
**China Council for International Cooperation on Environment and Development**

# South-South Cooperation for Ecological Civilization (Draft)

**Annual Conference of CCICED**

**December 2016**

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# Key Terms

The key themes of this report are “ecological civilization” and “South-South cooperation”, each encompassing a broad range of ideas. We define the terms here to lay the foundation of the report.

## 1. Ecological Civilization

Since ancient times, Chinese philosophy and culture have stressed the unity of man and nature. In recent years, environmental issues have become increasingly prominent, and the Chinese government has attached greater importance to environmental protection. As the government makes long-term plans for modernization and the promotion of social well-being, it carefully considers the important role of ecological civilization and environmental protection.

In 2007, the report of the 17th National Congress of the CPC put forward the concept of "ecological civilization" for the first time. The concept promotes industrial structures, economic growth, and consumption patterns that are energy-saving and environmentally friendly. It is a term similar in definition to “sustainable development”. In 2012, the 18th National Congress of the CPC incorporated ecological civilization into the overall "five-in-one",[1] thereby making ecological civilization one of the key elements of China’s socialist identity and a guiding principle of the CPC.

Based on the traditional philosophy of the unity of man and nature, China reflects deeply upon ecological problems brought about by industrialization and advances the ideas that underpin ecological civilization, including respecting nature, adapting to nature, protecting nature, and promoting harmony between man and nature. The goals are to redefine the relationship between humanity and the environment, and establish long-term mechanisms that promote the rational development of state land, the efficient and low-carbon use of resources, and the safety and health of the natural environment. **In short, ecological civilization is the concept that human prosperity can and should be achieved in a manner that respects the capacity of nature.** The application of ecological civilization is developing dynamically based on the practical experience made with new policy approaches. In sum, ecological civilization is largely consistent with the concept of sustainable development on which the global Sustainable Development Goals (SDGs) are based.

Ecological civilization is a comprehensive concept for a systematic understanding of the relationships between humanity and nature. But in this report, it is mainly used with a more narrow focus on ecology and environment, including the ideas of “sustainable development”, “green development”, “low-carbon development”, and “environmental protection”.

## 2. South-South Cooperation

Originating in the 1950s, and highlighted at the Bandung Conference in 1955, the idea of South-South cooperation was initially seen to reflect cooperation among the Asian, African, and Latin American countries to safeguard national independence and develop national economies. After decades of development as well as technical and economic cooperation among developing countries, the idea of South-South cooperation has gradually expanded. It

[1] Parallel efforts in economy, politics, culture, social policy, and ecological civilization.

now includes political, economic, social, cultural, environmental, and technological cooperation among developing countries.[2] Under South-South cooperation, countries respect each other's sovereignty, leadership, and independence. They see themselves as equals, and work with each other without any conditions or interference in each other's internal affairs.[3]

In recent years, more and more developing countries have begun to provide assistance for other developing countries. In order to distinguish such assistance from the official development assistance provided by developed countries, some scholars and institutions call the assistance among developing countries South-South cooperation, but a unified understanding of this term has not yet been formed. Some scholars in developing countries prefer using South-South cooperation to refer to all types of assistance among developing countries.[4] In a more narrow sense, South-South cooperation sometimes refers only to direct aid from one developing country to another.

In this report, the term South-South cooperation is used to refer to Chinese assistance to developing countries based on public policies and public funding – including direct financial aid, technical assistance, and other donations – in order to support the improvement of human well-being in developing countries. "South-South cooperation for ecological civilization" in this report refers to assistance given in order to support development pathways that are compatible with the concept of ecological civilization (or sustainable development).

China has always been a leading advocate for and a key participant in South-South cooperation. Since 1950, China has provided assistance to other developing countries, with foreign aid being an important part of China's efforts. In September 2015, during his visit to the United States and his participation at the General Assembly of the United Nations, President Xi Jinping announced the establishment of the "South-South Cooperation Fund on Climate Change", the "South-South Cooperation Assistance Fund", and the "South-South Cooperation Development Institute", all of which are focused on promoting development assistance to developing countries.

South-South cooperation includes many aspects of cooperation among developing countries. This report was drafted at a critical time when the Chinese government was considering plans to convert financial aid commitments into projects and activities. The report's primary aim is to provide policy recommendations on how to better promote the green development of developing countries through foreign assistance, also taking into account South-South cooperation, including trade and investment.

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[2] United Nations Office for South-South Cooperation: "What is South-South Cooperation?", http://ssc.undp.org/content/ssc/about/what_is_ssc.html.

[3] Nairobi Outcome Document, 2009.

[4] N.A. Besharati, N. Moilwa, K. Khunou, and O. Garelli Rios. (eds.): "Developing a Conceptual Framework for South–South Cooperation", Working Document, September 2015 ; N.A. Besharati, "Common Goals and Differential Commitments: the Role of Emerging Economies in Global Development", Discussion Paper, DIE, 2013.

# Key Findings

## I. China faces six major challenges in promoting South-South cooperation for ecological civilization

**Challenge #1:** ***There is a lack of inter-ministerial coordination and unified strategic planning for South-South cooperation for ecological civilization.*** While a number of ministries, commissions, and a few local governments engage in activities related to South-South cooperation for ecological civilization, there is little cooperation and coordination among the actors. Without coordination and without a unified strategy, participants are unable to join forces and enhance their efforts successfully, and they could also duplicate efforts and possibly miss important opportunities.

**Challenge #2:** ***Insufficient attention is paid to environmental projects and there is limited financial support.*** Although China has increased investment in the South-South cooperation for ecological civilization, the number of projects remains small and the proportion of the funds remains low. China aims to satisfy the articulated needs of recipient countries to the best of its ability but most of the requests for cooperation submitted to China focus on economic and social infrastructure projects. Environmental protection projects are usually not expressed as priorities.

**Challenge #3:** ***There is only limited participation of actors beyond the central government.*** China's South-South cooperation for ecological civilization is mainly carried out by the central ministries and commissions, with limited participation from local governments, NGOs, and the private sector. China's resources for South-South cooperation are mainly allocated to central government departments. Effective institutional mechanisms and financial support to mobilize the enthusiasm of local governments and other actors are not in place. Additionally, environmental protection is a relatively new element of China's South-South cooperation. Local governments, NGOs, and the private sector lack experience and aptitude in this area.

**Challenge #4:** ***China's South-South cooperation does not yet have an evaluation system with clear environmental protection indicators.*** In China's South-South cooperation, evaluation is still relatively weak. China has not yet established a unified system of indicators to measure the success of South-South cooperation. There is no coordinated system to evaluate the impact of projects (made possible by Chinese aid or investment) on local ecological systems.

**Challenge #5:** ***There is a lack of inter-disciplinary expertise.*** To effectively implement South-South cooperation for ecological civilization, China requires more coordinated expertise among experts in technology, international politics, and the specific needs of developing countries.

**Challenge #6:** ***There is a lack of meaningful public information and effective guidance on public communication.*** China has not established a data collection and analysis system and a platform for public information about South-South cooperation for ecological civilization. Only a limited amount of information is shared with domestic and international audiences. There is also no unified and clear communication mechanism among ministries on South-South cooperation for ecological civilization.

## II. Developing countries have a wide variety of needs in the area of ecological civilization

Although the socio-economic situation in developing countries is very diverse, they face similar issues when engaging in South-South cooperation for ecological civilization with China, including: (1) It is hard to identify fundamental needs as the concepts of ecological civilization and green economy[5] are not universally embraced; (2) Political and economic risks in some developing countries are high, which hinders Chinese public and private investment in environmental projects; and (3) Chinese companies and programs are relatively new from an ecological perspective, and local ownership issues need to be enhanced by stakeholder engagement.

To cooperate with China on ecological civilization, developing countries need: (1) knowledge-sharing and capacity-building programs for policy-makers and decision-makers on green economic policies, green technologies, and the concept of ecological civilization; (2) policies that address the accountability of Chinese corporations operating in other countries; and (3) best-practice strategies for implementing financial/ODA investment models that include plans to assist communities, stakeholder engagement, and training and educational programs for local employees.

In terms of technology, specific sub-sector cooperation requirements include: (1) transfer of renewable energy technology, particularly solar and wind energy; (2) Chinese expertise in industrial energy efficiency; (3) green transportation, such as fuel standards and public transportation solutions; (4) climate mitigation/adaptation technologies, especially flood protection and the prevention of biodiversity loss; (5) waste management, i.e., wastewater treatment works, waste disposal, and solid waste management in urban areas; and (6) scalable policies and technologies that could improve agricultural production on existing farmland.

## III. There are a number of key priorities for China's South-South cooperation for ecological civilization

As a large developing country with a vast territory and diverse ecosystems, China has nearly four decades of experience in rapid economic growth, socio-economic changes, and improvements in human well-being. Through these changes, the country has learned many lessons that could be beneficial for other developing countries as they pursue South-South cooperation for ecological civilization. This report offers five criteria that should guide China’s selection of priority areas for advancing South-South cooperation for ecological civilization. South-South cooperation for ecological civilization activities should: (1) be consistent with the global Sustainable Development Goals; (2) be adaptable to countries at different stages of development and with varying needs; (3) provide systematic solutions that balance livelihood and ecology; (4) operate with innovative technology and development models; and (5) promote environmentally friendly and low-carbon infrastructure-related technologies and investment.

According to these five criteria and the demands of developing countries as captured by our survey, the Task Force asked experts to prioritize the sub-areas analyzed above with criteria such as: degree of relevance for implementing the SDGs; appropriate technology; degree of

[5] A green economy, as encouraged by the United Nations Environment Programme, results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low-carbon, resource-efficient, and socially inclusive

innovation; linkages with infrastructure, etc. This exercise identified the following areas as initial priorities: water resource management in rural areas; infrastructure construction in the process of urbanization and low-carbon transportation; renewable energy; energy efficiency; adaptation measures in agriculture, forestry, and water resources; and early warning systems for disasters as the initial priorities. Nevertheless it is also agreed that there should be some flexibility. South-South cooperation for ecological civilization should be based on a case-by-case basis to consider the specific needs of recipient countries and changes in China's comparative capacity.

# Recommendations and a Roadmap

South-South cooperation for ecological civilization requires a massive increase in China's aid budget. It also calls for working together to find innovative development paths, an idea that should be embedded into other important Chinese external initiatives including the Belt and Road Initiative, international production capacity cooperation, and global agreements such as the 2030 Agenda for Sustainable Development, the SDGs, and the Paris Agreement under the United Nations Framework Convention on Climate Change. South-South cooperation for ecological civilization aims to support implementation of SDGs in other developing countries and transforming South-South cooperation into a green priority that will become China's contribution to the improvement of global governance towards sustainable development. Principles of South-South cooperation for ecological civilization are: balancing the objectives and needs of the environment, livelihoods, and social development; equitable partnerships for development; openness and inclusiveness; transparency; and compliance with rules.

## I. Policy recommendations

### *1. Establish a high-level coordination mechanism for South-South cooperation for ecological civilization*

- To establish a high-level central coordination mechanism led by the Premier or Vice-Premier to coordinate and embed ecological civilization into all of China's South-South cooperation initiatives. With this coordinating mechanism, a number of pertinent ministries and agencies should assume the mandate to mainstream ecological civilization into all of their activities, from the macro-level of goal-setting, policy guidance, and establishing principles, to the micro level-of institutional arrangements, process management, monitoring, and evaluation.. Establish an international advisory group that includes experts from all continents.

- Develop a "Green Action Guide for China's Foreign Aid" to inform and regulate Chinese support of projects that have an environmental impact. The Guide should recognize the positive effects of foreign aid on trade, investment, and other expressions of South-South cooperation.

- Establish a ministerial level "Chinese Agency for International Cooperation" to lead and coordinate South-South cooperation work that is now conducted by a variety of ministries. This agency would incorporate the concept of ecological civilization at all levels of decision-making and programming, including goal–setting and policy-making at the macro-level to institutional logistics, process management, monitoring, and evaluation at the micro-level.

### *2. Create the enabling conditions for South-South cooperation for ecological civilization*

- Develop medium- and long-term plans for South-South cooperation for ecological civilization. Consideration should be made for the varying priorities of different countries and regions as well as international trends and China's comparative advantages and capacity.

- Develop systems that enable inclusive participation, especially by border provinces, NGOs, and enterprises inspired by China's "going out" strategy of encouraging more Chinese investment abroad. Explore triangular cooperation with other donor countries and international NGOs.

- Advance research and strengthen the capacity of relevant institutions and personnel in China. Strengthen the awareness of environmental protection among personnel involved in South-South cooperation. Enrich basic research on international cooperation in general and ecological civilization in particular to expand the knowledge base for decision-making.

- Share more information and strengthen public communication. Link ecological civilization with the Sustainable Development Goals to make the concept of ecological civilization better known in the international community. Strengthen information and data collection for South-South cooperation for ecological civilization; establish an official communication channel to share information; and establish a platform where government and civil society can engage in dialogue about South-South cooperation for ecological civilization.

***3. Increase financial support and improve the effectiveness of expenditures***

- Increase the proportion of aid in China's total foreign aid budget for projects that promote ecological civilization and that advance the evolution of ecological civilization as a mainstream objective. Make effective use of grants, loans, and other financial channels.

- Innovate in the area of development finance, and try to combine foreign aid with funds from development finance institutions and commercial banks. Use public funds to offer incentives to the private sector to invest. Make full use of multilateral financial mechanisms, such as the Global Environment Facility and the Green Climate Fund. Select suitable opportunities that are in line with the goals of South-South cooperation for ecological civilization, and increase China's input and explore avenues for cooperation.

***4. Improve whole-process management, especially evaluation***

- Pay close attention to the quality of the empirical data used for project planning and approval. Strengthen understanding of partner countries' needs, and enhance coordination and consultation with relevant stakeholders throughout the whole process. Broaden partnerships and increase the number of relationships so that more projects that promote ecological civilization can be included in the South-South cooperation projects database.

- Integrate existing foreign aid programs and systems, and further strengthen technical cooperation and knowledge-sharing with developing countries. Promote China's experience in industry planning and actively promote the application of new technologies in South-South cooperation for ecological civilization.

- Prioritize *ex-ante* environmental impact assessments for large infrastructure, energy, mining, and agriculture projects. Also, embed ecological protection as an important post-evaluation indicator along with economic effects and social impacts. Consider the interaction of ecological, economic, and social impacts throughout project approval, monitoring, and evaluation.

## II. Roadmap

### 1. Stage One: Laying a solid foundation for long-term development (2017–2020)

**Specific goals:** (1) to significantly increase the proportion of environmental projects and the promotion of ecological civilization in all of China's South-South cooperation projects; (2) to successfully design a system for South-South cooperation for ecological civilization; (3) to convert the cooperation initiatives announced recently by Chinese leaders into concrete

results to set a good example for other initiatives; and (4) to raise awareness of South-South cooperation for ecological civilization among domestic and international audiences and encourage greater participation at home and abroad.

**Approaches for implementation**: Develop a five-year strategy for South-South cooperation for ecological civilization and incorporate it into the 14th Five-Year Plan. The strategy should consider relevant elements of other national strategies, including the 13th Five-Year Plan, the Belt and Road Initiative, and international production capacity cooperation; enhance top-level design and establish a policy system that addresses South-South cooperation for ecological civilization and improves institutional capacity; accelerate the establishment of new funds for development aid and standardize the use of these funds by developing relevant regulations; encourage relevant ministries to issue application guidelines and measures for using these funds; improve monitoring and evaluation mechanisms; promote South-South cooperation for ecological civilization among local governments, civil society organizations, businesses etc.; and build capacity by sharing knowledge and experience with a variety of actors. Mobilize society to enhance awareness and participation among the general public, in order to lay the foundation for the next stage.

**2. Stage Two: Deepening and scaling up cooperation (2021–2030)**

**Specific goals:** (1) to deepen the extent to which South-South cooperation for ecological civilization is incorporated into overall policy-making about international cooperation; (2) to scale up the quantity and quality of projects that promote ecological civilization in South-South cooperation; and encourage developed countries to increase the proportion of the environment-related projects in their ODA and to fulfill their funding commitments under the United Nations Framework Convention on Climate Change (UNFCCC) and other multilateral environmental agreements; and (3) to further deepen bilateral and regional cooperation, and gradually expand the number of participants.

**Approaches for implementation:** Incorporate South-South cooperation for ecological civilization into China's overall planning for international cooperation; focus on optimizing the policies, rules, and regulations of South-South Cooperation for ecological civilization, including improving the transparency of the policy process; further increase financial support by combining different types of funds; strengthen the infrastructure for cooperation, including the creation of a professional team to service South-South cooperation for ecological civilization. Motivate local governments, explore how South-South cooperation for ecological civilization can be realized through public-private partnerships (PPP), and encourage participation of the public and private sectors in Southern countries.

**3. Stage Three: Development and transformation (2031–2050)**

By the mid-21st century, global ecological and environmental pressures will have increased and China needs to assume more international responsibility in environmental matters. During this stage, China's **specific goals** for South-South cooperation for ecological civilization should be: (1) to renew and refresh the concept of South-South cooperation for ecological civilization consistent with new global realities, and advance new strategies accordingly; (2) to work together with developing countries on a post-2030 global development agenda that incorporates South-South cooperation for ecological civilization; (3) to lead global innovation, and to pursue radically innovative science and technology in the field of ecological civilization for the benefit of people in the developing world; and (4) to advance South-South cooperation for ecological civilization as a major global trend that plays

a positive role in deepening mutual understanding and interdependence among peoples and prevents conflict among countries.

# Project Background and Overview

## 1. Research background

International development is currently undergoing profound change as various international affairs influence each other and the breadth and complexity of development expand. In September 2015, the United Nations General Assembly adopted a new development agenda, (the 2030 Agenda for Sustainable Development) and set 17 comprehensive development goals relating to economy, society, environmental development, safety, and more. An important characteristic of the 2030 development agenda is the combination of poverty reduction, as stressed in the Millennium Development Goals (adopted in 2000) and the idea of sustainable development (highlighted at the Rio conference in 1992), putting more emphasis on the impact of development on environment. Environmental protection, climate change, and biodiversity have received increasing attention from the international community and have become important considerations in international development cooperation.

China is now at an important stage of its economic and social transformation, with rapid economic development causing certain pressures. The outline of the 13th Five-Year Plan a new definition of development that includes the following elements: innovative, harmonious, green, open, and sharing. During this period, China will increase its efforts to protect the environment, improve the efficiency of resource use, and enthusiastically embrace a concept of development that includes economic, social, and environmental well-being.[6] At the same time, China will broaden its opening-up under the guidance of the "Belt and Road Initiative", continue to actively fulfill its international responsibilities and obligations, and actively implement the 2030 Agenda for Sustainable Development.

In the process of opening up to the rest of the world, developing countries have always been very important partners for China, and South-South cooperation is an integral part of China's opening-up. Like the other developing countries, China is also faced with the same challenge of pursuing sustainable development. Development cooperation with other developing countries that co-exists with the pursuit of ecological civilization is an important embodiment of China's understanding of its responsibilities as a large country and its support of the implementation of 2030 Agenda for Sustainable Development. At the United Nations General Assembly in 2015, the Johannesburg Summit of the Forum on China-Africa Cooperation (FOCAC), and the 2015 climate change conference in Paris, the Chinese government made a series of commitments to support sustainable development in developing countries. How to deliver on these promises is an important issue facing the Chinese government.

In this context, the topic of this report is timely and significant. With the support of domestic and international experts in relevant fields, this report studies how China should better carry out South-South cooperation for ecological civilization, and offers policy recommendations for government decision-making.

## 2. Research methods and main contents of this report

The purposes of this research are: (1) to identify priority sectors for South-South cooperation for ecological civilization by analyzing developing countries' needs and China's relevant advantages and capacities; (2) to make policy recommendations to improve the process and

[6] "Outline of the 13th Five-Year Plan on National Economic and Social Development of PRC", March 2016.

impacts of China's South-South cooperation for ecological civilization; and (3) to propose a roadmap for South-South cooperation for ecological civilization, and to identify implementation approaches.

In order to fulfill these purposes, the Task Force has adopted a variety of research methods, including: (1) extensive desk-based data collection; (2) a survey of stakeholders in government, NGOs, and the private sector in selected developing countries which produced data from 14 countries in Asia, Africa, and Latin America[7] along with suggestions about China's South-South cooperation for ecological civilization; (3) interviews with a number of Chinese ministries, international organizations, and NGOs to understand the current state of South-South cooperation; (4) field research in Shanghai, Kunming, Shenzhen, and Chongqing, and talks with the relevant local governments, research institutions, and enterprises to listen to their comments and suggestions; and (5) a seminar in Nairobi, Kenya, including representatives from nine developing countries[8] and international organizations (including UNEP and GGGI) to learn about their challenges in meeting the Sustainable Development Goals and to hear ideas about cooperation with China.

Since April 2016, the Task Force has convened four joint working meetings, two consulting seminars, and many formal and informal meetings among Chinese Task Force members and subject experts. International members and the representatives of Chinese Task Force members have participated in weekly conference calls since July 2016 and have communicated frequently via email. Two chairs and eight core experts have been dedicated to this research. After much debate and multiple revisions, the Task Force released this report in November 2016.


## Keywords

Ecological Civilization, South-South Cooperation, Sustainable Development, Foreign Assistance


[7] The 14 countries are Cambodia, Ethiopia, Pakistan, Vietnam, South Africa, Democratic Republic of Congo, Kenya, Indonesia, Senegal, Rwanda, Uganda, Peru, Brazil, and Panama.

[8] The nine countries are Ethiopia, Uganda, Niger, South Africa, Nigeria, Kenya, Sierra Leone, Zambia, and Zimbabwe.

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## 1. THE DOMESTIC AND INTERNATIONAL STATE OF SOUTH-SOUTH COOPERATION FOR ECOLOGICAL CIVILIZATION

Based on the traditional philosophy of the unity of man and nature, China reflects deeply upon ecological problems brought about by industrialization and advances the ideas that underpin ecological civilization, including respecting nature, adapting to nature, protecting nature, and promoting harmony between man and nature. The goals are to redefine the relationship between humanity and the environment, and establish long-term mechanisms that promote the rational development of state land, the efficient and low-carbon use of resources, and the safety and health of the natural environment. China's notion of ecological civilization is largely consistent with the global Sustainable Development Goals.

As economic globalization continues, China's economic influence and impact continue to expand and increase. At the same time, China has become more closely connected and integrated with other developing countries. As a result, implementing South-South cooperation for ecological civilization is an important and logical way to identify innovative development pathways for the developing world. China has made a proactive choice to accept the responsibility of helping to realize human prosperity and sustainable development in the developing world.

### 1.1 The international situation

**Global sustainable development faces multiple challenges.** Society should not only address the environmental challenges posed by the overuse of resources, but it should also take poverty and social issues into account. In this industrial era, a series of environmental problems have been caused by the excessive consumption of natural resources, including air pollution, a worsening of water quality, excessive heavy metals in the soil, species extinction, deforestation, energy shortages, desertification, and climate change. These impacts have not only led to environmental crises, they have changed the quality of human life. At the same time, there are still 836 million people living in extreme poverty in the world,[1] and 1.2 billion people (17% of the global population) do not have access to electricity.[2] Extreme weather events resulting from global climate change not only cause the loss of property and lives,[3] they exacerbate the poverty of people who are facing a shortage of clean drinking water, sanitation services, and educational opportunities. To achieve ecological civilization, humanity must take action towards greening the economy.

**Green transformation has become an important goal for global development and international cooperation.** Since the World Commission on Environment and Development put forward the concept of "sustainable development" for the first time in the report "Our Common Future" in 1987, the international community has responded with a series of institutional mechanisms and bilateral agreements. The Rio Conference, held in 1992, successfully adopted the "Earth Charter", signed the "Convention on Biological Diversity", the "Framework Convention on Climate Change", and the "Convention on Combating

[1] UN SDG web page, October 27, 2016. www.un.org/sustainabledevelopment/poverty

[2] IEA Energy Access database, October 27, 2016. http://www.worldenergyoutlook.org/resources/energydevelopment/energyaccessdatabase/

[3] A. Shepherd, T. Mitchell, K. Lewis, et al. "The geography of poverty, disaster and climate extremes in 2030", 2013. http://www.droughtmanagement.info/literature/ODI_the_geography_of_poverty_disasters_climate_extremes_2013.pdf

Desertification". These agreements brought great credibility to the idea of connecting environmental protection with social well-being and economic development, and promoted cooperation and dialogue between developed and developing countries to address the challenges. The "2030 Agenda for Sustainable Development", adopted in September 2015, put forward 17 sustainable development goals (SDGs) and set the direction of social and economic development and environmental protection for the 15-year period, 2015–2030. The "Paris Agreement", adopted in December 2015 under the UNFCCC, established clear targets for mitigating climate change and adapting to its impacts. The Agreement created the post-2020 global climate governance system, incorporating all countries in the pursuit of a positive destiny for all humanity.

**Innovation in development and the pursuit of ecological civilization are required to achieve green transformation.** The existing development model needs to be fundamentally changed. Development needs to be less resource-intensive, more energy-efficient, and production and consumption patterns need to change. Innovation in these areas will ultimately lead to achieving ecological civilization.

According to Kuznets' theory, along with the increase of GDP per capita, the degree of environmental pollution will form an inverted "U" curve – first rising then falling. An innovative development pathway would abandon the idea of the environmental Kuznets' curve and try to achieve the same level of economic development at a lower environmental cost. This would happen by paying more attention to the quality and efficiency of economic growth, restricting the development of industries with a high degree of negative environmental impact, and constantly stimulating sustainable economic growth. Among all factors, technological innovation is the most important driver in achieving an appropriate development path. Through the use of renewable energy, human beings can gradually reduce their dependence on fossil fuels. An effective transition to renewable energy would protect the environment without compromising social well-being and economic development. An effective transition would also create more jobs by creating new opportunities for economic growth that do not damage the environment.

**Cooperation among developing countries is beneficial to a global green transformation.** In recent years, the total economic output of developing countries has increased rapidly. In 2013, the collective GDP of developing countries accounted for 50.4% of the world's total GDP,[4] exceeding the collective GDP of developed countries for the first time in history. By 2018, the estimated collective GDP of developing countries will be 53.9% of the world's total. With rapid economic growth and improvements in quality of life, developing countries need to pay more attention to environmental protection. Southern countries, as a whole, are still in the early stages of rapid economic development. The development choices they make will, to a large extent, determine the outcome of global transformation. In this context, the advantage of South-South cooperation compared with North-South cooperation is that Southern developing countries are more likely to share similar circumstances, and are therefore better positioned to work together to increase global market shares, innovate together to design green and inclusive development pathways, and thus achieve sustainable development together with the least environmental impact.

[4] National Bureau of Statistics, People's Republic of China, October 27, 2016. http://www.stats.gov.cn/tjsj/zxfb/201402/t20140227_516899.html

## 1.2 The domestic situation

**The vision of China's economic transformation and restructuring is consistent with the achievement of ecological civilization.** Even as the country has experienced remarkable growth and social achievement, it has also experienced several challenges caused by environmental issues. Having reached the status of a middle-income country, China needs to focus on the quality of future development so that it moves the country to a state of ecological civilization. The pursuit of ecological civilization should underpin the country's economic transformation.

**Implementation of the sustainable development agenda and the process of achieving ecological civilization are interrelated and complementary.** Firstly, the path to ecological civilization and the implementation of sustainable development overlap significantly. The two processes aim to promote the harmonious development of society, the economy, and the environment. Accelerating the pursuit of ecological civilization is the main means for China to implement the 2030 Agenda for Sustainable Development and to achieve the targets of the Paris Agreement. Secondly, the shared foundation of ecological civilization and sustainable development is the promotion of innovative development pathways to reduce reliance on natural resources, and minimize negative impacts on the environment. Both approaches also promote human progress within the carrying capacity of ecosystems and with the sustainable use of natural resources. Thirdly, China's practical experience in ecological civilization will play an important role in its South-South cooperation. Over the past decades, China has made remarkable progress in reducing poverty and hunger, improving education and health care, accelerating economic growth, increasing employment opportunities, strengthening infrastructure, and accelerating urban construction. The country has accumulated rich experience and has learned many lessons about environmental protection and the sustainable use of natural resources. China's pursuit of ecological civilization is a model for many developing countries as they undergo industrialization.

**Table 1-1. Comparison between China's ecological civilization construction process and the Sustainable Development Goals**

| | | SDGs | Ecological Civilization |
|---|---|---|---|
| Similarities | **Motivation** | Recognition of and reflection on the relationship between the environment and development | |
| | **Goal** | Lasting development in harmony with natural resources and the environment | |
| | **Dimensions** | Economic growth, social progress, and environmental protection | |
| | **Tool** | Green economy and "greenization" (lowering resource consumption, boosting green industries, and promoting a low-carbon, thrifty lifestyle)[5] | |
| | **Pathway** | "Integration" and "inclusion" | |
| | **Process** | Consistent and adequate | |
| | **Relationship with environmental policy** | Derived from, but not limited to, environmental protection | |
| | **Opportunities and risks** | Key opportunities coupled with implementation, financing, and capacity challenges | |

[5] "Chinese leaders push for 'greenization'." XinhuaNet, March 24, 2016. http://news.xinhuanet.com/english/2015-03/24/c_134094125.htm

| | | | |
|---|---|---|---|
| **Differences** | **Theoretical basis** | Theories of environmental carrying capacity, environmental value, social inclusion and equity, human agency and accountability, and integrated development | Ecology, economics, sociology, ethics, and Chinese traditional philosophy |
| | **Philosophical status** | Concept of human development | Governing philosophy |
| | **Scope of application** | Applicable across the globe and accepted worldwide | National identity and specificity and not applicable worldwide |
| | **Enforcement** | Mainly expected targets and measures of no binding force, neither legislatively nor administratively | Plans and programs integrated with binding targets |

(Source: based on Yu Hai, Zhang Yongliang, *CCICED Background Report, Overview and Implications of the Sustainable Development Process: the World and China*, October 2015, p47)

**China and other developing countries have a good foundation of cooperation, and have advocated for global and regional green development.** China has been an advocate for and practitioner of South-South cooperation. It started its cooperation with and provided assistance for many developing countries in Asia, Africa, and Latin America with the founding of New China. The country consolidated mutual trust and gained mutual benefits while cooperating with these countries and established a network of cooperation. In recent years, China has participated in international cooperation efforts with an increasingly positive attitude, as demonstrated by its participation at the United Nations; its constant expansion and deepening of bilateral and regional cooperation; and the launch of a number of cooperation initiatives including the Belt and Road Initiative, the New Development Bank and the Asian Infrastructure Investment Bank, thereby providing even more opportunities for international cooperation, especially for South-South cooperation. At the same time, in order to promote green transformation in developing countries, China has paid attention to the implementation of the concept of green development in South-South cooperation, and will continue to promote ecological civilization and the technological improvement of relevant industries to better serve such cooperation.

**Box 1-1 South-South cooperation for ecological civilization and the Belt and Road Initiative**

In 2013, China launched an ambitious and unprecedented multi-billion dollar economic and foreign policy initiative called the Belt and Road Initiative (BRI),[6] also referred to as the One Belt, One Road (OBOR), to revive and strengthen connectivity between China and the rest of the world for a rebalanced global economy. Corridors cutting across Central Asia, Russia, India, Pakistan, and Europe (the terrestrial route) and also running along the coasts of Asia and East Africa (the maritime route) are being developed. Taken together, the BRI is envisioned to span more than 60 countries accounting for 70% of the world's population, 55% of global gross national product (GNP), and 75% of the world's known

[6] This initiative goes by several different names, all reflecting slightly different interpretations: e.g., "One Belt, One Road (OBOR)", which is the short version of the "Silk Road Economic Belt and the 21st-Century Maritime Silk Road", used in the original Chinese proposal, the "New Silk Road (NSR)" and the "Maritime Belt and the New Silk Road." "The Belt and Road Initiative (BRI, or the B&R Initiative)" is the official name used by the Chinese government for OBOR. Herein, the terms "BRI" and "New Silk Road" are used interchangeably.

energy reserves.[7] In monetary terms, in 2015, participating financial institutions and companies may have raised funds well over USD 800 billion to support the BRI,[8] double the total GDP of 30 low-income countries in 2015.

The BRI undoubtedly provides economic opportunities. That said, if implemented without taking into account the environmental needs and ecosystem services to local communities, it can cause environmental degradation on an unprecedented scale to many Protected Areas (PAs), key landscapes, ecoregions, and key (flagship) species with outstanding biodiversity features and representative value. Meanwhile, the long-term economic return of Chinese investment cannot be guaranteed without an appropriate assessment of potential environmental risks especially in the context of global goals for sustainable development and climate change.

In 2016, President Xi Jinping called for a "green, healthy, intelligent, and peaceful" Silk Road and suggested that the participating countries "deepen cooperation in environmental protection, intensify ecological preservation, and build a green Silk Road".[9] This provides an encouraging sign that China is receptive to integrating environmental sustainability and the ecological civilization into the BRI. Immediate and concrete actions at the implementation level are needed to keep pace with private investment.

**China has the responsibility and capacity to provide the world with more environmental public goods and to promote innovative development pathways.** After decades of rapid development, China's economy ranks second in the world, and its national strength has been significantly enhanced. China has become the world's largest trading nation and second largest investor overseas, and the operating scale of its foreign projects has ranked first in the world for several consecutive years. The internationalization of Chinese enterprises has become an increasingly important factor in green transformation and sustainable development around the world, especially in developing countries. In the development process over the years, China has made the transition from extensive growth without any regard for the environment, to a style of development characterized by the pursuit of balance between growth and environmental conservation. China has accumulated a wealth of valuable experience in understanding this balance. As Chinese enterprises continue to accelerate their internationalization, China has the ability to provide environmental goods, services, and appropriate technologies and solutions through South-South cooperation to help other developing countries innovate as they shape their development pathways.

[7] N. Casarini, "China's inroads into the West", Chatham House, 2015. https://www.chathamhouse.org/publication/twt/chinas-inroads-west

[8] M. Grimsditch, "Financial platforms that may support projects in the 'One Belt One Road' route", Inclusive Development International (IDI), 20 October 2015.

[9] State Council Information Office of the People's Republic of China, 2016. See *References*.

## 2. CHINA'S SOUTH-SOUTH COOPERATION FOR ECOLOGICAL CIVILIZATION: ACTIVITIES AND CHALLENGES

In the early 1950s, the Chinese government began to provide assistance to other developing countries, focusing on infrastructure construction, and industrial and agricultural development. Environment-related projects mainly consisted of water conservation and irrigation projects, river management and drinking water projects, hydrological and geological survey projects, and other such initiatives. In the 1980s and 1990s, China's foreign aid initiatives were mainly clean energy projects based on the utilization of biogas.

When China entered a stage of rapid economic growth in the initial period of industrialization, it did not have a profound understanding of the balance between economic development and environmental protection, and thus did not promote South-South cooperation from the perspective of ecological civilization. Instead, its foreign aid activities only responded to developing countries' urgent needs. In the 21st century, China has been deeply integrated into economic globalization and its domestic enterprises have accelerated the pace of "going global". The concept of ecological civilization is also going global as China has an increasingly strong sense of the importance of environmental protection. The Chinese government has responded to the UN Millennium Development Goals and Sustainable Development Goals, and has designed and implemented aid measures for environmental protection and has also paid more attention to the impact of enterprises' overseas economic activities on the environment. It encourages and guides enterprises to fulfill their social responsibilities at home and abroad. In pursuing South-South cooperation on ecological civilization, China has made important progress but also faces challenges that require attention.

### 2.1 Activities of China's South-South cooperation for ecological civilization

#### 2.1.1 *The central government sets South-South cooperation policies and is responsible for most funds and resources*

China's South-South cooperation in the form of foreign aid is administered by the central government. Ministries and commissions are responsible for policy-making and finance allocation within their fields, and they coordinate and cooperate with each other to some extent. First, the Ministry of Commerce (MOFCOM) is China's leading foreign aid department and its main functions include formulating and organizing the implementation of foreign aid policies and plans. It is in charge of around 70% of China's bilateral aid funds, part of which is used for South-South cooperation in the area of environment. Second, the National Development and Reform Commission (NDRC) is the authority responsible for climate change issues, and its main functions include taking the lead to undertake the country's relevant work to implement the UNFCCC, taking the lead to participate in international negotiations on climate change jointly with other departments; coordinating international cooperation and capacity building to cope with climate change; and managing the newly established China South-South Climate Cooperation Fund. Third, the Ministry of Foreign Affairs, the Ministry of Environmental Protection, the Ministry of Science and Technology, the Ministry of Water Resources, and the State Forestry Administration are also carrying out international exchanges and cooperation with developing countries on environmental protection within their areas of responsibility; some of them also participate in implementing cooperation projects managed by MOFCOM or NDRC. That said, compared with MOFCOM and NDRC, they can only mobilize very limited financial resources for their

work in this area.

### 2.1.2 *Provinces in border regions participate in South-South cooperation for ecological civilization with neighbouring countries*

China has a long border and it neighbours a number of developing countries with which their ecological system is closely linked. Provinces and Autonomous Region such as Yunnan, Guangxi, Tibet, Inner Mongolia, and Xinjiang have conducted many cooperation programs. Yunnan Province launched an initiative to promote the cross-border protection of wild elephants with the support of the World Wildlife Fund (WWF). Funded by the Asian Development Bank, with the support of Yunnan Provincial Department of Environmental Protection, the Biodiversity Corridor Demonstration Village of Yunnan Province becomes a demonstration project for the countries in Southeast Asia. Tibet and Xinjiang have projects with Nepal and central Asian countries focusing on biodiversity and water resource management. And the Inner Mongolia Autonomous Region will cooperate more closely with Mongolia in the prevention of desertification. Generally speaking, bordering provinces have the geographic and cultural conditions to conduct cross-border ecological protection programs with neighbouring countries. While some important initiatives are underway, there is still great opportunity for improvement.

### 2.1.3 *The diversification of South-South cooperation for ecological civilization*

China's environmental South-South cooperation used to be limited to certain construction projects like irrigation, wells, methane tanks, and small-scale hydropower facilities. Since 2000, China has become more and more active in developing initiatives for South-South cooperation for ecological civilization as a positive response to the Millennium Development Goals. Areas of cooperation gradually expanded over time and now cover the following fields: water resources, protection of the environment and nature, clean energy, coping with climate change, and urbanization. Cooperation in the field of water resources mainly involves technology for water resource exploration, consulting, and planning; supporting construction of hydropower stations; and the provision of water-saving irrigation equipment and hydrologic measurement equipment. Cooperation in the field of protection of the environment and nature mainly involves wildlife conservation, desertification control, forest protection and management, and bamboo and rattan resource protection. In addition, China is working with other developing countries in the areas of clean energy, climate change response, urban waste disposal, and soil protection.

**Box 2-1 China's commitments to South-South cooperation for ecological civilization in recent years**

**Commitments that have been converted into actions**

- Among six measures for foreign aid pledged by the Chinese government at the 2008 UN High-Level Meeting on the MDGs: …6) by 2013, China will develop 100 small-scale clean energy projects for other developing countries, including small hydropower, solar power, and biogas projects.
- Within the New Eight-Point Plan China pledged at the Fourth FOCAC Ministerial Conference in 2008, China proposed the establishment of a China-Africa partnership to address climate change, senior official consultations on a non-regular basis, and the strengthening of cooperation in satellite weather monitoring, the development and use of new energy, prevention and control of desertification, and urban environmental protection. The Chinese government decided to assist African countries with 100 clean energy projects

focusing on solar energy, biogas, and small hydropower stations.

- Among six measures for foreign aid pledged by the Chinese government at the 2010 UN High-Level Meeting on the MDGs, by 2015 China will help build 200 clean energy and environmental protection projects, and will increase assistance to small-island developing states in the fields of disaster prevention and mitigation to help build their capacity for countering climate change.

**Pledged commitments**

- In 2012, the Chinese government announced at the UN Conference on Sustainable Development that China would carry out South-South cooperation to respond to climate change and promised that it would arrange about USD 10 million annually to support African countries, the least-developed countries, and small island countries to actively respond to climate change.
- In January 2015, the China-Community of Latin American and Caribbean States Forum Cooperation Plan 2015–2019 was passed at the first Ministerial-level Conference. The Plan includes provisions on jointly advancing intergovernmental climate change negotiations; promoting "low-carbon, high-quality at reasonable prices, energy-saving, and renewable technologies to relevant countries"; and enhancing collaboration in the protection of biodiversity, coastal ecological systems and reserves management, environmentally sound technologies, water conservation, desertification control, and pollution control and treatment.
- In March and June 2013, during his visit to Africa, Latin America, and the Caribbean, Chinese President Xi Jinping once again said that China would continue to provide support within its capacity for small island countries and African countries under the framework of South-South cooperation.
- At the Johannesburg Summit of the Forum on China-Africa Cooperation, Chinese President Xi Jinping promised that "China-Africa cooperation will never be pursued at the expense of local ecosystems and long-term interests" and announced that China will support the implementation of 100 clean energy and wildlife conservation projects, environmentally friendly agriculture projects, and smart city construction projects in Africa.
- In December 2015, at the opening ceremony of the climate change conference in Paris, Chinese President Xi Jinping announced the establishment of the China South-South Climate Cooperation Fund (20 billion yuan) and said China would launch 10 low-carbon demonstration zones, 100 climate change mitigation and adaptation projects, and 1,000 training projects for responding to climate change in developing countries in 2016. It would also continue to promote international cooperation in clean energy, disaster prevention and mitigation, nature protection, climate adaptation-based agriculture, and low-carbon smart city construction, and help improve financing ability for this work.
- China's foreign aid planning was incorporated into its 13th Five-Year Plan and points out that China will "expand international cooperation and assistance in the areas of disaster prevention and mitigation, environmental improvement, wildlife conservation, and poverty reduction..."

Sources: White paper of China's Foreign Aid (2011), and Press Release from the State Council Information Office, and related ministries

### 2.1.4 *China advances many forms of South-South cooperation*

The main forms of South-South cooperation for ecological civilization are: technical cooperation, training and capacity building, material assistance, and substantive projects. In

terms of technical cooperation, from 2010 to 2012 China cooperated with Ethiopia, Burundi, and Sudan, promoting the usage of solar, hydro, and other sources of clean energy.[10] In terms of capacity building, China held 150 trainings on environmental protection and climate change responses for over 4,000 officials and technicians from more than 120 developing countries. Topics included the development of low-carbon industries, energy policy, ecological protection, water resources management, water and soil conservation, the development and utilization of renewable energy, forest management, desertification control, early warning of meteorological disasters, and others. [11] In terms of material assistance, from 2010 to 2012 China provided 16 batches of environmental protection equipment and materials for 13 developing countries including Cambodia, Myanmar, Ethiopia, South Sudan, and Micronesia. China also actively promoted South-South cooperation on climate change, signed the "Memorandum of Understanding on Materials Donation to Cope with Climate Change" with nine countries, and donated more than 500,000 energy-saving lamps and over 10,000 energy-saving air-conditioners to nine countries including Grenada, Ethiopia, Maldives, and Samoa. [12]

### 2.1.5 *China actively participates in multilateral exchanges and cooperation*

The Chinese government attaches great importance to the implementation of international environmental conventions. China has joined more than 50 international environmental conventions and has established an internal management mechanism for international conventions. China has cooperated with Asian and African countries in capacity building for the implementation of international environmental conventions on biodiversity, chemicals, and others. An example of such cooperation is an environmental compliance project launched in Ethiopia. The Chinese government actively supports the multilateral and regional organizations' environmental activities. In June 2012, at the Rio + 20 Summit, China announced the donation of USD 6 million to the Trust Fund of the United Nations Environment Programme in order to help developing countries launch projects and activities to enhance their capacity for environmental protection. In 2008 and 2014, China donated USD 30 million and USD 50 million respectively to FAO, which helped Uganda, Mongolia, and other developing countries enhance their resilience to climate change.[13]In addition, through the Forum on China-Africa Cooperation, the Lancang–Mekong Cooperation Mechanism (LMCM), and the Community of Latin American and Caribbean States, China strives to establish high-level mechanisms for environmental cooperation and explore the evolving paradigm of South-South cooperation. The China-ASEAN Environmental Protection Cooperation Center (CAEC), which was established in 2010 by the Chinese government, is a regional cooperation organization designed to promote South-South environmental cooperation. At present, with the joint efforts of all parties, positive progress

[10] "White Paper: China's Foreign Aid 2014", The State Council Information Office of the People's Republic of China，p. 23.

[11] "White Paper: China's Foreign Aid 2014", The State Council Information Office of the People's Republic of China，p. 24.

[12] "White Paper: China's Foreign Aid 2014", The State Council Information Office of the People's Republic of China，p. 23.

[13] M. Weigel, "More money, more impact? China's Climate Change South-South Cooperation to date and future trends", UNDP in China Research Paper, April 2016, p. 8.

has been made in the development of China-Africa Cooperation on the Environment and the Lancang–Mekong River Environmental Cooperation Center.[14]

### 2.1.6 *NGOs are participating in South-South cooperation for ecological civilization*

Environmental NGOs in China have begun to launch projects in Southern countries. WWF China and GEI are two NGOs participating more actively in South-South cooperation projects. GEI, for example, has launched a project in Myanmar to promote regional environmental governance by helping the government of Myanmar to improve environmental governance capacity and to make innovative changes to the market mechanism, in order to promote sustainable development in investment and trade. In December 2015, WWF China released a policy document: "Economic resources corridor – the necessity of enhancing the environmental and social standards in infrastructure construction". The document aimed to identify the countries along the Belt and Road Initiatives and the African Economic Corridor as key sustainable global economic growth points through reasonable policies, plans, and project planning. In South-South cooperation, NGOs can play an important role. However, due to a lack of funds, a lack of policy support, a lack of experience, and the large number of domestic projects requiring the attention of NGOs, their participation in South-South cooperation is still very limited.

### 2.1.7 *Chinese enterprises overseas have been attaching more importance to the environmental impacts of their projects*

In recent years, Chinese enterprises have increasingly realized the importance of demonstrating corporate social responsibility. Chinese enterprises have been especially aware of the significant environmental impacts caused by forestry and the mining industry and have gradually attached more importance to protecting the local environment and sharing development outcomes with the local residents. In the operation of Sepon Mine in Laos, for example, China Minmetals Group adhered to the construction of a green mine and the implementation pit filling for reclamation; purchasing local water and electricity to make it possible for renewable resources to be used for production; evaluating possible impacts on local wildlife habitats and formulating protection plans, all guided by the principle of mutual benefit. On June 17, 2016, with the support of the State Forestry Administration of China, the Ministry of Water Resources and Forests of Gabon, and WWF, 12 Chinese enterprises invested in Gabon jointly launched the "Sustainable Forest Management Initiative". These enterprises made the joint commitment that they would obey the "Guideline for the Sustainable Operation of Chinese Enterprises' Overseas Forests" and all relevant laws, regulations, and international conventions. They intend to engage in responsible forest management, introduce a product tracking system, eliminate and prevent illegal logging, minimize the risk of forest degradation, jointly protect the environment of the forest, respect local culture and customs, actively get involved in community construction, help the poor, support public welfare and charity, and embrace and demonstrate corporate social responsibility.

Admittedly, Chinese enterprises still have a long way to go to achieve more comprehensive corporate social responsibility and, in particular, to guide their business activities under the concept of ecological civilization. Currently, most of the enterprises that embrace corporate

[14] Li Xia, Liu Ting, and Lu Diyin "Promoting South-South Cooperation to Achieve Green Development"

social responsibility in South-South cooperation are powerful, large state-owned enterprises. Private businesses, especially individual businesses, still use crude and sometimes destructive means of production due to poor awareness of environmental impacts or weak structures. All Chinese enterprises – state-owned and private – shape China's international image, so China should attach more importance to guide enterprises to follow the concept of ecological civilization and to act responsibly.

## 2.2 Challenges faced by China in implementing South-South cooperation for ecological civilization

### 2.2.1 *There is a lack of inter-ministerial coordination and unified strategic planning for South-South cooperation for ecological civilization.*

At present, China's ecological civilization-based South-South cooperation is mainly carried out by the relevant ministries, commissions, and local governments based on their respective needs. The relevant ministries and commissions have developed their policies and programs with limited coordination with each other. There is neither a national strategy nor top-level design and planning, and there is little coordination with other forms of South-South cooperation, so opportunities to join forces are lost. Also, because South-South cooperation is delivered through multiple channels, there could be confusion within partner countries and weaknesses in bilateral exchanges and program management. To this end, China needs to consider why it should carry out South-South cooperation for ecological civilization and how to advance such conduct cooperation effectively and in a coordinated way.

### 2.2.2 *Insufficient attention is paid to ecological projects and there is limited financial support.*

In recent years, China has placed greater importance on South-South cooperation for ecological civilization and has increased investment in the area, but the number of projects remains small and funding remains low. There are a number of reasons for this. With South-South cooperation, China tries to meet the needs of recipient countries to the extent possible. For some developing countries, economic development is the most urgent imperative. Most of the requests for cooperation submitted to China focus on economic and social infrastructure projects. Environmental protection projects are usually not expressed as priorities. In addition, China's style of funding projects from a single source makes coordination difficult and it makes it more difficult to change the nature of South-South cooperation.

### 2.2.3 *There is only limited participation of actors beyond the central government.*

Currently, China's South-South cooperation for ecological civilization is mainly carried out by central ministries and commissions, with some limited participation from local governments, NGOs, and private enterprises. China's resources for South-South cooperation are mainly allocated to the central government departments, and there is neither an effective institutional mechanism nor financial support to mobilize the enthusiasm of local governments and other actors. In addition, protection of the environment and nature is a relatively new area of China's South-South cooperation, and local governments, NGOs, and private enterprises still lack experience in this area. Domestic environmental protection is a major responsibility which makes it difficult for many local governments and NGOs to rally around South-South cooperation for ecological civilization. Also, the limited involvement of non-government actors is not conducive to the effective use of overall resources.

### 2.2.4 *China's South-South cooperation does not yet have an evaluation system with clear indicators for the protection of the environment and nature.*

Under China's current South-South cooperation, evaluation is still relatively weak. China has not yet established a coordinated evaluation system and indicators for South-South cooperation, especially for evaluating the impact of aid and investment projects on the local environment and nature. In recent years, MOFCOM, the Ministry of Environmental Protection, the State Forestry Administration, and other relevant ministries have issued a series of policy documents and regulations to regulate Chinese investment and guide enterprises to protect the local environment. Environmental protection is also more carefully considered than before in project feasibility studies and post-project assessments. However, the economic and social effects of projects are still considered more seriously than the environmental impacts. This is partly because partner countries emphasize economic development, but it is also related to China's lack of clear and strict evaluation systems that place sufficient importance on environment impacts.

### 2.2.5 *There is a lack of inter-disciplinary expertise.*

To effectively implement South-South cooperation for ecological civilization, China requires more coordinated expertise among experts in technology, international politics, and the specific needs of developing countries. But in China such combined skill sets are very limited. At the government level, there are people who understand international affairs, the needs of specific countries, and emerging technologies. That said, very few government officials have the combined expertise. As for NGOs, they have cultivated experts for domestic environmental protection, but these experts lack experience in international cooperation, they know little about the needs of developing countries, and they lack experience in introducing Chinese knowledge and technology to developing countries. All in all, China lacks the expertise for South-South cooperation for ecological civilization. Cultivating talents at all levels is an urgent priority.

### 2.2.6 *There is a lack of meaningful public information and effective guidance on public communication.*

China has not established a data collection and analysis system and a platform for public information about South-South cooperation for ecological civilization. Only a limited amount of information is shared with domestic and international audiences. There is also no unified and clear communication mechanism among ministries on South-South cooperation for ecological civilization. The domestic public, civil society organizations of partner countries, as well as the international community know little about the positive impacts of China's South-South cooperation for ecological civilization. Without such knowledge, it is difficult to gain broader support and a wide understanding. In addition, China's South-South cooperation is facing the challenges of language and cultural differences with other developing countries, which has led to ineffective communication with local communities.

## 3. THE EXPERIENCE OF DEVELOPED COUNTRIES IN ENVIRONMENTAL DEVELOPMENT AID

Development aid has been the major funding source for environmental capacity development, projects, and policy work in developing countries. That said, environmental support has not been as important a feature in aid as economic development, which in many cases has had negative environmental effects. For a long time, the approach in aid arrangements has been to grow now, and clean up later.

In 1992, the UN Conference on Environment and Development in Rio de Janeiro made a strong statement about changing this "environmental blind spot" of development thinking and called for integrating environmental and social objectives into economic policy-making for development. In 2015, the UN General Assembly adopted the 2030 Agenda for Sustainable Development which calls on all signatories to respect the limited carrying capacity of ecosystems when working to enhance human prosperity at home and abroad. The 2030 Agenda thus sets all on a new collective learning path.

### 3.1 Promoting environmental and development objectives through aid

Developed countries' cooperation with Southern countries on environment started around 1972 with the UN Conference on Human Environment. The 1992 UN Conference on Environment and Development in Rio de Janeiro more strongly connected development and environment and thus pushed donors into this policy area. In the 1990s, development was mainly understood as a catching-up process characterized by poverty reduction and economic development in the South. Economic globalization was considered to contribute positively to poverty reduction, and liberalized markets were an important element of this strategy. Environment was seen as encompassing local and global change which could have adverse effects on human prosperity now and in the future. The main policy approach was to strengthen environmental institutions and to fund projects that mitigated the most salient problems in cities (e.g., air pollution, waste and water management) and in rural areas (e.g., protection of forests and biodiversity).

Thus in the 1990s, a sectorial view on the meaning and operationalization of the development-environment interface prevailed. The main priority of development agencies remained economic growth and poverty reduction. Aid for environment was strengthened, but it did not become a priority nor did it change the funding strategies of donors (see Figure 3-1). Avoiding dangerous global environmental change was basically seen as the responsibility of developed economies, which entailed reducing the environmental impacts of their consumption and production patterns, but without questioning the basic technological pathways or organizing principles of globalization.

Donors from industrialized countries have been organized under the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD) since 1961. The DAC's purpose is to promote development cooperation, and to improve coordination and management of development finance for greater impact. The DAC has 29

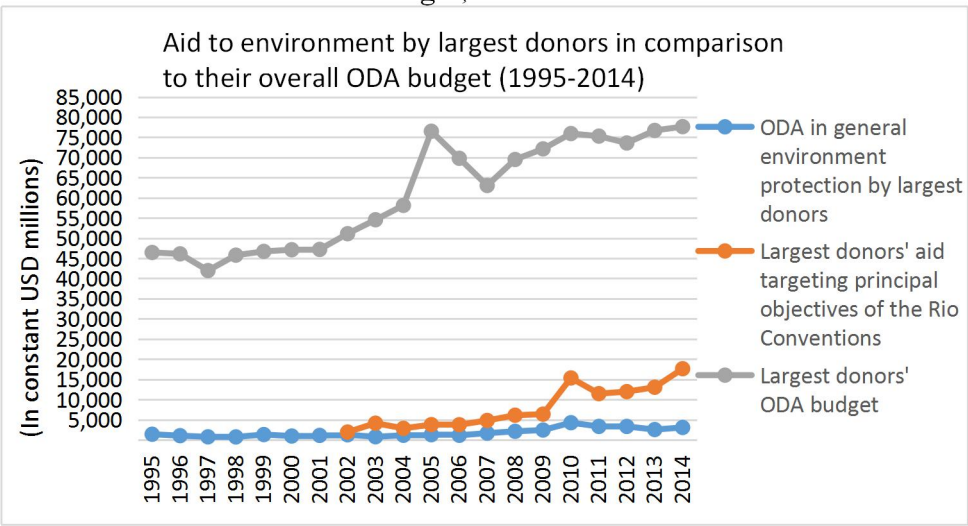
members; the World Bank, International Monetary Fund, and the United Nations Development Programme participate as observers.

The DAC has been collecting data on aid for the environment since 1995 and defines environmental expenditure as general environmental protection encompassing environmental policy and administrative management, biosphere protection, biodiversity, site preservation, flood prevention/control, environmental education/training, and environmental research.

In 1998, the DAC introduced the "Rio markers" to record support to developing countries for the implementation of the UNFCCC, the United Nations Convention on Biological Diversity, and the United Nations Convention to Combat Desertification, as the industrialized countries had committed to do. Only in 2010 a marker was introduced for adaptation to climate change (before, only climate change mitigation was recorded). A scoring system is used in which donors "mark" whether their development cooperation activities are targeting the environment or the Rio Conventions as the "principal" objective (score "2"; fundamental to the design and purpose of the activity); a "significant" objective (score "1", the objective is explicitly stated but is not the primary purpose); or whether they do not target these objectives at all (score "0").

DAC members spent USD 45,630 million on general environmental protection between 1995 and 2014 (Figure 1). This represents 2.35% of total ODA in this period. Countries with the highest *absolute* expenditures in environment-related ODA are Japan, France, the U.S., Germany, and Norway. This coincides with the group of largest DAC donors, with the notable exception of the United Kingdom, which in this subgroup is replaced by Norway. Countries that spend the highest *proportion* of their ODA on environment are Norway, Japan, France, Denmark, and Germany. To illustrate the difference between these two perspectives: Norway spent USD 4,192 million on the environment in total between 1995 and 2014. That represented 6.82% of its total ODA. The U.S., by contrast, spent the third largest absolute sum on environment with USD 6,446 million, but this represents only 1.51% of its total ODA. In general, aid expenditures have not only been low, but also very volatile over the years (Figure 3-2).

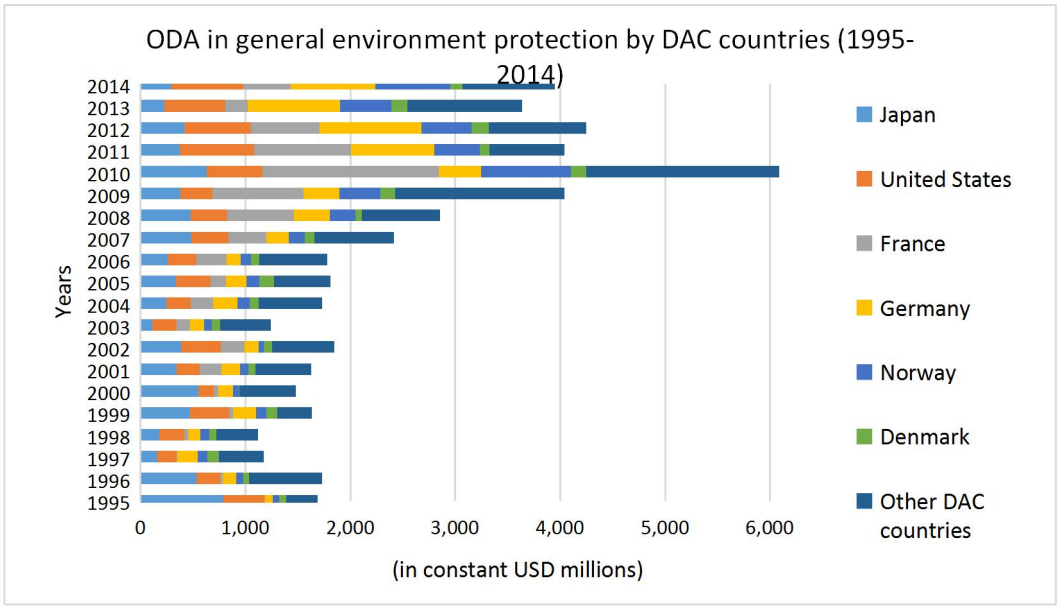
**Figure 3-1: Aid to environment by largest donors in comparison to their overall ODA budget, 1995-2014**



*Source: OECD DAC Statistics; largest donors in environment refers to absolute expenditures and includes Japan, the United States, France, Germany, Norway, and Denmark.*

The DAC defines the overall purpose of ODA as a contribution to improving *human* welfare in developing countries. The easiest way to make aid for environment compatible with ODA was to fund activities that address local environmental impacts of economic growth. This is demonstrated by an analysis of bilateral and multilateral projects funded between 1988 and 1999.[15] The same analysis shows that development projects with environmental externalities decreased while neutral projects increased. Controversy arose with regard to using ODA to prevent dangerous global environmental change – such as global warming and biodiversity loss – because developed countries would also benefit from such activities.

**Figure 3-2: ODA in general environmental protection by DAC countries 1995–2014**




*Source: OECD DAC*

In the 1990s, donor countries developed quite varied approaches to ODA.[16] Denmark, for one, moved from infrastructure and agriculture to urban projects and made an effort to mainstream environmental considerations into all development cooperation. Germany invested first strongly in water and land management, and then moved on to biodiversity and climate change (with a focus on renewable energy technologies). Japan first tied development aid to natural resource exploitation (thus linking ODA to national economic interests). Increasing protests led to some adjustment by Japan, but the share of projects causing environmental damage remained high. The U.K. was a latecomer to environmental projects in development cooperation, as was the U.S., which pursued security and commercial interests through its environmental programs.

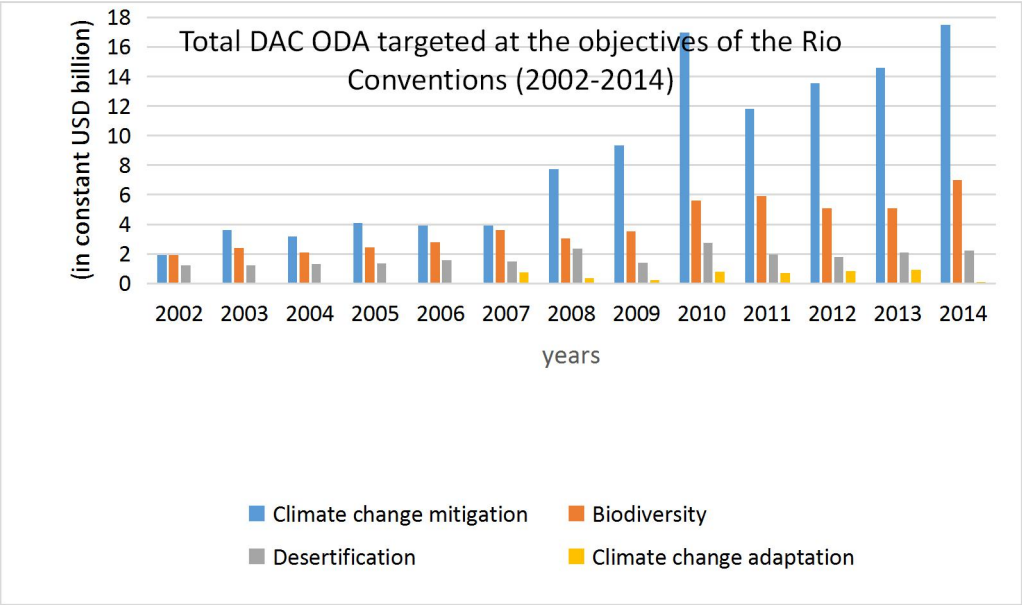
In the 2000s, the DAC data show that donors started to step up their investment with regard to the Rio Conventions (UNFCCC, UNCBD, and UNCCD). (The orange line in Figure 3-1 shows total donor expenditures for the Rio Conventions as their principal objective. Figure 3-

[15] R.L. Hicks, B.C. Parks, T.J. Roberts and M.J. Tierney, "Greening Aid? Understanding the Environmental Impact of Development Assistance", Oxford University Press, 2008.

[16] R.L. Hicks, B.C. Parks, T.J. Roberts and M.J. Tierney, "Greening Aid? Understanding the Environmental Impact of Development Assistance", Oxford University Press, 2008.

3 shows how ODA is distributed among the three Conventions). Most of these funds go to the mitigation of climate change and to the energy sector (renewable energy sources, energy efficiency) (Figure 3-3).

**Figure 3-3: Total DAC ODA targeted at the objectives of the Rio Conventions (2002–2014)**




*Source: OECD DAC Statistics*

## 3.2 What works in aid for environment and what does not?

During the last 25 years, DAC donors invested considerably in knowledge creation and human resources on environment and development. They set up specialized departments in development ministries, agencies and banks, and invested in evaluating the results of bilateral and multilateral programs and projects. Complementing this engagement, universities established graduate programs related to environment and development, and funding for research in developing countries was increased considerably. In addition, non-governmental development organizations also started to invest in this area while environmental NGOs learned to understand the social and economic dimensions of environmental protection.

When climate negotiations under the UNFCCC gathered momentum after the Kyoto Protocol entered into force in 2005, governmental and non-governmental actors had to intensify their engagement. With the Copenhagen Accord of 2009, European donors learned that emerging economies and other developing countries are important actors in global climate and environmental affairs. They stepped up their political and financial engagement accordingly (Figure 3). Together, all of these activities and investments created a solid basis of knowledge and experience in international environmental cooperation.

Three instruments can be considered relevant for environment-related development cooperation: political conditionality; environmental policy dialogue; and triangular cooperation. The first two are important because they refer to the context in which technological or financial transfers are embedded, and which can either facilitate or hinder the objectives connected to the cooperation. The third instrument, triangular cooperation, is important as it facilitates learning between Northern and Southern donors, as well as between other non-governmental stakeholders involved.

Political conditionality is an instrument often used by DAC donors to apply pressure for reform. As ODA is an important funding source, donors tend to apply green conditionality (tying aid to environmental reforms) in order to reward partner governments or as a bargaining tool to generate environmental investment. The success of this instrument, however, has been limited. Early research[17] shows that political conditionality has worked best when a government has already committed to green reforms (without strong domestic opposition), when there were no commercial interests involved on the donors' side, and when there were no alternative funding options (i.e., it required strong coordination and agreement among donors). Furthermore, donors had to ensure a long-term commitment and sufficient funding because institutional change is not achieved rapidly.

Climate finance is an example of the slow pace of change. Offers by donors to introduce innovative technologies (i.e., renewable energy) or reforms did not automatically unleash massive change, due to technological path dependency and incentive structures that favoured conventional technologies. Donor support was often too weak and short-term to encourage recipient governments to intervene in markets and provide "policy rents" for investments in sustainability while withdrawing rents from polluting investments.[18]

Environmental policy dialogue is an alternative or complementary instrument that aims to strengthen public, political, and civil society actors in the partner country. The rationale behind this approach is to raise awareness of environmental issues in all areas of society. The success of environmental policy dialogue requires a long-term commitment by donors and partners, recognition of the important role of NGOs as change agents, long-term investment in capacity development (particularly technical and analytical knowledge), and a deep understanding of local political and economic contexts. This approach includes placing environmental protection on the agenda of other policy fields by emphasizing its social and economic benefits.

It is clear that both approaches – political conditionality and environmental policy dialogue – require a broad and deep network of cooperation that goes beyond conventional aid and the provision of technological solutions to specific environmental problems. Indeed, cooperation needs to include the sub-national level (i.e., districts and municipalities) in order to support bottom-up approaches adapted to specific local conditions. Participants at the sub-national level would include local governments, community associations, farmers, and civil society organizations. At national level, it is also important to go beyond government, as environmental objectives cannot be implemented without the active support of the private sector, science, and civil society. Additionally, advocacy and education are fundamental for expanding environmental awareness in the private sector and among the public at large.

Finally, triangular cooperation (cooperation that typically involves a Northern and Southern donor and a Southern recipient) is mentioned in the 2030 Agenda and in the Addis Ababa Action Agenda as an instrument for implementing the Sustainable Development Goals. According to a survey by the OECD DAC, the value of triangular cooperation is often characterized as "working in horizontal partnerships, building trust, learning among all partners, strengthening networks, and increasing intercultural understanding", and as an instrument that helps partners to "share knowledge, learn together, facilitate capacity

[17] D. Fairman and M. Ross, "Old Fads, New Lessons: Learning from Economic Development Assistance", in: R. Keohane and M. Levy, (eds.). "Institutions for Environmental Aid: Pitfalls and Promise", MIT Press, 1996.
[18] A. Pegels, (ed.). "Green Industrial Policy in Emerging Countries", Routledge, 2014.

development, collaborate, and jointly create solutions to development challenges".[19] This is supported also by the experience and activities of the UN Office for South-South Cooperation. DAC donors engage in this form of cooperation because capitalizing on the expertise and technology of Southern partners, as well as the cultural similarities, has proven effective. Furthermore, cooperative engagement in joint projects promotes mutual understanding. This is especially valuable when promoting learning for sustainability as changes need to be achieved within very short timeframes.

### 3.3 New approaches are required for implementing the 2030 Agenda

Twenty years after the first Rio Conference, the limitations of the sectoral approach to environment and development – and economic policy – became apparent, in rich and poor countries alike. Despite some improvements regarding some types of pollution, many environmental trends continued to proceed in the wrong direction.[20] Developed countries did not manage to sufficiently dissociate their economic growth from consumption (and the environmental degradation it causes), while in developing countries, the goal of catching-up was often associated with significant environmental consequences that became difficult to control, not to mention social and economic costs. Focusing exclusively on local reform was insufficient because cumulative global effects have taken us beyond certain safe resource-use thresholds, and because the impacts of global warming occur even in regions that hardly contributed to the phenomenon.

The 2030 Agenda reacts to this assessment by adopting goals that refer in an integrated manner to the social and economic dimensions of human prosperity, its dependence on the environment and on ecosystem functions, and by emphasizing common but differentiated responsibilities for the global commons. The Sustainable Development Goals are conceived as a horizontal network of targets related to several goals. This reflects the indivisibility between goals and the interdependencies among them which have to be taken into account by implementation strategies.[21]

Promoting the 2030 Agenda in domestic policies as well as in external relations, including South-South cooperation, offers opportunities for closing the credibility and coordination gap and for making policies more effective.

Under these circumstances, greening development takes on a different meaning which was shared in interviews with Chinese institutions and partners in developing countries. Chinese interviewees stressed the need to substantially improve the coordination of economic, environmental, and social policies among responsible Chinese and partner country institutions. The goal should be to establish criteria for Chinese South-South cooperation which clearly take into account the interdependencies among economic, social, and environmental objectives; to improve communication; and to take into account the demand

[19] OECD DAC, "Dispelling the myths of triangular co-operation – evidence from the 2015 OECD survey on triangular co-operation". Paris, OECD, 2016.

[20] J. Rockstroem et al., "Planetary boundaries: Exploring the safe operating space for humanity". *Ecology and Society*, Vol. 14, No. 2, 2009.

[21] M. Nilsson, D. Griggs and M. Visbeck, "Map the interactions between sustainable development goals". *Nature*, 2016, Vol. 534, p. 320-322.

side when defining objectives, projects, and measures. These positions are consistent with the results of more recent evaluations of environmental development cooperation.[22]

Other emerging economies are also taking steps toward adopting an integrated approach in their South-South cooperation. The Network of Southern Think Tanks (NeST) recently developed a first conceptual framework for monitoring and analyzing South-South cooperation.[23] The framework notes two key aspects to be considered when promoting "inclusive partnerships, citizens' protection, and empowerment": "It is the responsibility and remit of each partner country to set its labour, land, and environmental standards, but if these frameworks are missing in the recipient country, the provider of South-South cooperation needs to follow at least the standards it has set up for itself. Partner countries need to balance considerations of economic growth with protection and sustainability of the environment". [24]

### 3.4 Conclusions about Chinese South-South cooperation for ecological civilization

Sustainable development cannot be achieved if economic development is not integrated with social and environmental objectives from the start, at the strategy stage. This is valid for all countries, North and South. Moreover, in today's globalized world, local effects cannot be separated from global effects. Therefore, the integrated approach also needs to consider transnational effects of domestic policies, and pursue sustainable development in all areas of international relations. As the concept of ecological civilization is very similar to the concept of sustainable development, these considerations also apply to the implementation of ecological civilization within China and in China's international relations, including South-South cooperation.

The following conclusions can be drawn from the analysis in this chapter. These conclusions refer to the changes needed within DAC member countries and to the policy recommendations described in more detail in Chapter 6:

- The design of development cooperation strategies requires coordinated strategic planning to integrate environmental, social, and economic objectives from the start in order to achieve coherent results and avoid environmental harm. Such coordinated strategic planning should also consider the activities of other individual ministries and enterprises, in order to avoid incoherence in policies and activities, as well as gaps in credibility.

- Increased funding is needed to promote cooperation on environmental issues and the implementation of the Rio Conventions. Such funding, however, will not be effective without strong environmental institutions, laws, and incentives that embed and promote necessary reforms and change processes.

- Environmental institutions need to be strengthened in order to enable them to enforce environmental laws and regulations, and to demonstrate the benefits that accrue in the short and the long term. Environmental capacities also need to be strengthened in other policy

[22] IEG. Environmental Sustainability – An Evaluation of the World Bank Group Support. Washington DC: World Bank Group, 2008 and S. Morrisson-Metois and H. Lundgren. Forests and sustainable forest management. Evaluation evidence on addressing deforestation to reduce $CO_2$ emissions. Paris: OECD DAC Network on Development Evaluation Secretariat. OECD Evaluation Insights No. 11, April 2016, OECD.

[23] N.A. Besharati, N. Moilwam, K. Khunou, and O. Garelli Rios, (eds.) "Developing a Conceptual Framework for South-South Co-operation", Working Document, Johannesburg: SAIIA, 2015.

[24] *Ibid*., 41

fields, including transportation, economic policy, housing/urban development, and energy. Such capacity building will help to improve coordination among policies and ministries.

- Cooperation with non-governmental and sub-national actors at the local level is fundamental for raising environmental awareness and for calling attention to the need to change economic development pathways.

- Effective international cooperation in environment requires: (i) adequate and long-term external funding by donors; (ii) plans for stepping up domestic funding; and (iii) investment in evaluation, research, and knowledge creation, and in development cooperation training for the academic sector at large in donor and partner countries.

## 4. DEVELOPING COUNTRIES' DEMANDS FOR ECOLOGICAL CIVILIZATION

China's South-South cooperation is demand-driven. In recent years, the demands of developing countries toward achieving sustainable development are adjusting to changing circumstances. Understanding the partners' views and the demands on cooperation with China, and to provide corresponding assistance, is of great importance for China as it identifies its priorities for South-South cooperation for ecological civilization and seeks ways to improve outcomes. This chapter summarizes the demands of developing countries' in South-South cooperation for ecological civilization. The summary is based on the analysis of questionnaires and direct feedback from the Nairobi seminar which included participants from 20 developing countries across Africa, Southeast Asia, and Latin America,. This information lays a foundation to identify the areas where China has comparative advantages on the supply side.

This analysis notes that stakeholders (except for GGGI, accounting for seven questionnaire responses) represented a diversity of organizations and countries. Therefore, this information should only be considered as one input into forming policy recommendations.

### 4.1 Common developing country viewpoints on ecological civilization

Throughout the questionnaire and workshop exercises, a number of trends related to ecological civilization challenges and opportunities were apparent. Although a diversity of issues was raised, there were a number of common threads:

- Although most countries understand that environmental preservation and protection of natural resources are important, they do not distinctly recognize the opportunity for green growth (i.e., the fact that economic growth can be achieved in ways that also promote environmental sustainability and social inclusiveness).

- Most countries recognize that the development of clean energy technologies creates jobs and can facilitate progress toward achieving the Sustainable Development Goals. They also recognize that China is an important partner in providing these technologies, as well as the policy and technology infrastructures associated with them.

- Although challenges to developing countries' ecologies are diverse, there is clear agreement that deforestation, soil and water degradation, industrial pollution, and bad city planning are issues of great urgency as they are ecological issues that directly affect the economy and the quality of life of citizens.

- Most countries agree that cooperative programs with China involving technology transfer, investments in renewable energy, and capacity building for their policy-makers and decision-makers, is the best way that South-South cooperation can have a positive ecological impact. It should be noted that customized programs will be required as each country faces unique as well as common challenges.

### 4.2 Challenges with South-South cooperation for ecological civilization

**4.2.1** ***Limited awareness of ecological civilization:*** The Chinese concept of ecological civilization does not yet enjoy wide global visibility compared to sustainable development. Further communication is required about its role, and greater efforts are required to connect the needs of developing countries with the concept. Meanwhile, as ecological civilization is a

concept that belongs to Chinese philosophical tradition and emerged from recent experiences of rapid economic growth and its environmental impact, it is clear that its application to other countries requires that the specific national conditions and localized needs of developing countries need to be paid special attention.

**4.2.2** ***Barriers to public and private investments on environment projects:*** Economic and political issues in many developing countries have a negative impact on the investment worthiness of long-term environment projects. Some of the issues are technology-based, such as a lack of local renewable energy assessment data. Other issues are political in nature but nevertheless translate into high risk for investors, such as the stability of regimes. Cooperation should address these issues through mutually agreed technology and policy solutions that enhance understanding on both sides and quickly lead to reduced project financing risk.

**4.2.3** ***Accountability of Chinese enterprises in environmental protection:*** China's South-South cooperation for ecological civilization and green growth necessarily involves private sector projects in other developing countries. These are primarily large capital and infrastructure projects that are so far only sporadically engaged in the process of implementing green policies. Chinese companies and programs are relatively new to global cooperation from an ecological perspective, and while feedback about effectiveness and economic impact is generally good, blowback from investments in brown industries and local ownership issues must be mitigated. This can be achieved through enhanced training on recipient country issues and strengthened stakeholder engagement.

### 4.3 Demand of developing countries for South-South cooperation for ecological civilization

Questionnaire and workshop feedback concluded that there are number of policy and technology sectors within the context of South-South cooperation that can strengthen green development across a wide range of developing countries. The following sections have been separated into policy and technology recommendations, however, it should be noted that these two categories are not mutually exclusive. In fact, the deployment of technology solutions requires that appropriate policy infrastructures are in place.

#### 4.3.1 *Policy cooperation*

- Knowledge sharing and capacity building programs are required for policy-makers and decision-makers in other developing countries to advance green growth policies, technologies, and the concept of ecological civilization. The Task Force noted that a large number of respondents in fact had little understanding of the Chinese definition ecological civilization. This should be addressed by China through any knowledge sharing and capacity building programs.

- Strengthen capacity building on legal, financial, and technological issues, with the aim of strengthening local structures, enhancing the investment worthiness of large capital projects, and reducing the risk of financing these projects. Cooperation activities would include: (1) expert exchanges with policy-makers and other stakeholders on China's best practices on legal infrastructures supporting accelerated deployment of green capital projects; (2) knowledge sharing and expert exchanges on innovative financial models that overcome traditional barriers to green capital projects; and (3) technology policy cooperation which utilizes China's existing data and experience to prime and accelerate

green project markets, and enhance the investment worthiness of projects.

- Environmental protection and enforcement policies in the areas of deforestation, biodiversity conservation, water management, and pollution were emphasized by the respondents.

*Development of policies regarding accountability of Chinese corporations operating in other countries.*

While China strives to ensure investment in infrastructure projects in other developing countries is low-carbon and green, many of our survey responses have shown that this is especially important with regards to accountability and enforcement. Respondents from Pakistan stressed that, so far, environmental concerns and compliance with environmental laws have not been incorporated in the CPEC.[25] They also noted that more in-depth cooperation is necessary with regards to Pakistan's legal framework, implementing authority, early-stage decision-making, and localized ecological solutions. Interviews in Kenya showed that even in countries with demanding environmental laws, interest in expanding the transport and energy infrastructure is so strong that governments do not insist on strict compliance. A study on the Bui Dam in Ghana built by Sinohydro corroborates this impression.[26] This means that if China wants to align its South-South cooperation with ecological civilization, it needs to: (1) enforce compliance with environmental laws and regulations for Chinese enterprises' activities abroad; and (2) support partner governments in strengthening their own environmental institutions in order to promote compliance with existing environmental laws and regulations.

Meanwhile，China also needs to strengthen the capacity of Chinese companies and investors to navigate sensitive political environments in other developing countries (for example, through strengthened stakeholder engagement capacity). Again, this view was shared especially by African stakeholders, who cited long and strained relationships with many Western countries and organizations that are unfamiliar with powerful local sentiments and concerns about the history of colonialism in Africa, and the implications of neocolonialism and its association with ownership, shareholder control, and territoriality. Chinese companies and organizations with operators in Africa who are unaware of these nuanced on-the-ground dynamics risk losing funds and spending time embroiled in local politics that could compromise even the best-intentioned environmental projects.

*Build awareness of best-practice models regarding investment and aid projects in Africa*

As a whole, our assessment of the China-Africa relationship on ecological civilization, is that: (1) China is responding rapidly and reliably to foreign aid and investment requests from Africa; (2) China is seen to be investing a lot of resources into capacity building before, during, and after aid and FDI activities; (3) China is generally considered a responsible

[25] The China-Pakistan Economic Corridor (CPEC) is a 3,000-kilometer network of roads, railways, and pipelines across Pakistan to China. As one of the six economic corridors under China's ambitious Belt and Road Initiative, CPEC has been made part of China's 13th Five-Year Plan. Due to rampant flooding in the CPEC region, in 2016 senior Pakistan officials called for making an action plan to green CPEC to reduce environmental degradation and secure Chinese investment.

[26] O. Hensengerth, "Interaction of Chinese institutions with host governments in dam construction: the Bui Dam in Ghana", in: W. and O. Hensengerth (eds.) "Evolution of Dam Policies", Springer, 2014, p. 229–270.

partner that respects local and international laws and regulations on environment, and respects generally accepted business practices, particularly corporate social responsibility; (4) China's offshore response is fast and effective; and (5) China is comparatively well-structured and organized both domestically and abroad. Basically, China is increasingly considered to be a trusted and respected development partner.

However, deeper discussions revealed that more needs to be done with regards to stakeholder engagement and the adaptation of capital projects to more appropriately address the needs of African countries and individual communities. Interviews with stakeholders from a number of African countries, including Ethiopia, Uganda, Niger, South Africa, Nigeria, Kenya, Sierra Leone, Zambia and Zimbabwe, indicated that social inclusion and community engagement were essential for deploying successful capital projects in Africa. This recommendation advocates for training, education, and social assistance – relocation subsidies, for example – to be included in business plans and financial modelling for large capital projects.

The KenGen Geothermal power plant in Kenya serves as an example of best practice, where housing for displaced communities, consideration for local wildlife, and training and education funds were factored directly into initial project planning and design. This initial investment in both the local community and staff bolsters long-range stability, innovation, and growth in otherwise politically sensitive communities.

Initial investment in community training and education programs is also a good way to ensure the availability of a local labour force in the future. Whereas in many developing countries, such as China and India, large capital projects result in long-term jobs in operations and maintenance, the lack of appropriate education in Africa results in pressure on local populations as community members entering the workforce are forced to relocate.

Therefore, investing in appropriate education for communities surrounding capital projects ensures that local people have the right skills to find employment related to the project in the short and long term. This is especially relevant to long-lifespan and internal rate of return on projects such as those in renewable energy, which can last 30–50 years or longer.

*Focus cooperation on environmental protection, enforcement of regulations, and climate change mitigation/adaptation, specifically deforestation and water and soil degradation*

Responses by country stakeholders across diverse regions (Latin America, Africa, and Southeast Asia) indicated that deforestation and soil degradation were challenges shared by the majority. The important of deforestation and soil degradation is directly associated with economic reliance on agricultural and commodities in many developing countries. Many respondents stressed the importance of cooperation on policies and technologies related to agricultural land use and the goals of increased productivity and higher efficiency, water vs infrastructure development, as well biodiversity conservation.

This can be achieved by ensuring China's South-South cooperation also includes strong bilateral government cooperation, in addition to technology and policy cooperation at the local level. For instance, Peru's response illustrated the understanding of ecological civilization as a Chinese concept, and has recommended the implementation of bilateral action plans such as an "Action Plan on Prevention and Control of Air Pollution" and an "Action Plan on Prevention and Control of Water Pollution" to facilitate environmental aspects of Sino-Peruvian cooperation.

### 4.3.2 *Technology sectors*

Technology cooperation in a number of environmental sectors and associated sub-sectors was identified as a high priority among developing country respondents. More in-depth communication and analysis with governments and stakeholders is necessary to clarify specific sub-sector cooperation interests.

*Renewable energy.* Respondents indicated that renewable energy was among the top technology priorities for South-South cooperation for ecological civilization, with solar and wind energy seen as offering the greatest benefit. UNDP research[27] concurs with the observation that renewable energy is a vital area for cooperation. Besides direct technology transfer cooperation, programs between technical institutes would prime the market and accelerate deployment opportunities.

Priming markets for accelerated deployment of renewable energy could include cooperation with technical institutes on renewable energy codes and standards, localized power purchase agreements, community solar project structures, and other initiatives. The investment worthiness of projects can be enhanced through low-cost technology cooperation such as support around resource assessments, best practices on wind farm configurations, and best practices on integrating renewable energy into existing infrastructures.

Furthermore, China's geographic and climactic diversity enables more direct sharing of local policy support regarding accelerated renewable energy and energy efficiency. This includes, for instance, climactic data such as ambient humidity impact on solar efficiency, and airflow differential data relating to wind farm configurations.

*Energy efficiency.* China also specializes in industrial energy efficiency (IEE), and although many developing countries lack the type of manufacturing infrastructure that China is currently adapting to greater efficiency methods, many Chinese practices can be transferred to power sectors in developing countries. This would offset huge amounts of carbon emissions and pollutants related to coal-fired power plants. Cooperation on IEE technologies can also help offset carbon emissions from highly energy-intensive local industries such as iron, cement, and steel production, as well as agriculture and mining industries. UNDP research also regards energy efficiency is a vital area for technology cooperation.

[27] M. Weigel, "More Money, More Impact? China's Climate Change South-South Cooperation to Date and Future Trends", UNDP research paper, 2016.

*Green transport.* The transportation sector in developing countries has been identified as having a negative impact on air quality, energy intensity, and quality of life due to urban congestion. While few countries highlighted cooperation on electric vehicles (EVs) and EV infrastructure as a priority, many want to cooperate on technologies offering higher fuel-standards resulting in lower carbon emissions per vehicle, as well as on public transportation

Box 4-1 The China-Pakistan Economic Corridor (CPEC)

CPEC is a notable case study of a country stakeholder experiencing green development challenges, and how calls for green applications could secure Chinese investment. As one of the six economic corridors under China's ambitious Belt and Road Initiative, CPEC has been referenced in China's 13th Five-Year Plan. Pakistani officials predict that the project will result in the creation of upwards of 700,000 direct jobs from 2015 to 2030, and add 2 to 2.5 percentage points to the country's annual economic growth. However, most of the road network is being constructed in the Indus River basin where the country has suffered much from annual floods causing thousands of fatalities and billions of dollars of losses. After the study tour to China in June 2016, a senior governmental delegation from Pakistan called for making an "Action Plan to Green CPEC" to reduce environmental degradation and secure Chinese investment.

solutions.

*Climate mitigation/adaptation technologies.* Responses from a diverse range of countries identified climate mitigation technologies as an area of high need, specifically with regards to flood protection and the prevention of biodiversity loss. However, even these sub-sectors require greater resolution in determining specifically how cooperation can achieve the greatest impact. For example, in Panama, prevention of flooding and biodiversity loss is a water management issue related to the sustainable management of the country's 52 watersheds. Cambodia, however, cited flooding as an urban planning issue requiring greater cooperation on mitigating unstructured urbanization and rapid population growth.

China has great experience in implementing diverse sustainable cities solutions across a wide variety of areas, including floodwater management under the Chinese concept called "sponge cities". The sponge cities concept is characterized by new and retrofit city planning safeguards that are designed to mitigate flooding and manage floodwater collection through a combination of floodwater utility systems, municipal services, and floodwater remediation technologies.

*Waste management.* The area of waste management was highlighted as an opportunity for cooperation and clean investment by a variety of countries in Asia, along with Uganda and Peru. They specified the need for best practices in policy-making and technologies for waste management services and systems, including wastewater treatment works, solid waste disposal, and solid waste management. The need for progress in waste management was also raised within the context of urbanization, suggesting that waste management opportunities are evident the municipal waste sector.

Due to China's strong experience in urban management – shaped largely by its sheer number of municipalities – China can share best practices and services as well as applicable

technologies and case studies about waste management. An example of an interesting pilot project is in Shandong Province where waste heat from a large aluminum plant is used to process municipal waste into biomass and ecologically friendly compost.

*Agricultural production.* Given the importance of agriculture to the economies of many developing nations, respondents indicated that cooperation on innovations in land use, energy efficiency, and technologies for the agricultural sector was vital. Specifically, stakeholders highlighted the need for scalable policies and technologies that could improve agricultural production on existing farmland so that more space would not be needed.

## 5. ANALYSIS OF CHINA'S PRIORITY AREAS FOR SOUTH-SOUTH COOPERATION FOR ECOLOGICAL CIVILIZATION

As a large developing country with a vast territory and diverse ecosystems, China has nearly four decades of experience in industrialization, modernization, urbanization, and internationalization. The country has accumulated a wealth of experience in balancing economic growth and environmental protection, so it can provide other developing countries with innovative ideas, pathways, and solutions that differ from those resulting from North-South cooperation. Over the years, China has been providing assistance according to the needs expressed by other developing countries, focusing on infrastructure construction while seldom applying its environmental protection expertise. This chapter attempts to identify priority areas for South-South cooperation for ecological civilization in accordance with the global Sustainable Development Goals. The objective is to promote the organic convergence of developing country needs and Chinese aid. This would enhance the effectiveness of assistance and help countries learn from each other on the road to ecological conservation.

### 5.1 Criteria for identifying priority areas for China to promote South-South cooperation for ecological civilization

**5.1.1** ***Related to the global SDGs.*** The Sustainable Development Goals adopted by the United Nations General Assembly[28] are widely accepted by the international community, as a guide for development for the next 15 years. Compared with the Millennium Development Goals, the Sustainable Development Goals are more extensive as they comprise economic, social, environmental, and political goals. For the majority of developing countries, it is not easy to achieve these goals as scheduled. Among the 17 goals, the 6$^{th}$, 7$^{th}$, 12$^{th}$, 13$^{th}$, 14$^{th}$ and 15$^{th}$ goals[29] are directly related to environmental protection, encompassing agriculture, food security, sustainable industrialization, and urbanization. The concept of ecological civilization put forward by China is consistent with the Sustainable Development Goals. While advancing South-South cooperation, China should also help developing countries to achieve ecological civilization. China has made great strides in achieving the Millennium Development Goals and has gained experience and started to adopt appropriate policies for achieving a balance in economic and social development, and for paying more attention to the welfare of vulnerable groups, which is an important example for developing countries.

**5.1.2** ***Adaptable for countries at different stages of development and with different development needs.*** Due to the constraints of technology and talent, it is often difficult for developing countries to effectively use technologies and equipment transferred from developed countries. In addition, sophisticated environmental technology and equipment is often expensive, which poses a financial burden for many developing countries and reduces the amount of public funds available for national development. Finally, in order to successfully apply the sophisticated technologies and development models of the developed world, China must face the challenge of customizing technology so it is effective locally.

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[28] United Nations, "17 Sustainable Development Goals", 2016. http://www.un.org/sustainabledevelopment/sustainable-development-goals/

[29] These five goals are: to ensure the availability and the sustainable management of water and sanitation for all; to ensure access to affordable, reliable, sustainable, and modern energy for all; to take urgent action to combat climate change and its impacts; to conserve and sustainably use the oceans, seas, and marine resources for sustainable development; and to protect, restore, and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Having gained such experience during its development process, China can provide targeted technologies to meet other developing countries' requirements for applicability, cost performance ratio, and customization.

**5.1.3** ***Providing systematic solutions that balance livelihoods and the environment.*** Ecological civilization is a systemic process. In recent years, international research on the effectiveness of development assistance demonstrates the mutual influence among environmental protection, emissions reduction, and other social goals. The focus has moved from specific targets to more systemic overall development goals. China has started to make effective progress in these areas, especially in the process of regional economic development. It takes into account the protection of different natural environmental systems, and provides support for traditional livelihoods and new economic models of local communities. China still needs to learn more about this advanced concept, but it can take the lead to share its experience of combining practical actions with advanced theories with the developing world.

**5.1.4** ***An innovative technology and development model.*** Leapfrogging development means that developing countries do not need to follow the development paths of developed countries. They can jump directly from their current technological state to a more contemporary and sophisticated reality. In African countries, for example, people rarely used landline telephones and instead leaped directly to the wide use of mobile phones.[30] Similarly, with the continuous decline in the prices of renewable energy and the development of distributed power, it is possible for developing countries to skip the traditional grid pattern of a centralized power supply and instead move to a system that primarily depends on decentralized clean renewable energy. In addition, innovations in mobile Internet and financial systems also provide a new investment and financing model for clean technology and ecological civilization. With the rapid development of big data and Internet technology, developing countries must try to learn more advanced concepts for energy development in the future to cope with climate change. They should consider China's experience in the development of energy systems, as they will benefit from the contribution of China's huge market to the reduction of the cost of renewable energy.

**5.1.5** ***Environmentally friendly infrastructure-related technologies and investment.*** One of China's important experiences in its rapid development is the great importance it has placed on infrastructure construction related to economic development. From transportation to hydropower, and then to health care, education, and other social services, infrastructures that the Chinese government or Chinese have supported are almost everywhere in developing countries. Well-designed infrastructure that supports environmental protection can help achieve the goal of ecological civilization. Under South-South cooperation, China has made environmentally friendly infrastructure investment a priority area based on its own experience. This was also one of the major topics of the G20 Summit that was held in China in September 2016.

## 5.2 Priority areas for China to promote South-South cooperation for ecological civilization

Based on the above, we can evaluate some of China's technological advantages for South-South cooperation for ecological civilization to identify priority areas and opportunities. Five priority areas have been identified: wastewater and water resources management; ecosystem

[30] CCTV website, 2016. http://finance.cctv.com/20061205/101081.shtml

protection; urbanization; clean energy and air quality; as well as adaptation to climate change. This section analyzes China's advantages and opportunities for providing assistance to developing countries.

### 5.2.1 *Analysis of the priority areas*

*Wastewater and resources management*

Currently, 80% of the world's untreated sewage is being discharged directly into the sea, and the problem is particularly serious in developing countries.[31] Restricted by economic and technical conditions, many developing countries have limited capability to construct water supply, drainage infrastructure, and sewage treatment projects. China has made much progress in the development of regulations and standards on drinking water, standardized construction, water treatment, and clean water supply. These accomplishments can serve as a model for other developing countries and be an important feature of China's foreign aid.

*Sewage disposal*

China is competitive among developing countries in terms of water pollution control technology. By introducing foreign-advanced technologies and learning from them, China has gradually reached an advanced level of sewage treatment, has accumulated rich experience in the construction and operation of sewage treatment infrastructure, has acquired a variety of low-cost, efficient technologies and equipment with independent intellectual property rights, and has cultivated a number of leading environmental protection enterprises with their own brands and core technologies. China's urban sewage treatment capacity has been expanded from 120 million tons in 2010 to 182 million tons in 2015. Ninety-one percent of urban sewage is now treated and China now has one of the best sewage treatment capacities in the world.[32] Some rural areas have also deployed sewage treatment technology. Tonglu County of Zhejiang Province, for example, promoted contiguous remediation in rural areas under government leadership. The project was based on local conditions and needs, and is a good model for improving the sewage treatment capabilities of rural areas.

**Box 5-1 Tonglu County's effective model of rural sewage treatment[33]**

In 2009, Tonglu County launched an ambitious rural sewage treatment initiative, adopting three strategies for rural sewage disposal, namely: artificial wetlands, unpowered anaerobic treatment, and small biogas digesters. In 2012, Tonglu became the first county in Zhejiang Province to deploy sewage treatment projects covering the entire rural area. The initiative included nearly 2,000 decentralized sewage treatment projects, a sewage pipe network of 2,500 kilometers, and more than 70,000 inspection wells. The initiative not only meant that sewage would be treated, it also contributed to the greening of villages and the beautification of the environment.

Effective long-term management is the key to ensuring the project's enduring positive impacts. Over the past three years, in accordance with the requirements of "full

[31]Du Ming, "Promote China to share sewage treatment technology and experience with the world", *Economic Daily*, Fifteenth edition, April 7, 2015. http://finance.cctv.com/20061205/101081.shtml

[32] "China Environmental Status Bulletin 2015"

[33] http://www.zjjs.com.cn/n18/n84/n85/n103/n105/c346254/content.html, October 26, 2016.

coverage of villages, a wide range of beneficiaries, normal facility operations, and effective pollution control", Tonglu County adopted the "Four New" mode to ensure the long-term operation and good performance of rural sewage treatment projects.

*Drinking water safety*

Rural drinking water safety has been a difficult challenge and a defining feature of the country. Over the years, China has accumulated a wealth of experience in balancing urban and rural development, multi-channel financing, and the standardized construction of rural drinking water projects. During the 12th Five-Year Plan period, China solved the drinking water safety problem of nearly 300 million rural residents, including 40 million rural teachers and students. The proportion of people benefitting from the rural centralized water supply rose from 58% at the end of 2010 to 82% at the end of 2015; tap water penetration rate reached 76%; and the quality of water was improved significantly.[34] At the same time, China has relatively mature water purification technology and has witnessed the rapid development of efficient flocculent technology. Its ultra-filtration membrane water treatment technology, and new materials and technologies for the removal of fluoride from drinking water, are world class which positions China to help other developing countries to improve the safety of drinking water.

*Resource management in key rivers*

In addition to the management and treatment of rural and urban sewage, China also places great importance on water resource management and pollution control work at the river basin level. China has implemented the most stringent source protection system, compensation system, and accountability system. And it has established long-term environmental protection systems featuring effective use of markets and incentives to promote environmental protection. Also, China has launched a pilot project on inter-provincial watershed ecological compensation in the Xin'an River Basin which has achieved good results in watershed management. Eighteen provinces have implemented the watershed ecological compensation mechanism. Meanwhile, through the effective combination of flood prevention and land use approaches – and by setting up a professional management organization for flooded areas – China has already made important progress in flood prevention and relief, and has coordinated the management of environmental protection and agricultural production.

*Ecosystem protection*

The Chinese government places great importance on environmental protection and biodiversity conservation. By the end of December 2015, China's forest coverage rate had increased steadily, rising from 16.6% at the beginning of this century to nearly 22%[35]; the National Committee on Biodiversity Protection was established and the "Biodiversity Protection Strategy and Action Plan (2011–2030)" was released; and populations of some rare and endangered species have been gradually restored. China's experiences in

[34] http://www.gov.cn/xinwen/2016-01/11/content_5031970.htm, October 26, 2016.

[35] From the report of the environment minister, Mr. Ji-ning Chen, "Improving environmental quality as the core and making up the ecological environment shortcomings", April 19, 2016.

environmental protection include its establishment of a long-term compensation mechanism for environmental benefits, and its vigorous promotion of projects that convert environmental challenges from "dilemmas" into "win-win" situations.

*Desertification control*

China has done a lot of work in the field of sand fixation with plants, sand control by engineering, chemical sand fixation, water conservation, and the development of degraded land. China has also conducted moderate development, and has advanced a number of agricultural and animal husbandry technologies. In the field of agriculture, China mainly launched water diversion projects for flushing sand dunes, farmland transformation projects, rice cultivation with sand lining membrane, saline alkali land improvement, greenhouse cultivation and breeding, plastic film mulching cultivation, and the development of soil-less culture technology. In animal husbandry, China mainly launched initiatives on reasonable grazing, grazing based on the state of grasslands, pasture improvement, and the development of greenhouse cultivation technology. The integrated farming and animal husbandry technologies mainly include the "small biological economic circle" technologies and small watershed management technologies. These experiences can be seen as models for South-South cooperation.

*Ecosystem protection and recovery*

The Chinese government has vigorously implemented eco-restoration projects such as the protection of natural forests, restoring farmland to forests, and restoring grazing lands to grasslands. Since 2005, more than 360 billion yuan has been spent in natural forest protection, effectively protecting about 1.05 million square kilometers of natural forest. China's forest area has increased by 100,000 square kilometers since 2005. Grassland coverage in key areas has increased by 11%; more than 2,800 $km^2$ of degraded wetlands, including mangroves, has been restored; and 720,000 $km^2$ has been protected from soil erosion.

*Ecological space management and control*

China encourages the establishment of environmental red line control systems. By delineating and strictly adhering to the upper limits of resource consumption and the bottom line of environmental quality and protection, China has limited development that harms the environment. China can share this knowledge in the context of South-South cooperation for ecological civilization.

*Cities and urbanization*

Urbanization is, to a large extent, the dominant trend in the development of civilization, as it tends to mark a country's modernization. However, urbanization also produces environmental challenges, and thus needs to be integrated with the concept of ecological civilization. Most developing countries are still at the early stages of urbanization, and this leaves great opportunities for China to advance South-South cooperation in this area.

Since 2001, China's urbanization rate increased by approximately one percentage point per year. In 2015, urbanization reached 56% and 22 cities each now have more than 5 million residents. In linking urbanization and ecological civilization, China learned a great deal from international experiences in earlier years, and then made changes according to its own conditions and characteristics, including its development programs for low-carbon cities. It

has nurtured its industrial capacities with comparative advantages, while gaining experience. All this has set a solid foundation for China's South-South cooperation in urbanization.

*Urban infrastructure construction*

Through the development and improvement of the urban infrastructure network, China can provide better public services, and support innovation and power for economic development. For developing countries, the Chinese government's experience in urban infrastructure construction including water, electricity, roads, gas, and network construction can be a key element of South-South cooperation. South-South cooperation in infrastructure construction can be government-led or based on public–private partnerships. China should encourage the enhancement of public infrastructure, which is essential to the successful future development of cities.

*Green, low-carbon transport*

By optimizing urban traffic systems, controlling traffic levels, developing public transport, and promoting new, environmentally friendly automobiles, the Chinese government has vigorously promoted green transportation reform. In 2014, there were a total of 143.9 million private cars in China, 14 times more than in 2002. And the public transportation use was up 93.9% over 2002.[36] In order to reduce the pollution caused by urban traffic, the Chinese government has vigorously improved the quality of oil, encourages the transformation of gasoline-powered cars into electric vehicles, and promotes the use of blade electric vehicles (BEV), natural gas vehicles, and fuel cell vehicles. Profound changes are taking place in global transportation. With the rapid development of rail transportation, green transportation, and intelligent transportation systems, the Chinese government can use its experience and technological advantages to provide strong support for the efficient transformation of urban transportation through South-South cooperation.

*Green construction*

The construction sector has been one of the main sources of urban energy consumption and greenhouse gas emissions. Reducing construction's energy consumption and optimizing construction's energy structure are two major strategies to promote sustainable development of the construction sector. The main ways to reduce the energy consumption of buildings include: the reasonable control of building size; improving building energy efficiency; and promoting energy conservation during construction. Promoting the use of low-carbon energy sources in the construction sector is an important key, especially the use of renewable energy in cooling and heating buildings. Currently, China is mainly promoting the transformation of heating systems, such as the use of gas-fired boilers instead of traditional coal-fired boilers, and the use of the latest geothermal heating technology.

*Energy and air*

Since 2006, China has surpassed the United States and has become the world's largest energy consumer, but the dependence on a coal-based energy structure has brought great damage to the environment, especially air quality. Many developing countries also rely on cheap coal as a primary source of energy, and many cities suffer from serious air pollution due to heavy traffic and poor fuel quality. To promote ecological civilization in South-South cooperation,

[36] National Bureau of Statistics, *China Statistical Yearbook 2015*, p. 599.

all partners must place importance on the promotion of clean energy and the improvement of air quality.

*Technologies for the clean use of coal*

China has made significant progress in ultra-low-emission technology for coal-fired power plants. China has advanced coal-fired power generation units and environmental protection technologies, and can significantly reduce the emission concentration of pollutants with special removal technologies. Additionally, China has mature energy-saving technologies for the transformation of turbines, the recovery and utilization flue gas waste heat from boilers, frequency conversion of motors, and heating system transformation, thereby reducing coal consumption significantly. After the transformation, the average standard coal consumption of the coal-fired generating units fell from 333 g/kWh in 2010 to 315 g/ kWh in 2015,[37] up to a world-leading level.

For some developing countries, their natural resource endowment and rapid economic development means that they must use cheap fossil energy – especially coal – to provide electricity. Therefore, deploying clean and energy-saving technology in coal-fired power plants is of great significance to meeting the increasing energy needs of developing countries.. At the same time, China also needs to seriously consider the overall environmental impacts of coal-fired power plants and make its greatest efforts to meet the strictest environment standards in an effort to achieve ecological civilization in South-South cooperation.

**Box 5-2. The Bali Island Coal-fired Power Plant Project in Indonesia**

As the largest overseas thermal power project invested by China Huadian Corporation, the Bali Island Coal-fired Power Plant Project in Indonesia is based on an agreement signed between China Huadian Corporation, the Indonesian government, and Indonesia's National Electric Power Company. With installed capacity of 426MW, the plant produces 40% of the island's power supply.

China Huadian Corporation invested USD 670 million in the project and will dominate its operation for 30 years as the primary shareholder. The project was launched successfully in August 2015.[38]

The power plant adheres to the highest engineering and safety standards, and has strictly complied with environmental regulations throughout the whole process from design to construction and operation in order to reduce its environmental impact. To prevent the possible pollution caused by an open coal yard, Huadian established the first fully enclosed circular coal yard in Indonesia, retaining coal dust particles in a warehouse, as opposed to having them drift in the air. In order to reduce the impact on the environment, the power plant established an effective desulfurization system. The sulfur dioxide and dust emission concentration was only 185 mg per cubic meter and 19 mg per cubic meter respectively, far below the national standard of Indonesia. The project's standard coal consumption is 317.46g/kWh, an advanced level by international standards.

After the coal-fired power plant in Bali Island was put into operation, it greatly alleviated the island's power shortages, reduced the cost of power generation, reduced the dependence on crude fuel and gas power generation, reduced the huge subsidy pressure on the local government, and produced good social and economic benefits.

[37] Ministry of Environmental Protection, *Bulletin on China's Environment 2015*.

[38] http://news.bjx.com.cn/html/20150906/659814.shtml

*New energy transportation*

Due to the poor fuel quality and low motor vehicle emission standards, the transportation sector usually emits pollutants in the city, causing serious air pollution and haze. After a period of serious air pollution in 2013, the Chinese government decided to implement a national vehicle emissions standards, and "fifth stage" gasoline and diesel fuel standards, close to those of the European before 2015. In addition, the Chinese government enthusiastically promotes the development of new, environmentally friendly automobiles, and resolutely eliminates low-emission vehicles not up to environmental standards. By developing fuel and emissions standards, China has prompted vehicle manufacturers and fuel suppliers to improve environmental standards – a lesson learned from the experiences of Europe and the United States. China cooperates with relevant agencies in developed countries, and is effectively promoting this pattern within the developing world where the vehicle industry is expanding rapidly.

*Renewable energy*

In recent years, China has experienced rapid development in the field of renewable energy, especially in the fields of small hydropower, photovoltaic power generation, solar water heaters, and biogas. In these areas, China has world-leading technology. Over the past few decades, making good use of its technological advantages, China has carried out small hydropower and renewable energy projects in rural areas to improve access to electricity and to alleviate poverty. These projects contributed to improved living conditions and the economic development of Chinese villages. In the process, China gained a great deal of development experience.

By importing advanced technologies from other countries and innovating with them, China has effectively reduced the cost of renewable resources. Wind power and photovoltaic manufacturing have become important domestic industries producing world-leading technology. With the advantages of China's photovoltaic equipment manufacturing industry, the Chinese government implemented a poverty alleviation project in 2014 to help needy families in some poor counties' to install distributed household appliances or photovoltaic power generation systems for agricultural facilities. These photovoltaic poverty alleviation projects promoted the growth of incomes and employment in impoverished regions in developing countries. In addition, wind and solar power generation, energy storage systems, solar water heaters, and biogas technologies also provide good energy solutions for areas not covered by the power grid in poor and remote regions in developing countries.

*Coping with climate change*

As the largest developing country in the world and the one most vulnerable to the impacts of climate change, China places great importance to tackling the issue. Through institutional development and top-level design, China has taken positive action to mitigate and adapt to climate change, and has achieved remarkable results. China also actively promotes South-South cooperation in response to climate change, takes the initiative to hold technical and capacity building training events for the developing world, and has established the South-South Cooperation Fund of 20 billion yuan to address climate change. Since 2011, China has granted a total of 720 million yuan to provide materials and equipment to developing countries to address climate change. Those donations include more than 13,800 sets of LED

street lamps, more than 20,000 energy-saving air-conditioners, more than 10,000 solar photovoltaic power generation systems, 10,000 clean stoves for cooking, and one meteorological satellite data collection processing system.[39]

*Improving energy efficiency*

In the transportation field, China has designed a low-carbon traffic system framework for green recycling, issued a series of green transportation evaluation index systems, and further reduced the energy consumption of vehicles, shipping, ports, and civil aviation by promoting the monitoring of energy consumption monitoring and the implementation of fuel consumption standards. In the field of construction, China has revised energy-efficient design standards for public buildings[40] and green building evaluation criteria,[41]formulated and issued green store building evaluation criteria,[42] and further promoted green construction, heat monitoring, and energy-saving renovations of existing residential buildings.

*Increasing forest carbon sinks*

China has made important progress in increasing its forest carbon sink and reducing emissions through policy and technology support. During the 12th Five-Year Plan period, China advanced the 12th Five-Year Plan for Forestry Development and the "Key Points for the Action of the Forestry Sector to Cope with Climate Change during the '12th Five-Year Plan' Period", and developed a series of technical programs such as the "Outline of National Afforestation", the "Provisions for the Job Design of Forest Tending", and the "Measures for Forest Tending Inspection and Acceptance". During the 12th Five-Year Plan period, China had completed the reforestation of 450 million Mu and the tending of 600 million Mu[43] of forest. In addition, China has formulated the "Key Points for the Action of the Forestry Sector to Cope with Climate Change during the '13th Five-Year Plan' Period" and has set a new target for increasing forest carbon sinks.

*Climate change adaptation in agriculture, forestry, and water.* China increased investment in conservation tillage and adaptation initiatives, and issued more than 54 billion yuan for the construction of water conservancy works. In 2016, China issued the "Forest Stewardship Action Plan for Climate Change Adaptation (2016–2020)", making clear its objectives for climate change adaptation related to forest stewardship. It took effective measures to achieve its goals, including strengthening the comprehensive management of forests, strengthening the development of forestry nature conservation and wetland protection, and strengthening the protection of grasslands. Meanwhile, China also actively promotes environmentally friendly water policies and has launched or completed 100 national pilot projects addressing water conservation and seven on water rights. It has also launched 105 national pilot projects

[39] "Xie Zhenhua: 720 million RMB Accumulated to Support Africa in Addressing Climate Change." *The China Youth Daily*, July 10, 2016.
[40] "Design specification for building energy conservation: GB50189-2015", China Architecture & Building Press, 2015.
[41] "Evaluation Standard for Green Building GB/T50378-2014", China Architecture & Building Press, 2014.
[42] "Evaluation Standard for Green Commercial Architecture", China Architecture & Building Press, 2015.
[43] Mu, a unit of area (=0.0667 hectares), from "Afforestation of 450 Million Mu Completed in 12 FYP", Xinhua Net, January 10, 2016.

to reduce the impact of climate change on water resources.[44]

*Disaster early warning systems and forecasting.* China's disaster warning systems and meteorological networks are the best in the world. China has a number of experts that understand how disaster warning systems can be adapted to conditions in developing countries. China has a number of experts that understand how disaster warning systems can be adapted to conditions in developing countries. China has therefore been able to effectively help developing countries to improve their resistance to climate change, building important partnerships along the way.

### 5.2.2 *Evaluation of specific priority areas*

It can be concluded that rural water pollution and drinking water, urbanization infrastructure, and renewable energy are China's priority areas for South-South cooperation. These are followed by agriculture and forestry, water resources, combating climate change, and disaster warning systems. Based on the needs of various countries and the changes in China's relative ability, more specific analysis needs to be carried out on the priority areas and indicators. This evaluation index system can help the Chinese government and enterprises clarify the development direction and priorities in South-South cooperation.

Through organizing experts to evaluate prioritization of the sub-areas analyzed above with criteria such as "Degree of relevancy with SDGs", "Appropriate technology", " Systematic solutions", "Innovativeness", "Linkages with infrastructure", etc., we have identified that "Water resources in rural areas", "Infrastructure construction in the process of urbanization and low-carbon transportation", "Renewable energy", "Energy efficiency", "Adaptation measures in agriculture, forestry, and water resources", "Disaster early warning systems" and other areas should be prioritized. Nevertheless it is also noted that these priority areas are not just limited to the areas highlighted above, and case-by-case analysis upon areas and indicators should be made based on the specific needs of recipient countries and changes in China's comparative capacity.

Generally speaking, in South-South cooperation for ecological civilization, China should take into account not only its priority areas and technical abilities, but also the specific needs of developing countries. It should determine the priority areas for cooperation and set practical development goals. In the meantime, China should prioritize the areas where it can effectively improve people's livelihoods in the developing world, help achieve the Sustainable Development Goals, provide strong support for these areas, and actively cooperate with developing countries to jointly set more practical development goals and establish appropriate models of cooperation.

[44] "China's Policies and Actions for Addressing Climate Change (2015)", The National Development and Reform Commission, 2016.

## 6. POLICY RECOMMENDATIONS FOR CHINA TO PROMOTE SOUTH-SOUTH COOPERATION FOR ECOLOGICAL CIVILIZATION

China has become the second largest economy in the world, and is experiencing transformation from being a regional economic power to a global one. China has the responsibility and capacity to promote the transformation and expansion of South-South cooperation, which should contain the essence of ecological civilization. South-South cooperation for ecological civilization does not only mean a simple increase in aid budget to help developing countries achieve the Sustainable Development Goals, but an initiative that calls for working together to find innovative pathways of development. The Belt and Road Initiative and international production capacity cooperation are also consistent with South-South cooperation for ecological civilization. Altogether, China is enriching and innovating the idea of South-South cooperation and making a positive contribution to global governance and well-being.

The specific policy recommendations for China's South-South cooperation for ecological civilization will focus on three levels. First, to create a new strategy for China's environmentally friendly foreign aid by standardizing and regulating traditional aid modalities and projects. Second, to increase assistance for ecological environmental protection, link developing countries' demand for green development closely with China's supply capacity, and provide direct support for developing countries to achieve ecological civilization. Third, to highlight the important role of the government's foreign aid to promote South-South cooperation for ecological civilization in a broader sense, taking trade and investment into account.

### 6.1 Principles

***6.1.1 Balancing environment, livelihoods, and social development.*** Break through the traditional development mode of "grow first, clean up later". While tapping into the

substantial natural resources of developing countries, it is important to achieve a new development path that balances environmental protection, livelihoods, as well as social development.

***6.1.2 A partnership of equals.*** South-south cooperation for ecological civilization does not refer to the traditional granting of aid and passive acceptance. Instead, it means partners will complement each other's advantages. China will share its development expertise with other developing countries and develop appropriate technology and design solutions to advance ecological civilization.

***6.1.3 Active protection of the environment and nature.*** China should adapt to the transformation of its status from a regional power to a global power, actively address the environmental impact caused by its economic growth, and take the initiative to provide to the world more public goods reflective of ecological civilization.

***6.1.4 Openness and inclusiveness.*** Encourage diversified actors, including domestic and foreign governments, civil society, and the private sector to participate in South-South cooperation for ecological civilization, so that the results of cooperation will benefit all. Additionally, do not exacerbate social inequality by allowing negative impacts on poor and vulnerable groups.

***6.1.5 Transparency and compliance with rules.*** Enhance public information and use data and case studies to demonstrate the effectiveness of South-South cooperation for ecological civilization. Introduce environmental standards and permit South-South cooperation projects to be open to external monitoring.

## 6.2 Policy recommendations

### *6.2.1 Establish a high-level coordination mechanism for South-South cooperation for ecological civilization*

- To establish a high-level central coordination mechanism led by the Premier or Vice-Premier to coordinate and embed ecological civilization into all of China's South-South cooperation initiatives. This mechanism should entail working in a coordinated way across the pertinent ministries and agencies. At the macro-level, enhance coordination and consultation among the pertinent ministries and agencies for strategy- and policy-making for South-South cooperation for ecological civilization as well as environmental evaluation of significant South-South cooperation projects. At the micro-level, undertake regular performance assessments of the goals for each stage, policy implementation, and the impacts of significant projects, and formulate an accountability mechanism for South-South cooperation for ecological civilization. The mechanism would also be central for helping ministries to manage the increasing amount of financial resources available for promoting low-carbon development and for implementing the Sustainable Development Goals in developing countries. NGOs should also be invited to play a constructive role in coordination and implementation. Furthermore, the establishment of an "International Advisory Group for South-South Cooperation for Ecological Civilization" would promote the concept of ecological civilization among partner countries and allow for joint learning.

- With this coordinating mechanism, a number of pertinent ministries and agencies should assume the mandate to mainstream ecological civilization into all their activities, from the macro-level of goal-setting, policy guidance, and establishing principles, to the micro

level-of institutional arrangements, process management, monitoring, and evaluation. This requires a shared understanding among ministries that there is a joint responsibility and accountability for delivery, and that the expertise and experience of all relevant ministries are needed. Close cooperation among MOFCOM, NDRC, MEP, and MFA will be helpful for ensuring that other departments, such as the Ministry of Water Resources, the State Forestry Administration, and the Ministry of Land and Resources, engage in this process. Furthermore, establish an independent development cooperation agency at an appropriate time to integrate South-South cooperation in different ministries.

- Develop a "Green Action Guide for China's Foreign Aid" to guide and regulate the activities of China's foreign aid that have an environmental impact. Give full play to the positive spillover effects of foreign aid on trade, investment, and other forms of South-South Cooperation. Through the establishment of high-quality environmental protection indicators for the whole process of foreign aid projects, establish good models for commercial investment projects and green finance. Gradually improve green finance standards, as well as the monitoring and evaluation of the environment impacts of Chinese foreign investment.

- Establish a ministerial level "Chinese Agency for International Cooperation" at an appropriate time to lead and coordinate South-South cooperation work that is now conducted by different ministries, to incorporate the concept of ecological civilization in all aspects from the macro-level of goal-setting, policy guidance, and establishing principles, to the micro level-of institutional arrangements, process management, monitoring, and evaluation.

### *6.2.2 Create the enabling conditions for South-South cooperation for ecological civilization*

- Develop medium- and long-term plans for South-South cooperation for ecological civilization, including plans for cooperation in priority fields and programs for different regions and countries. These should consider international trends, the needs of developing countries, and China's comparative advantages and capacity. These plans and programs should form a coordinated planning system to ensure that South-South cooperation for ecological civilization is conducted in an orderly manner. Integrate the concept of ecological civilization into South-South cooperation in other sectors, such as infrastructure, agriculture, and health care.

- Develop an enabling environment that allows inclusive participation. Actively mobilize China's local governments, especially border provinces. Make full use of Chinese enterprises investing in developing countries, and encourage them to undertake South-South cooperation projects, which could illustrate their commitment to corporate social responsibility and advance ecological civilization. Explore cooperation with international NGOs in project implementation and joint research, and encourage domestic NGOs to cooperate with NGOs in host countries. Use the UN and other multilateral platforms to promote South-South cooperation for ecological civilization. Explore triangular cooperation to encourage recipient countries to put forward and lead programs in support of South-South cooperation for ecological civilization.

- Strengthen research and capacity building at relevant institutions and for designated personnel in China. Strengthen awareness of environmental protection among staff involved in South-South cooperation. Adjust government staffing structures in support of South-South cooperation and find ways to enrich the talent pool. Promote exchanges with international organizations and relevant institutions. Enrich basic research, especially systematic in-depth

study of regions and countries, special fields, technical research and development, and quantitative research about the impact of cooperation, which could provide a theoretical and data basis for policy-making.

- Promote the release of information and strengthen public communication. With the Sustainable Development Goals in place, link ecological civilization with the SDGs to make the concept of ecological civilization better known and discussed by the international community. Strengthen information and data collection for South-South cooperation for ecological civilization, and establish an official channel to release relevant policies, data, and project information systematically and with a clear focus. Objectively and scientifically present the results of South-South cooperation for ecological civilization. Establish a platform for government and civil society to talk about South-South cooperation for ecological civilization, and to enhance the public support for the idea.

- Encourage the participation of domestic NGOs and select NGOs with with international reach to participate in South-South cooperation for ecological civilization. Enhance non-governmental organizational exchanges and cooperation.

- Enhance international exchanges and cooperation in the field of environmental protection to promote ecological civilization through a variety of channels. First, China can increase support for UN agencies like the UNEP and UN HABITAT, by establishing special funds. Second, encourage traditional donor countries as well as other participants in South-South cooperation to share their experiences. Third, encourage China's NGOs in the field of environmental protection to cooperate and engage in dialogue with NGOs in developing countries.

### *6.2.3 Increase financial support and improve the effectiveness of expenditures*

- Increase the amount of aid funds as well as the proportion of aid for environmental protection in China's total foreign aid budget. Make effective use of grants, interest-free loans, and concessional loans, and the combined effects of the mixed funding. Develop coherent overall planning for government funding of South-South cooperation, while clarifying the roles of relevant ministries.

- Innovate forms of development finance, and try to combine foreign aid with funds from development finance institutions and commercial banks. With a focus on South-South cooperation for ecological civilization, use public funds to play a leading role and thereby encourage the private sector to invest.

- Select appropriate topics that are consistent with the goals of South-South cooperation for ecological civilization, increase China’s input, and explore program cooperation.

### *6.2.4 Improve whole-process management, especially evaluation*

- Place great importance on the quality of the empirical data used for project planning and approval. Strengthen the understanding of partner countries' demands, and enhance coordination and consultation with relevant stakeholders from partner countries in the whole process. Broaden the sources of cooperation projects, so that more ecological protection projects can be included in the South-South cooperation projects database.

- Integrate existing foreign aid methods. While maintaining support for infrastructure

development, further strengthen technical cooperation and knowledge sharing with developing countries. Establish a knowledge-sharing platform on South-South cooperation for ecological civilization. Make reference to China's experience in industrial planning, legislation, and policy formulation, to help developing countries implement natural resource evaluation, industrial planning, the establishment of policy and legislation framework, management platforms, and other areas to promote technology transfer to and the capacity building of developing countries. Closely follow technology trends and actively promote the application of new appropriate technologies for South-South cooperation for ecological civilization. Prioritize *ex-ante* environmental impact assessments for large infrastructure, energy, mining, and agriculture projects. Also, embed ecological protection as an important post-evaluation indicator along with economic effects and social impacts. Consider the interaction of ecological, economic, and social impacts throughout project approval, monitoring, and evaluation.

# 7. ROADMAP FOR SOUTH-SOUTH COOPERATION FOR ECOLOGICAL CIVILIZATION

South-South cooperation for ecological civilization is a long-term effort that needs to always consider development trends and conditions. Between 2017 and 2050, South-South cooperation for ecological civilization can be divided into three stages: the stage of laying a solid foundation; the stage of deepening and scaling-up cooperation; and the stage of development and transformation. For each stage, specific implementation approaches and key actions will be needed. Here is what we foresee:

## 7.1 Stage One: Laying a solid foundation for long-term development (2017–2020)

### *7.1.1 Vision and goals*

The global economy gradually recovers from the financial crisis, and the polarization of international politics grows deeper and deeper. Cooperation among countries is damaged by some forms of protectionism in international trade and investment, which causes decreasing marginal benefits in North-South cooperation. However, at the same time, the depth and breadth of South-South cooperation have been constantly enhanced as the emerging countries thrive. As one of the largest developing countries, China is taking a key role in setting the global development agenda. China consistently stands by developing countries, upholding the principle of common but differentiated responsibilities. South-South cooperation for ecological civilization that is initiated and implemented by the Chinese government will determine the direction of economic growth, industrial transformation, and social development in developing countries, guiding cooperation among developing countries to a new level.

In this stage, China's specific goals for South-South cooperation for ecological civilization include: (1) to significantly increase the proportion of environmental projects in all South-South cooperation implemented by China; (2) to establish a system of South-South cooperation for ecological civilization; (3) to convert cooperation initiatives announced recently by Chinese leaders into concrete results to set a good example for other fields; and (4) to raise awareness of South-South cooperation for ecological civilization among domestic and international audiences and to strengthen participant bodies.

### *7.1.2 Approaches for implementation*

**At the national strategy level,** develop a five-year strategy for South-South cooperation for ecological civilization and prepare for incorporating it into the 14th Five-Year Plan. The five-year strategy should adopt relevant requirements of other national strategies including the 13th Five-Year Plan, the Belt and Road Initiative, and international production capacity cooperation, **At the enabling system level ,** enhance top-level design, including a consolidation of existing systems related to South-South cooperation for ecological civilization, thereby improving the policy and institutional framework for South-South cooperation. Accelerate the establishment of new funds for development aid and standardize the use of these funds; formulate relevant regulations to standardize how the funds are used; and encourage relevant ministries to issue application guidelines and measures for using these funds. Improve monitoring and evaluation mechanisms. **At the participating body level** promote South-South cooperation for ecological civilization among local governments, civil society organizations, and private enterprises, and build capacity by sharing knowledge and experience among actors. Increase awareness and participation among the general public, in order to lay a foundation for the next stage.

### *7.1.3 Suggestions for key actions*

*Institutional arrangements*

Develop a Green Action Guide for China's Foreign Aid. Formulate country-specific plans for South-South cooperation for ecological civilization (2018–2023). Improve the rules governing the use of the South-South Cooperation Assistance Fund and the China South-South Climate Cooperation Fund. Under the guidance of a high-level coordination mechanism for South-South cooperation for ecological civilization, establish a knowledge-sharing platform for South-South cooperation for ecological civilization.

*Global and regional actions*

Convert initiatives announced recently by Chinese leaders at the UN Summit, FOCAC, Paris Climate Conference, and LMCM, into concrete results. Initiatives should include, but not be limited to: the Ten, Hundred, Thousand cooperation plan and the Lancang-Mekong Exchange Center for Environmental Protection. Deepen triangular cooperation with international organizations, especially professional organizations like UNEP and UNHABITAT. Fully assess the environmental impact of China's growing foreign investment cooperation, especially the impact of cross-border industrial parks, infrastructure, production capacity cooperation projects, and the economic corridor. Working with the neighbouring countries, take the lead to establish the Asian Big Cat Fund as a way to promote cross-border wildlife protection.

*Bilateral actions*

Implement on-the-ground environmental protection projects that are closely related to people's livelihoods in developing countries. For example, to address challenges with water security, access to electricity, and sanitation in Central Asian, South Asian, and Southeast Asian countries, we recommend to implementing solutions such as small water treatment devices and small hydropower stations. In Africa, implement the One Hundred projects on clean energy, wildlife and plant protection projects, environmentally friendly agricultural projects, and smart city solutions, which were announced in FOCAC 2015. In addition, launch national "Water-Energy-Food Action Plans" in selected countries. In Latin America and Pacific Island countries, build low-carbon cities and industrial zones for demonstration in selected countries, launch cooperation projects on clean energy, and work on cross-border protection of tropical rain forests in Latin America. In the area of climate change mitigation and adaptation, continue providing material assistance, but also work toward breakthroughs in project design and technical cooperation.

## 7.2 Stage Two: Deepening and scaling up cooperation (2021–2030)

### *7.2.1 Vision and goals*

In the decade after 2020, the contribution of emerging countries to global economic growth would continue to increase, and cooperation among developing countries would be the main driver behind deepening globalization. In this period, various countries will make important progress in achieving the Sustainable Development Goals. To remain at a hifgh level, these efforts will require international cooperation. By 2021, China will have become a well-off society and will have achieved its five goals including the overall improvement ecosystems and the environment.[45] During this decade, South-South cooperation would a mainstreamed aspect of China's international cooperation; private enterprises and NGOs will constantly evolved to reflect this reality. In this period, ecological civilization would be deeply integrated into all aspects of the China-led South-South cooperation.

In this stage, China's specific goals for South-South cooperation for ecological civilization include: (1) to deepen the extent to which South-South cooperation for ecological civilization is incorporated into the overall strategy for international relations; (2) to scale up the quantity and quality of projects in South-South cooperation for ecological civilization, and encourage developed countries to increase the proportion of environment-related projects under their ODA; (3) to shift the focus from quantity of projects to quality in an effort to enhance overall effectiveness while reducing the negative social and environmental impacts; and (4) to further deepen bilateral and regional cooperation, and gradually expand the number of participants.

### *7.2.2 Approaches for implementation*

**At the national strategic level,** incorporate South-South cooperation for ecological civilization into the China's overall strategy and plans of international cooperation, including the strategies and plans of local governments and ministries, including the "going out" strategy in foreign investment and trade. **At the enabling system level,** shift the focus from the establishment of institutions to institutional development, including improving rules and regulations relating to South-South cooperation for ecological civilization. Gradually improve the transparency of the policy process, enhance the degree of public participation, and raise

[45] Premier Li Keqiang, "Goals and Requirements of Accomplish Building a Comprehensive Well-off Society", *People's Daily Newspaper*, November 6, 2015, p. 3.

public awareness of global environmental protection with the support of new media. Further increase financial support by combining different types of funds, and comprehensively promote green finance for South-South cooperation. In terms of the capacity building, develop a strong foundation for cooperation and create a professional team to service South-South cooperation for ecological civilization. **At the participating body level**, motivate local governments (with a particular focus on border provinces), explore South-South cooperation for ecological civilization through public-private partnerships, and encourage the participation of the public and private sectors in Southern countries.

### *7.2.3 Suggestions for key action*

*Institutional arrangement*

Under a high-level coordination mechanism for South-South cooperation for ecological civilization, make a comprehensive assessment of the first stage to summarize the experience and the lessons learned. Further improve the guiding policy for South-South cooperation for ecological civilization. Cooperate with the China-Africa Development Fund, the China-Africa Production Capacity Cooperation Fund, the China-ASEAN Fund, the Silk Road Fund, and the China-Latin America Fund, among other mechanisms. Include non-governmental organizations, research institutions, and evaluation agencies in host countries into South-South cooperation for ecological civilization. Study the feasibility of triangular cooperation, fully agreed and led by the host country. Enhance investment in basic and policy research on South-South cooperation for ecological civilization.

*Global and regional actions*

Promote South-South cooperation for ecological civilization through regional governmental cooperation mechanisms such as the African Union, FOCAC, the Shanghai Cooperation Organization, and ASEAN 10+1, among others. Include South-South cooperation for ecological civilization in G20 and BRICS discussions. Explore cooperation channels and consider roles for new development banks such as the Asian Infrastructure Investment Bank and the BRICS Development Bank. Launch regionally targeted regional and programs.[46]

*Bilateral actions*

Select targeted countries willing to get involved, and provide technical assistance or capacity building projects to integrate the concept of ecological civilization with the countries' plans to achieve the Sustainable Development Goals. Gradually encourage and guide environmental compliance by China's private enterprises that conduct business internationally.[47] Analyze to understand the specific needs of cooperating countries for green development from the perspectives of infrastructure, technology, policy, education, research, and culture. Assist the

[46] For instance, "International Mountain Future Action Plan" and "Lancang-Mekong River Ecological Compensation Plan", and promoting the "Water - Energy - Food Action Plan" to East Africa, etc. Interviews conducted in July 2016, in Shanghai and Kunming.

[47] For example, formulating the guideline for environmentally friendly development in cooperation with the government of Pakistan, developing green industrial park projects jointly with the Ethiopian government, and formulating the China-Myanmar cross-border forestry protection plan jointly with the Myanmar government. Information is the survey about developing countries' demands, from roundtable discussion with Pakistan government delegation in June 2016 and from interviews conducted in July 2016 in Beijing.

host country to improve its capacity in environmental monitoring and the enforcement of laws and regulations.

## 7.3 Stage Three: Development and transformation (2031–2050)

### *7.3.1 Vision and goals*

By the mid-21st century, the economic growth rate of emerging countries would maintain the trend of exceeding that of developed countries, but the living standards in developing countries would still be lower than those of developed countries.[48] Developing countries will have a larger population and a stronger consumption capacity than they have now, which would increase global environmental pressures. Environmental resources would be allocated unevenly, which might be a factor that causes regional conflicts. After 2030, the world would focus on setting new development goals, which would focus more on the relationship between environmental and social development. And the environment would have a greater impact on people's happiness and well-being.

Prior to 2049, building a modern country would become the focus of the government's work. By then, China would enter the ranks of middle- to high-income countries. The development gap between China and developed countries would be narrowed, but the gap with developing countries would be widened. As a global power, China needs to assume more international responsibility for the environment. Also, as a leader of South-South cooperation, China would have acquired enough experience and expertise to lead required reform of the international development aid system. Also, with the improvement of China's environmental governance capacity and a larger talent base, China would provide improved public products with enhanced technology to Southern states. The capacity to design global cooperation initiatives in ecological civilization and green development would increase, and China would be able to play a leading role in promoting the implementation of relevant action plans globally. Therefore, China-led South-South cooperation for ecological civilization would experience a positive transformation and enter a new stage.

In this stage, China's specific goals for South-South cooperation for ecological civilization include: (1) to give new meaning to South-South cooperation for ecological civilization according to the global trends, and incorporate this evolving approach to South-South cooperation for ecological civilization into national strategies; (2) to stand with developing countries and work together on a new global post-2030 development agenda that incorporates South-South cooperation for ecological civilization; (3) to lead global innovation, and to pursue disruptive science and technology in the area of ecological civilization to benefit people in the developing world; and (4) to embed South-South cooperation for ecological civilization as a major global trend that plays a positive role in deepening the mutual understanding and interdependence, and preventing international conflicts.

### *7.3.2 Approaches for implementation*

**At the national strategic level,** through the "200-Year Goals" and Five-Year Plans, incorporate the evolving nature of South-South cooperation for ecological civilization into the national strategies, and prepare for a transformation of South-South cooperation for

[48] "Looking to 2060: Long-term Global Growth Prospects", A Going for Growth Report, OECD, November 2012.

ecological civilization as China enters the ranks of middle-high-income countries. **At the enabling system level,** continue to improve the transparency of the policy process for South-South cooperation for ecological civilization. Lead the reform and transformation of international environmental cooperation mechanisms. In terms of financial support, continue to improve the efficiency of South-South cooperation funds and conduct fundraising at the global level. As for capacity building, develop a new generation of development practitioners as the foundation of South-South cooperation for ecological civilization. Expand capacity building to go beyond simple projects to include communication between people to enhance mutual understanding through South-South cooperation for ecological civilization. **At the participant body level,** expand the participation of local governments, private enterprises, and the public, and make the South-South cooperation for ecological civilization an inclusive development process that engages people and communities throughout society.

**Table 7-1. China's roadmap for South-South cooperation for ecological civilization**

<table>
<tr><th colspan="2"></th><th>2017–2020</th><th>2021–2030</th><th>2031–2050</th></tr>
<tr><td rowspan="7">Vision and goals</td><td rowspan="3">Vision</td><td>Multi-polarity; protectionism; decreasing marginal benefits of North-South cooperation.</td><td>Emerging countries would contribute to global growth; SSC would become the main driver of globalization.</td><td>Economic growth rate of emerging countries would continue to exceed that of developed countries, but living standards would stay lower.</td></tr>
<tr><td>Depth and breadth of SSC enhanced.</td><td>SSC would also be mainstreamed into China's international cooperation.</td><td rowspan="2">Environmental resources would be allocated unevenly, which could cause regional conflicts.</td></tr>
<tr><td colspan="2">Standing by developing countries;, upholding the principle of CBDR.</td></tr>
<tr><td colspan="3">Irreversible trend to regulate and standardize China's traditional foreign cooperation.</td><td>A time to set new development goals.</td></tr>
<tr><td rowspan="3">Goals</td><td>To significantly increase the proportion of projects related to EC.</td><td rowspan="2">To scale up quantity and quality of projects, but shift the focus to quality and social and environmental impact; encourage developed countries to increase the proportion of environment-related projects.</td><td>Give new meaning to SSC for EC, to support the transformation of the national strategy.</td></tr>
<tr><td>To accomplish the development of a system of SSC for EC</td><td>Promote SSC for EC as a major global trend that deepens mutual understanding and interdependence, and prevents conflicts.</td></tr>
<tr><td>To convert international cooperation initiatives into practices.</td><td>To deepen the extent that SSC for EC is incorporated into the overall strategy.</td><td>Stand with developing countries and work on a new agenda together.</td></tr>
<tr><td colspan="2">To enlarge participant bodies.</td><td>Lead global innovation in the pursuit of disruptive science and technology.</td></tr>
<tr><td rowspan="3">Approaches for implementation</td><td>National strategy</td><td>Develop a five-year strategy for SSC for EC that relates to the 13th Five-Year Plan and the Belt and Road Initiative requirements.</td><td>Incorporate SSC for EC into the China's overall strategy; consider the strategies of individual ministries and local governments as well.</td><td>Incorporate SSC for EC with new content into the national strategy, and prepare for entering the ranks of medium- high-income countries.</td></tr>
<tr><td>Enabling system</td><td>Top-level design with improved institutional settings; accelerate the establishment of new funds; improve monitoring and evaluation mechanisms.</td><td>Shift the focus from the establishment of institutions to institutional development; improve transparency; combine different types of funding and promote green finance; put a professional team in place.</td><td rowspan="2">Continue to improve the transparency of the policy process; lead the reform and transformation of international environmental cooperation mechanisms; continue to improve the efficiency of SSC funding and conduct fundraising globally; develop a new generation of development practitioners that are the foundation of SSC for EC.</td></tr>
<tr><td>Participating body</td><td colspan="2">Include local governments, civil society organizations, enterprises, etc., and build capacity by sharing knowledge and experience among them; promote social mobilization to increase awareness and participation among general public; include PPP model..</td></tr>
<tr><td rowspan="4">Suggestions for key actions</td><td>Domestic institution</td><td>Develop a Green Action Guide for China's Foreign Aid.</td><td colspan="2">Study the feasibility of triangular cooperation, fully agreed to and led by the host country; enhance investment in basic and policy research.</td></tr>
<tr><td rowspan="2">Global and regional</td><td>Convert initiatives into concrete results; deepen cooperation with international organizations.</td><td colspan="2">Promote SSC for EC through appropriate global development dialogues and cooperation mechanisms, such as G20 and BRICS; launching regionally targeted initiatives and programs.</td></tr>
<tr><td colspan="3">Fully considering the environmental impacts of China's growing foreign investment cooperation; encourage and guide the environmental compliance of our "going global" enterprises engaging in international trade and investment.</td></tr>
<tr><td>Bilateral</td><td>Implement a number of on-the-ground environmental protection projects.</td><td colspan="2">Integrate EC with the host countries' plans to achieve the SDGs; analyze to understand the specific demands of cooperating countries for green development; assist host countries in improving their capacity in environmental monitoring and the enforcement of laws and regulations.</td></tr>
</table>

## ANNEX I. List of interviewees for Chapter IV

| | NAME | COUNTRY/ REGION | TITLE & ORGANIZATION |
|---|---|---|---|
| 1 | Abdul Qadir Palijo | Pakistan | Superintending Engineer, Irrigation Department, Government of Sindh |
| 2 | Abdul Qahar | Pakistan | Member of Parliament, National Assembly |
| 3 | Adam Ward | Vietnam | GGGI Country Representative |
| 4 | Adeloui Hugues Akpona | DRC | Manager, DRC Programme, Africa Wildlife Foundation (AWF) |
| 5 | Anna Van Paddenburg | Indonesia | GGGI Country Representative |
| 6 | Dagmar Zwebe | Indonesia | Program Manager, GGGI Indonesia |
| 7 | Faiz Muhammad | Pakistan | Manager, IUCN Pakistan |
| 8 | Fiona Lord | Cambodia | GGGI Country Representative |
| 9 | Ghulam Hussain Dars | Pakistan | Assistant Professor/Principal, US-PCASW, MUET, Jamshoro |
| 10 | Guillermo Castro H.. | Panama | Vice-President of Research and Education<br>The City of Knowledge Foundation |
| 11 | Henky Widjaja | Indonesia | GGGI Indonesia |
| 12 | Innocent Kabenga | Rwanda | GGGI Country Representative |
| 13 | Innocent Maloba | Kenya | Policy and Partnerships Officer, WWF Kenya |
| 14 | Innocent Nhapi | Zimbabwe | Chinhoyi University of Technology |
| 15 | Jackson K. Kiplagat | Kenya | Programme Manager, WWF Kenya |
| 16 | Kamran Akhtar | Pakistan | Lt. Colonel, Research & Support Directorate, General Headquarters, Rawalpindi |
| 17 | Mahamadou Tounkara | Senegal | GGGI Country Representative |
| 18 | Manuel Cendoya Martinez | Peru | Senior Advisor on Innovation and Technology to the Minister of Production |
| 19 | Maria Emilia Correa | Costa Rica | President Triciclos S.A., Santiago, Chile and Member USAID Technical Committee of Fundecor |
| 20 | Maria Paz Cigarán | Peru | General Manager of Libelula, Peru |
| 21 | Maria Rivera | Peru | Directora, Escuela Farmacia y Bioquimica, Facultad de Ciencias y Filosofía and Directora del Centro de Investigación para el Desarrollo Integral y Sostenible (CIDIS), Universidad Peruana Cayetano Heredia |
| 22 | Martin Gbonda | Sierra Leone | Professor and trade economist |
| 23 | Masood Arshad | Pakistan | Director, Climate, Energy & Water, WWF-Pakistan |
| 24 | Mike Nsereko | Uganda | Director for Policy Planning and Information, National Environmental Management Authority |
| 25 | Mohamed Awer | Kenya | CEO, WWF Kenya |
| 26 | Mounkaila Goumandakoye | Africa | Former Director, UNEP, Regional Office for Africa |

| | | | |
|---|---|---|---|
| 27 | Muhammad Babar Wazarat | Pakistan | Brigadier, Research & Support Directorate, General Headquarters, Rawalpindi |
| 28 | Muhammad Mueen Watto | Pakistan | Member of Parliament, National Assembly |
| 29 | Nakedi Maputla | South Africa | Senior Partner Relations Manager, Africa Wildlife Foundation, Southern Africa |
| 30 | Nelson Olaniyi | Africa | Trade and Development Expert |
| 31 | Patricia Londono | Colombia | Vice-President and Executive Director for Environment, Agencia Nacional de Hidrocarburos |
| 32 | Peter Okubal | Uganda | GGGI Country Representative |
| 33 | Pheakdey Heng | Cambodia | Policy Lead, GGGI Cambodia |
| 34 | Robert Mukiza | Ethiopia | GGGI Country Representative |
| 35 | Shahid Rasheed Awan | Pakistan | Additional Secretary (Technical),Forest, Wildlife and Fisheries Department, Government of Punjab Lahore |
| 36 | Syed Mahmood Nasir | Pakistan | Inspector General, Forests, Ministry of Climate Change |
| 37 | Teak Seng | Great Mekong | Regional Conservation Director, WWF-Greater Mekong |
| 38 | Warwick Manfrinato | Brazil | Director, Centre of Research for Integral and Sustainable Development (CIDIS)<br>Executive Director, CITEacuicola UPCH<br>Institute for Advanced Studies<br>Latin American Ecological Corridors Initiative<br>Rainforest Business School Program<br>Executive Director<br>University of Sao Paulo |

## ANNEX II. List of Chinese institutions that were interviewed

From May to September 2016, the Task Force carried out several interviews in Beijing, Shanghai, Kunming, Chengdu, and other places in China. In order, the following institutions were interviewed: the Department of International Cooperation and Science of Ministry of Water Resources; World Resources Institute (WRI Beijing); WWF China (Beijing); International Cooperation Department of the State Forestry Administration; International Cooperation Department of the Ministry of Environmental Protection; Department of Latin American and Caribbean Affairs of the Ministry of Foreign Affairs; Department of African Affairs of the Ministry of Foreign Affairs; Global Environmental Institute(GEI); Institute of Geographic Sciences and Natural Resources Research of Chinese Academy of Science (CAS); Department of Concessional Loans of China Eximbank; China-Africa Development Fund; the United Nations Environment Programme (UNEP) – Institute of Environment and Sustainable Development of Tongji University; the Bureau of Environmental Protection of Yunnan Province; Institute of International Rivers and Ecological Security of Yunnan University; Kunming Institute of Botany of CAS; Forestry Department of Yunnan Province; Dongfang Electric Corporation; China Communications Construction Company Limited； China Road and Bridge Corporation; and CNPC Great Wall Drilling Company.

## ACKNOWLEDGEMENTS

This report is the result of the wisdom, devotion, and hard work of every member of the Task Force and many partners who contributed to the effort. Within eight months, the Task Force organized five joint expert group meetings in China and Kenya; held three Chinese team meetings; interviewed more than 60 international and Chinese experts; set up dozens of cross-continental calls; and reviewed the draft report several times.

During this research, Professor Arthur Hanson, the Chief International Advisor to the China Council for International Cooperation on Environment and Development (CCICED), provided us with strategic support. We also express our sincere thanks to him.

We would like to express our appreciation to the assistant Secretary General of CCICED, Dr. FANG Li. Dr FANG and her team – including but not limited to, ZHANG Huiyong, HAN Yang, and ZHANG Min – offered substantial input to the research. We would also like to thank Mr. Knut Alfsen and Dr. LIU Jian, from the CCICED Chief Advisor Support Team, for their support throughout the research. We also thank Ms. Lucie McNeill and Ms. YICHUN Dai at the CCICED Project Office at Simon Fraser University for their support with this project. Mr. Stu Slayen also has our appreciation for his hard work in editing.

We would especially like to express our thanks to H.E. Erik Solheim, the Under-Secretary-General of the United Nations and the Executive Director of the United Nations Environment Programme, for his kind assistance and guidance. Without his leadership and the support of his high-performance team, we could not have held a successful international workshop in September 2016 in Nairobi.

We would also like to thank the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH team, especially Ms. Ursula Becker, Ms. Nadja Emmanuel, and Ms. DAI Min, together with Winston CHOW from the Global Green Growth Institute (GGGI) and WWF, for their personal and institutional support. In addition, we thank every program assistant, research assistant, and intern, including but not limited to: TANG Xiaoli, GU Wenjing, LIN Yunhui, LV Hao, and Anna-Katharina Schaper. We have enjoyed having you on our team!

Last but not least, we would like to express our appreciation to all donors to the CCICED, especially the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, the Chinese Academy of International Trade and Economic Cooperation, and GGGI. Their funding made this work possible.