers the biggest short-term climate mitigation payback, by [averting](#) as much as 0.5 °C in global warming.

Climate Adaptation: As global temperatures break records, more countries, communities, and families face the effects of extreme weather led by acute events such as floods, prolonged droughts, wildfires, and heat waves, as well as chronic effects, such as shifts in vector-borne diseases and growing risks of food insecurity. While climate change is a global challenge, effective climate adaptation takes place at the local level, in which adaptation actions are tailored to meet the specific characteristics of local communities and their citizens.

In 2023, the Intergovernmental Panel on Climate Change ([IPCC](#)) noted progress in adaptation planning across all regions and sectors. Examples cover many areas, from irrigation and fit-for-purpose early warning systems to agroforestry and better land-use planning, guided by accurate flood maps, often improved with the use of artificial intelligence (AI). However, maladaptation remains pervasive, hampered by a lack of information and financing and rigid regulations that require assets to be rebuilt as they were rather than providing incentives to build back better.

The 2023-2024 Work Plan included CCICED's first climate adaptation work. A key feature is its identification of key adaptation capacities or capabilities that together comprise effective actions. Another feature involves working with natural systems under the umbrella term nature-based solutions (NbS) that include sponge cities and other green infrastructure. Among the key challenges include learning from past mistakes, strengthening links between central agencies and local government, and boosting climate adaptation finance.

Biodiversity and Oceans: As noted, the Kunming-Montreal Global Biodiversity Framework (KMGBF) sets out the blueprint to halt and reverse biodiversity loss. Work continues towards the “30x30” conservation target for terrestrial and marine areas by 2030. The use of such tools as remote sensing and the ecological redline continue to support meeting this key goal within China, in which its current network of roughly 10,000 natural protected areas covers [18% of its land area](#). More work will be needed in most countries to ensure high levels of ecological integrity within protected areas, as well as match progress on land with marine protected areas. Challenges remain around developing measurement systems that provide comparable quantitative data to help determine progress toward the 2030 goal.

In addition to the “30x30” goals, CCICED's work on the GBF implementation has initiated research related to wider sustainable use challenges, including in the agricultural and natural resource sectors. A growing body of successful regenerative food system approaches demonstrates practical solutions to reducing pollution and soil loss, embedding climate resilience, and working with ecosystems in ways that ensure farmers, their families, and communities benefit from such transformation. However, these and other GBF targets will be stymied by the persistence of [environmentally harmful subsidies](#), estimated in 2023 to be USD 635 billion a year, leading to the overuse of fertilizers, pesticides, and other inputs that continue to increase soil contamination and land degradation.

In many ways, oceans are at the forefront of the triple crises: from the overexploitation of fish stocks and loss of key marine habitat to land-based sources of pollution and plastics and

the carbon footprint of the marine sector. With sea level rise accelerating, coastal communities are increasingly at risk of extreme weather events like typhoons and flooding. CCICED's work continued to examine opportunities to shift to a more sustainable blue economy, in which carbon-neutral marine operations, as well as marine carbon sequestration systems, will play a vital role in China's dual control and biodiversity goals.

International Cooperation and Rule-Based Competition: As geopolitical tensions and uncertainty increase, the importance of international cooperation to meet the Sustainable Development Goals, Paris Climate Agreement, GBF, and other goals has never been more important or challenging. An important focus of CCICED's 2024 research involves promoting south-south cooperation channels, through which China works in partnership with developing countries to help meet climate and other goals. As China is likely to exceed its carbon peaking timeline, it can share its strategy with other countries—especially developing countries—as a means to bolster their confidence in their ability to meet NDC targets ahead of schedule.

To date, the bulk of trade in such green goods and services as renewable energy or net-zero industrial technologies has involved Organisation for Economic Co-operation and Development member countries and China. By contrast, African countries collectively received [77.5%](#) of all technologies, and the Association of Southeast Asian Nations countries received 65%. CCICED's work focuses on ways to increase cooperation, including examining significant bilateral opportunities involving China-Brazil and China-Indonesia, in areas such as the sustainable sourcing of soft commodities like soy and palm oil, increased financing for clean technologies, and cooperation in global supply chains of the minerals and metals vital to the green transition.

CCICED also looked at the growing role of trade in green technologies, led by solar and electric vehicles. Estimates by the World Trade Organization (WTO) show that the pace of trade in [environmental goods and services](#) has marginally outpaced other traded goods and

services. The total proportion of trade in green goods could reach 15% of all merchandise trade by 2030. China has become a leading exporter of several green technologies.

The rule-based trading system is increasingly strained. While national security was used in less than a handful of cases during the decades of the General Agreement on Tariffs and Trade (GATT) and the early years of the WTO, there are now hundreds of export restrictions under national security provisions, many of which involve the materials at the centre of the green transition. Other measures, such as the Carbon Border Adjustment Mechanism (CBAM) and the EU Deforestation Regulation (EUDR), have raised the profile of the trade-environment nexus. A key finding of CCICED's work is the preference for multilateral solutions, such as the WTO or regional agreements that support rule-based systems.

Part Three: Comprehensive Solutions

Synergistic Solutions: CCICED's work has been guided by the triple crises of climate change, biodiversity loss and pollution. Among the findings of nearly all working groups is the need for policy solutions that magnify synergies linking low-carbon green pathways, the protection of ecosystems, and the means to further reduce pollution. Examples range from the use of green infrastructure and nature-based solutions to co-control systems that simultaneously reduce criteria air pollutants, such as NO_x (nitrogen oxides), SO_x (sulfur oxides), and PM_{2.5} (particulate matter), as well as greenhouse gases.

Green Industrial Policy: There has been a resurgence of industrial policies focused on the low-carbon transition in a growing number of countries, with the International Monetary Fund's [Global Alert Trade](#) tracking more than 2,500 industrial policy measures in 2023, of which a large number are tied to climate mitigation and supply chain resilience. Some common industrial policy characteristics to enhance competitiveness and innovation comprise a mix of an investment-led push and demand-side pull to scale up green technologies and systems, coupled with tighter regulations and standards, market-based

pricing measures, green public procurement, and other measures. A shared challenge is to address the trade-distorting effects shared by many industrial policies.

Recently, China has advocated “new high-quality productive forces” as the new foundation of its economic development. High-quality green development is at the centre of this concept, led by the new trio of green technologies—solar panels, electric vehicles, and long-term battery storage technologies. Targets to scale up green innovation as the major engine of economic growth and productivity continue to transform China’s electricity and automotive sectors, with China now producing roughly 80% of all [solar panels](#) and a major global leader in electric vehicles.

A challenge is maintaining the pace of innovation. Among the findings of a recent report on [EU competitiveness](#) from the European Commission, authored by the previous Italian Prime Minister and President of the European Central Bank, Mario Draghi, are steps to narrow the innovation gap through multiple measures, including increased public financing, the streamlining of regulatory and standard systems, and realizing synergies through scale effects. A key opportunity rests with those companies able to pioneer the next generation of green technologies at scale, from green hydrogen and net-zero steel to carbon storage. For China, increasing public financing for green technology research and development should be linked with the greater role of capital market activity through venture capital to accelerate the commercialization of new green technologies.

Private-Sector Innovation: CCICED’s research in 2024 has emphasized the vital role of the private sector in green outcomes. Examples range from the role of commodity producers in implementing zero-deforestation global soft commodity supply chains as a means of protecting biodiversity and reducing the major climate repercussions of tropical forest loss, to steps by innovative fashion and textile companies in cutting their carbon, pollution, and water footprints while anticipating a growing demand among consumers—especially younger consumers—in green lifestyles. A recurring emphasis of CCICED’s work is matching the promise of AI and digitization with green innovation.

Closing the Implementation Gap: A unique feature of the current multilateral agenda is the clarity of action needed toward 2030 and mid-century targets. The Paris Climate Agreement target of 1.5°C, together with complementary targets such as tripling renewable energy, doubling energy efficiency, and increasing climate financing, set the direction both for domestic action and international cooperation. The 23 targets of the Global Biodiversity Framework are intended to work in tandem to halt and reverse biodiversity loss. Pledges, phase-out schedules, and funding to developing countries to tackle hydrofluorocarbons (HFCs) under the Montreal Protocol are already producing co-benefits to protect stratospheric ozone and cut a potent short-lived climate pollutant. Similar benefits can be accrued by addressing methane, a highly potent greenhouse gas. International air quality standards, drinking water standards, and other standards play similar roles in benchmarking action.

The Sustainable Development Goals encompass these and other actions, underscore the important synergies, co-benefits and interconnections across policies, and the need for international cooperation to deliver results.

A major focus of CCICED's recent work remains implementation. As the green transition and related industrial policies cover most economic sectors, economywide measures, and demand-side drivers, the need for coherent, coordinated, efficient, and cost-effective implementation outcomes is paramount.

Yet, as policies and measures become more comprehensive, evidence suggests they are falling short in many jurisdictions. In the case of climate change, greenhouse gas emissions have never been higher than in 2023 ([International Energy Agency](#)), average global temperatures were the highest on record ([World Meteorological Organization](#)), and disasters driven by extreme weather events increased.

A welcome focus of recent work is unpacking why climate mitigation and other measures are not delivering the expected results. In 2024, the International Organization of Supreme Audit Institutions launched its [Climate Scanner](#) to share the results of implementation audits

covering public policies, governance systems, and finance. A common challenge for most jurisdictions is policy coherence between and across ministries and across federal, sub-federal, and municipal jurisdictions. Recent analysis led by the [Potsdam Institute](#) examined some 1,500 climate mitigation measures across 41 countries, concluding that only 63 delivered GHG mitigation outcomes in an effective way, while analysis of implementation results classified through four clusters of climate mitigation policies has begun unpacking what works, what doesn't, and why.

Obstacles to effective implementation include the persistence of billions in annual subsidies to fossil fuel producers as well as other environmentally harmful subsidies in the agricultural, natural resource, and other sectors. Policy ambition, measured through performance standard requirements or carbon price stringency, is an important determinant of outcomes. The analysis also shows that more policies do not always mean stronger outcomes: a key determinant of effective climate mitigation measures is the interaction of market-based pricing measures with a small set of well-designed green subsidies, performance standards, and others.

Building Inclusion and Equity

One of the most important lessons in actions aimed at cutting pollution, tackling climate change, and conserving nature is that no policies will work unless they are designed at the outset to be inclusive, build equity, seek input to the co-design of policies, and provide opportunities by way of good jobs, clean communities, and wider equity returns, including concrete steps to enhance gender equity. These values resonate especially strongly with young people, who look for more ambitious environmental action by their employers.

Among the pledges adopted at the [UN Summit of the Future](#) meeting in September 2024 is the commitment to significantly increase investments to close the gender gap, including by strengthening institutional support for gender equality and the empowerment of women, including advancing reforms giving women equal rights to economic resources, access to ownership, financial services, inheritance, natural resources, and appropriate new

technologies. CCICED also maintained its focus on gender equity throughout its working groups, as reflected in the 2024 Gender Report.

The Summit of the Future also pointed to the role of Beyond GDP measurement systems in order to advance a comprehensive system that places as much weight on social capital, human capital, and natural capital as it does on produced capital and financial capital. By going beyond GDP indicators, such a framework can help support the 2035 *Beautiful China* transition target.