Examining Chinese Corporate's Philanthropy for the Sustainable Development Goals

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Executive summary

Enterprises, as principal decision-making units in the market and cells of the national economy, can play a crucial role in promoting sustainable economic, social, and ecological development. In response to the call of the United Nations, enterprises in China have taken on more responsibility in the joint efforts towards Sustainable Development Goals. In 2019, the total amount of social donations in China reached totaling 170 billion yuan, and 55% of them are from enterprises (China Charity Alliance, 2020). However, research tracking and assessing their impacts and outcomes achieved is scarce.

In order to investigate the patterns, mechanisms, and outcomes of corporate philanthropy in China under the UN 2030 Agenda, this study intends to examine Chinese enterprises' philanthropy for SDGs through both quantitative and qualitative analysis. We 1) construct a donation database towards SDGs covering over 6 million donation events from 2008 to 2020 with outer partners, 2) conduct four quantitative analyses of corporate donations to SDGs in four different scenarios including contributions of leading companies, the contributions in 2015, the donating preferences of companies in the power industry, and the enterprises' donating behaviors during the Covid-19 pandemic, and 3) provide several case studies on Chinese enterprises' donations to SDGs to explore who the stakeholders engaged in the process are and how the donations could be managed and finally go towards certain sustainable development goals. Accordingly, a panorama of Chinese enterprises' philanthropy for SDGs is developed eventually and suggestions are proposed for relevant stakeholders to facilitate the corporate participation in SDGs through philanthropy.

Key findings of this report include:

- The establishment of a new type of relationship between government and business have effectively contributed to the realization of the global Sustainable Development Goals in China. Both state-owned and private enterprises have been active in charitable fundraising.
- Chinese enterprises have a high degree of recognition of SDGs and actively link their corporate social responsibility with SDGs.
- The contribution of Chinese enterprises to the 17 SDG goals is unevenly distributed, and the progress of achieving some SDG subgoals has been slowed due to the epidemic.

Preliminary suggestions are proposed for different stakeholders of China's philanthropy to boost a better combination of SDG agenda and enterprises' philanthropy:

- The UN should develop international initiatives to advocate the linkage between philanthropy and SDGs and promote the communications between practitioners and researchers of different countries.

- The government should support the evaluation work of charitable funds and SDG, enact policies to guide enterprises to invest recourses into underfunded areas, and continue to improve the business environment to empower and motivate enterprises to contribute.

- Social organizations should strengthen the information disclosure and data transparency and utilize information technology and big data to better match the supply side and demand side of charitable funds.

- Enterprises should integrate SDGs into long-term corporate strategy, seek for new combination points of the company's main business and SDGs, and deepen their participation in charitable projects.

1. Introduction

1.1 UN 2030 Agenda and China's commitments

On September 25, 2015, the United Nations (UN) Summit on Sustainable Development was held in New York and adopted the 2030 agenda for sustainable development, which is an outcome document agreed upon by 193 member states. This agenda succeeds the Millennium Development Goals (MDGs) to address the social, economic, and environmental dimensions of global development by 2030; and eventually shift to a sustainable development path. The global Sustainable Development Goals (SDG), which include 17 SDGs and 169 specific goals, has charted the course for the local development and international cooperation of various countries and outlined the blueprint for global prosperity and sustainability.

As the world’s largest developing country and second largest economy, China has made solemn commitments to the 2030 agenda for sustainable development. To guide and promote the implementation of SDGs in China, the country has formulated and issued a series of policies and guidelines to combine these goals with actual local development and established a national plan for the implementation of the 2030 agenda for sustainable development. China has also integrated the SDG implementation into its 13th five-year plan and the national medium- and long-term development strategies, issued the plan to build innovative demonstration zones for the implementation of the 2030 agenda for sustainable development, and approved the first batch of these demonstration zones.

1.2 Corporate participation in SDGs

Unlike the MDGs, which relied mainly on government resources, the SDG agenda is committed to mobilizing organic interactions and solidarity between states, markets, and civil society, and the concerted action of multiple actors to achieve common goals. UN Secretary General Antonio Guterres has called for the integration of SDG in all actions of every sector. The realization of SDG requires more than national governance and public welfare and charity. Enterprises, as the principal actors of the market, basic decision-making unit, and cell of the national economy, are a major driving force for sustainable economic, social, and ecological development.

Enterprises are important partners of SDG and they can contribute immensely to the implementation of these goals through their core businesses. As indicated in Figure 1, there are three main approaches for the enterprises to participate in achieving the SDGs, namely corporate production, management, and philanthropy. The corporate production refers to all productive activities of enterprises while the corporate management involves corporate governance, personal administration, and labor right protection. The corporate philanthropy covers all charitable donations and voluntary activities of enterprises. In each approach, enterprises could contribute to different SDGs through concrete actions and benefit from these activities in the same time. For example, the emission reduction of enterprises in the production process could contribute to SDG 12 (Responsible consumption and production) and SDG 13 (Climate action) while attracts sustainable financial investment and reduces climate-related risks for enterprises. Therefore, enterprises could contribute to both the implementation of the SDGs and the development of enterprises.

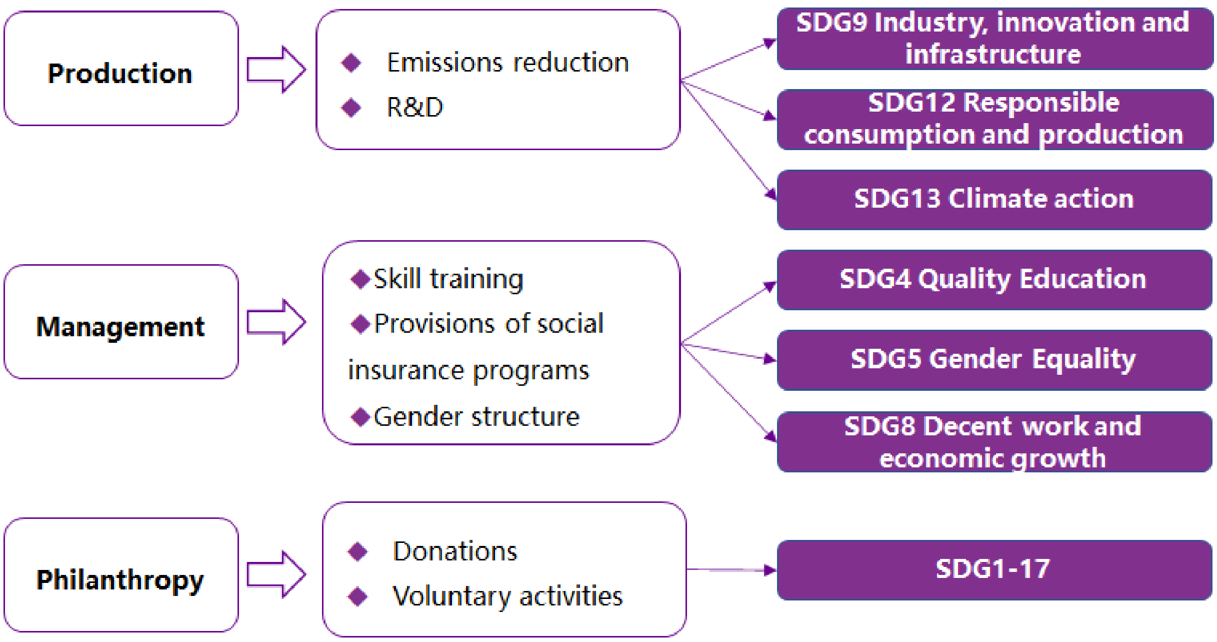


Figure 1: Different approaches for enterprises to participate in achieving SDG

Compared with some corporate production and management activities that might clearly correspond to specific SDG targets, corporate philanthropy usually covers a wide range of topics and multiple SDG targets. In addition to helping attaining important economic, societal, and environmental goals, enterprises can also benefit from donating to SDGs by establishing themselves as responsible actors displaying strong sense of corporate social responsibility (CSR). In 2019, the total amount of social donations in China reached totaling 170 billion yuan, and 55% of them are from private enterprises (China Charity Alliance, 2020). However, no solid research has been conducted to trace that enormous sum of charitable funds into specific SDG and study the mechanism of action and potential influence of these funds on SDG implementation in China. Considering that the UN calls on companies to assess the impact of their activities, set ambitious goals, and track their results transparently towards SDGs, pertinent assessments and analyses are imperative to fill this research and practice gap.

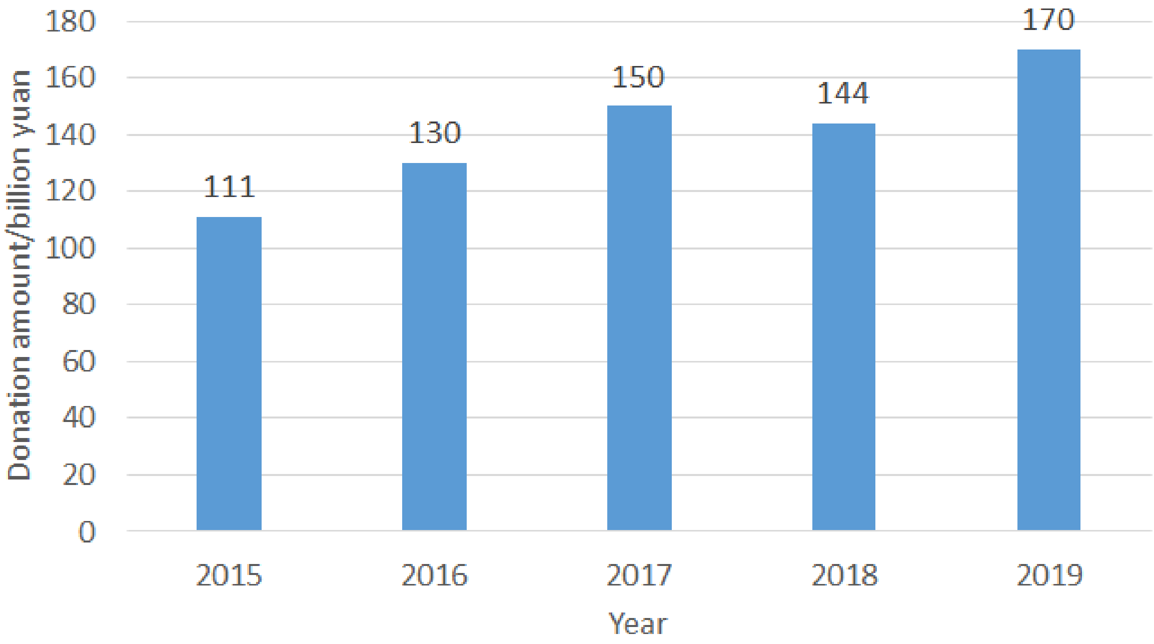


Figure 2: Annual charitable donations in China (China Charity Alliance, 2020)

1.3 Examining Chinese Corporate's Philanthropy for the SDGs

Initiated by the Institute for Sustainable Development Goals of Tsinghua University and Yishan Datacenter jointly in 2019, this study aims to comprehensively evaluate the contribution of Chinese enterprises to the implementation process of SDG while realizing corporate social responsibility (CSR) through public donations. Moreover, this study provides a comprehensive quantitative analysis using the Chinese enterprise public donation database to examine four different aspects of the enterprises' contributions with regards to the attainment of the 17 SDG sub-goals, including contributions of leading companies, the contributions in 2015, the donating preferences of companies in the power industry, and the enterprises' donating behaviors during the Covid-19 pandemic. Thereafter, several case studies on Chinese corporates' donations to

SDGs are conducted to explore the major stakeholders engaged in the process and the mechanisms through which the donations are managed and employed in the subfields of the 17 sustainable development goals. Accordingly, a panorama of Chinese corporate donations to SDGs is developed eventually and recommendations are proposed for relevant stakeholders to facilitate the corporate participation in SDGs through public donation and in turn promote the development of a relevant economic, social, and institutional environment in China.

This topic has important reference value to the UN, government departments, main market bodies, and organizations in society. This project has the potential to (1) realize an improved understanding of the contributions of enterprises to SDG from the private sector perspective for the UN, (2) improve ability for government departments to evaluate the coordinated development of enterprises and promote the economic, political, cultural, social, and ecological civilization construction in a coordinated manner, (3) prompt social organizations to integrate their resources, understand the needs of enterprises, and source funds for public welfare products, and (4) motivate enterprises to grasp the opportunity for transformation and upgrade, accelerate structural adjustment, and transform old drivers of growth into new ones.

This report consists of the following parts. After a brief introduction on the importance of corporate contributions to SDGs and background of this research, in part 2 and 3, we firstly review the literature on SDGs, CSR, corporate philanthropy, and corporate donation management and then introduce our database and research methodology. In part 4, we present the results of comprehensive quantitative analyses to track corporate contributions in different scenarios. Part 5 demonstrates several case studies on projects under SDGs donated by Chinese corporates, which enable us to explore the different mechanisms and patterns of their collaboration with relevant parties. Finally, we discuss and conclude our main findings and provide some preliminary suggestions for enhancing and simulating the contribution of private sectors to SDGs in Part 6-8.

2. Literature Review

Numerous local and international studies have been conducted on the SDG agenda, CSR and corporate citizenship, public welfare and corporate philanthropy, and enterprise sustainable development index, thereby laying a strong foundation for the development of the current research. However, the majority of the existing studies on CSR and public welfare have focused on the impact and effects of corporate public welfare behaviors on corporate performance instead of social outcomes (Bear et al., 2010; Godfrey, 2005; Matten & Crane, 2005; Muller & Kräussl, 2011). Meanwhile, although the international research framework and method of enterprise sustainable development index have been relatively formed, the evaluation and ranking of Chinese enterprises dedicated to promoting the sustainable development process have yet to reach maturity and the corporate contributions towards SDGs through public donations are usually ignored. Moreover, in terms of corporate donations management, researchers conclude three types of corporate charitable donations according to the degree of corporate participation in the charity project while SDG still has not been associated with these project-level analyses. Overall, no solid research has been conducted to trace that enormous sum of charitable funds into specific SDG and study the mechanism of action and potential influence of these funds on SDG implementation in China. Thus, pertinent assessments and analyses are imperative to fill this research and practice gap.

2.1 UN SDG agenda research

Research on the UN SDGs has mainly focused on the social cognition and acceptance of these goals; hence, the global expectation on SDG is extremely high and the acceptance of the 2030 agenda is remarkably positive (Spangenberg, 2017). The 2030 agenda has also been acclaimed for its global influence (Pogge & Sengupta, 2015) and considered a beacon for the global transition to sustainable development (Blanc, 2015) and a baton of the collective actions of all sectors of society (i.e., government, private sector, and civil society) (Hajer, 2015; Caprani, 2016).

Given the high global attention to SDG, numerous studies have been conducted that can be broadly divided into three categories: overall, sub-target/sub-industry, and sub-regional country research. For the overall research, studies have been conducted on such topics as the process monitoring index of SDG (Biggeri, 2019; Barbier, 2019), contribution of enterprises to SDG (Ghosh, 2019; Rosati, 2019), official development assistance (Pineda-Escobar & Cuervo, 2016), and life cycle analysis of sustainable development goals (Wulf, 2018). For the sub-target/sub-industry research, the topics center on SDG2 (Byerlee, 2019), SDG4 (Anan-Diab & Molinari, 2017; Storey, 2017; Moon, 2018), SDG9 (Ilie,2019), accounting (Schaltegger, 2017), management and business (Yiu & Saner, 2017; Pedersen, 2018), urban development (Barnett & Parnell, 2016; Rozhenkova, 2019), law (Kim, 2016), finance (Schwerhoff, 2017), and other goals and industries. For the national and regional studies, the topics include North Korea climate action study (Chol, 2019), Russian energy sustainable development study (Ryazanova & N.Y., 2019), and Colombia sustainable development planning and implementation study (Pineda-Escobar, 2019).

However, the research on the participation of private sectors in SDG agenda is limited, especially at the individual enterprise level in developing countries. Considering the norms of sustainable finance and impact investing stem form developed countries, it is reasonable that the norm transition of investing and corporate management towards a more sustainable trajectory still has a long way to go in relatively undeveloped areas. As the world's largest developing country and second largest economy, China has made solemn commitments to the 2030 agenda for sustainable development and the participation of private sectors is vibrant and exemplary for practice in other countries and academic research. Thus, this study could supplement to the literature of private sectors' participation and contribution towards SDG as a typical sub-regional country research.

2.2 CSR research

CSR research, which focuses on the corporate involvement in and contribution to social affairs, has a long history and has reached relative maturity. The theoretical research on CSR mainly includes stakeholder theory, business ethics theory, corporate social performance, sustainable development, triple bottom line theory (three-dimension theory), and corporate citizenship (Carroll, 1999; Bakker et al., 2005). Empirical studies have focused on the relationship between CSR and financial performances. For example, CSR performance is crucial to the "sustainability" of an organization (Eccles et al., 2012; Mandojana & Bansal, 2016). Enterprises with good CSR performance will have harmonious relationship between employees and employers, high employee loyalty (Dhanesh, 2012; Lee et al., 2012; Kim et al., 2016), and considerably high employee productivity (Hansen et al., 2011).

Typically, research on CSR is replaced with that on corporate sustainability, which is often associated with the UN SDG. CSR and corporate sustainability are considered synonymous (Ebner & Baumgartner, 2006) or the latter is considered a branch (Christofi et al., 2012) or an evolution (Taylor, 2013) of the former. Recent studies on CSR and corporate sustainable development have focused on and advocated that enterprises choose core targets to fulfill their social responsibility (Ike, M et al., 2019). However, from a practical perspective, the attention of empirical research on CSR should also be partially shifted from the relationship between CSR and financial performances to the actual impact of corporate actions on SDG and social outcomes rather than merely propose advocations for enterprises. More concrete evaluations and quantitative analyses are necessary to better associate classic CSR theories with SDG practice, where this research could partly contribute.

2.3 Corporate citizenship research

As an important component of CSR theory, corporate citizenship is the core concept to help us better understand the role that enterprises play in the whole society and the reasons why enterprises should fulfill their social responsibilities, which include contributing to SDG implementation in the current social context. This part reviews the background and impetus of corporate citizenship changes and further illustrates the theoretical rationale to combine CSR/corporate citizenship with SDG.

Globalization and changes in the role of companies

Globalization is the big background for the shift to governance and industry self-regulation. Governments cannot regulate corporate behaviors on social and environmental issues effectively by intervening at the international level. Furthermore, it is difficult for both governments and international organizations to advance the process of negotiating intergovernmental agreements and designing international rules (Haufler, 2001). On the other hand, for multinational enterprises, the standards that specify the physical qualities of products and services and the terms of business exchanges are necessary for technology development and market promotion. Meanwhile, they also face the pressure from civil society groups and stakeholders to be accountable and avoid negative impacts on society and environment. Combining the lack of mandatory regulation with the expectation from civil society and stakeholders, enterprises have developed voluntary standards and self-regulation not only for their own businesses but also for public interests, which indicates the enterprises begin to play a public role in world affairs.

Self-regulation policies by companies to exert a responsible role through corporate citizenship

The public role adopted by firms is conceptualized as corporate social responsibility or corporate citizenship. To exert this responsible role, enterprises develop different kinds self-regulation policies as illustated in Table 1 (Haufler, 2001). Among these corporate codes of conduct and supporting programs for the implementation of codes, the UN Global Compact and Global Reporting Initiative (GRI) proposed by UN Environmental Program are most influential and adopted by most international firms. Roughly 7,000 signatories, which consists of 5,200 from business and 1,800 from civil society and other non-business organizations, make UN Global Compact the largest global corporate citizenship initiative (Baccaro & Mele, 2011). In addition, since 2000, GRI's Sustainability Reporting Guidelines have been used by thousands of organizations in more than 90 countries to report publicly about their impacts on the economy, the environment, and society (GRI, 2020).

Table 1. Self-regulation policies to fulfill corporate social responsibility (Haufler, 2001)

Self-regulation policies	**Functions**
Corporate codes of conduct	Laying out the social commitments the company makes
Management and accounting systems	Translating the commitments into specific roles and responsibilities within the enterprise
Implementation programs	Ensuring the expenditure of resources to achieve specific goals

Monitoring, auditing, certification, and labeling programs	Testifying the successful achievement of these goals

Four categories of the conception of corporate citizenship

According to the difference in the supposed beneficiaries of corporate action and the motivation behind these actions, Locke (2002) divides the conception of corporate citizenship into four categories, namely minimalist, philanthropic, encompassing, and social activist approaches.

Minimalist approach

As a leading economist of neo-liberalism, Friedman (1970) contends that the core target and the only responsibility of business is to promote efficiency and optimize economic performance for its shareholders, which best illustrates the content of minimalist approach. In this context, any social or environmental issues and goals will distract managers from their core businesses and lead to inefficiency. Similarly, Manne and Wallich (1972) regard the concern on society and environment as the agency costs of self-interested executives who pursue their own prestige, which is an estangement from the rationale of free market and harmful to social welfare.

Philanthropic approach

This approach is developed from the traditional minimalist viewpoint and still emphasizes the shareholders' wealth and operational efficiency. The difference is that apart from instrumental value, the philanthropic approach admits the philanthropic activities of individual managers, shareholders, and companies motivated by moral or ethical values.

Encompassing approach

In contrast to above "shareholder primacy" views, a broader vision on stakeholders and corporate citizenship presents in the encompassing approach (Hansmann & Kraakman, 2001). In this view, any other groups that may be affected by corporate activities are counted as related stakeholders for whom companies should be responsible. Freeman (1984) and Brummer (1991) contend that wider corporate responsiveness could strengthen the resiliency of the firm and enhance company profitability and shareholder wealth in the long run, which reveals an instrumental value behind this approach to maximize the benefits of broader but still limited stakeholders. As illustrated by Gardberg and Fombrun (2006), the internal channel to realize this instrumental value is intangible assets such as legitimacy, reputation, and competitive advantage created by wider responsiveness.

Social activist approach

By extending the boundaries of supposed beneficiaries, social activist approach emphasizes that enterprises should encompass broader societal goals and benefit the whole society out of moral and ethical considerations. The enormous power and wealth obtained by international companies enable themselves to exert such extensive influence on the world (Locke, 2002).

Overall, the transition from the minimalist to the social activist evinces the gradually broader social responsibilities that enterprises should fulfill under the expectation of the whole society, which demonstrates the necessity and rationality to incorporate the private sectors, especially enterprises, into the implementation process of SDGs. On the other hand, the UN SDG agenda also provides enterprises with a favorable opportunity to systematically reflect on the corporate citizenship of themselves and better design their CSR practices under a scientific and comprehensive framework of goals.

2.4 Studies on enterprise sustainable development index

The study of the enterprise sustainability index includes the Jantzi Social Index, Dow Jones Sustainability Indices, S&P/TSX Renewable Energy and Clean Technology Index, FTSE4GOOD Index, and China's "Yili 99" Index.

The Jantzi Social Index, which was established by the Jantzi Institute in collaboration with Dow Jones, has a wide range of environmental, social, and governance rating criteria, such as indigenous relations, community engagement, corporate governance, employee relations, environment, and human rights.

The Dow Jones Sustainability Indices, which measure the sustainability of thousands of companies, include economic, environmental, and social dimensions. Secondary indicators under the economic dimension include branch governance, risk and crisis management, and code of conduct/compliance/anti-corruption and bribery. The environmental dimension is divided into environmental report and specific industry-level indicators. The social dimension includes human resource development, talent attraction and retention, labor practice standards, corporate citizenship/philanthropy, CSR reporting, and other secondary indicators.

The S&P/TSX Renewable Energy and Clean Technology Index measures the performance of Toronto Stock Exchange-listed companies, the core business of which is developing green technologies and sustainable infrastructure.

The FTSE4GOOD Index, which was developed jointly by the Financial Times Index and Ethical Investment Research and Information Service, aims to track companies that have demonstrated good CSR policy, management, and performance. Environmental indicators include secondary indicators of biodiversity, climate change, pollution and resources, supply chain, and water security. Social indicators include customer responsibility, health and safety, human rights and community, and labor standards. Management indicators include secondary indicators, such as anti-corruption, corporate governance, risk management, and tax transparency.

Yili 99 aims to evaluate the social value of enterprises. The evaluation model is divided into four levels on the bases of framework of the driving force of the target, innovativeness of the method, and transformation ability of the benefits (i.e., economic, social and environmental benefits). For example, the first-level indicator of objective driving force is divided into three second-level indicators: value, strategic, and business drivers. Value driver is divided into third-level indicators, such as core values and business ethics.

Table 2. Five main enterprise sustainable development index

Name of index	Developer	Feature
Jantzi Social Index	Jantzi Institute & Dow Jones	Wide range of environmental, social, and governance rating criteria
Dow Jones Sustainability Indices	Dow Jones	Plentiful secondary indicators under economic, environmental, and social dimensions

S&P/TSX Renewable Energy and Clean Technology Index	Standards & Poor's	Focusing on green technologies and sustainable infrastructure
FTSE4GOOD Index	Financial Times Index and Ethical Investment Research and Information Service	Tracking companies demonstrating good CSR performance
Yili 99	China Alliance of Social Value Investment & Wind	Four-level evaluation model different from ESG/SDG framework

Overall, although the international research framework and method of enterprise sustainable development index have been relatively formed, the evaluation and ranking of Chinese enterprises dedicated to promoting the sustainable development process have yet to reach maturity. Moreover, the existing index system presents difficulty in conducting a horizontal comparison of enterprises in different industries. The current study uses the unique Chinese corporate charity donation database to link the public welfare behaviors of Chinese enterprises with SDG and systematically evaluate the participation of Chinese enterprises in each SDG sub-target using case study and quantitative statistics. Accordingly, the public welfare index of SDG of Chinese enterprises is obtained, thereby enabling a fair horizontal comparison of different enterprises in various industries. This index also provides new evidence and research perspective on the Chinese path of sustainable development and China's active participation in the UN 2030 agenda.

2.5 Studies on the motivations and impacts of corporate philanthropy

Corporate philanthropy constitutes an important part of the corporate economy. To explain the behaviors of corporate philanthropy/corporate citizenship, Benabou and Tirole (2010) propose three main motivations of enterprises. The first explanation is a "win-win" strategy for the society and enterprises which facilitates the sale of enterprises' products to socially conscious consumers, attracts ethically-minded employees, and increases profits. The second mode is so called "delegated philanthropy". In this mode, customers, investors, or employees designate enterprises to shoulder social responsibility on their behalf to reduce information or transaction costs. The third pattern is a kind of insider-initiated philanthropy where the firm's governance system is so weak and vulnerable that some board members could spend shareholder profits meeting their own charitable interests.

In terms of the impacts of corporate philanthropy, negative concerns are proposed for the “win-win" category as “strategic CSR" (Baron, 2001), in which enterprises eventually aim to strengthen their market positions and hence longer-term profits by public donations to charitable organizations. Especially when this strategy serves as a tool to placate regulators and public opinion in order to avoid strict scrutiny, the social consequence could become more ambiguous. Kotchen and Moon (2012) claims that if firms regard charity as a strategic tool to secure favorable regulatory treatment, the social cost may exceed the societal benefits of their contributions to charity. For example, excessive pollution may stem from weaker environmental regulations, consumer surplus could suffer from favorable treatment by antitrust authorities, and the chances of a banking crisis could increase under lax financial oversight.

As for the positive impacts of corporate philanthropy, scholars have claimed that enterprises could benefit from corporate philanthropy in a variety of ways such as (1) helping support key stakeholders of the enterprise and strengthening positive brand reputation (Bear et al., 2010), (2) maintaining employee loyalty (Muller & Kräussl, 2011), (3) molding enterprises as responsible corporate citizens (Matten & Crane, 2005), (4) providing shareholders with insurance-like protection based on intangible assets (Godfrey, 2005), and (5) generating a competitive edge to the enterprise (Porter & Kramer, 2002).

To sum up, the studies on corporate philanthropy focus on the determinants and impacts of corporate donations mainly from the perspective of corporate management and operation. Considering that the annual Chinese corporate donations has reached 80 billion yuan in 2019 (China Charity Alliance, 2020) and UN called on companies to assess the impact of their activities, it is worthwhile to investigate the social outcomes, especially contributions to SDGs, of such enormous sum of corporate charitable funds. Although some researches and organizations have tried to trace these funds and categorize them into different SDGs at charity foundation level (UNDP, 2020), the contributed areas and amounts of individual Chinese enterprises under the SDG system remains unknown. Thus, our research could lay a concrete foundation for the following research by comprehensively filtering and categorizing these charitable funds at individual enterprise level.

2.6 Studies on different types of corporate donation

In practical implementation of corporate philanthropy, enterprises tend to take diversified approaches in charitable projects based on the balance of their own capacity and the cost of management, and even in the same project the roles of different enterprises could be diversified (Seitz & Martens, 2017). Though there are some studies trying to figure out the evolving trend in the pattern of corporate philanthropy (Hu, 2015), or tracking the innovative approached they have been taken (Zuo, 2021), the research in how Chinese enterprises are engaged in the projects is in lack. Ding (2012) once mentioned the classification of corporate charitable donations according to their way of participation -- discretionary donations; cooperative development; independent operation, but did not illustrate with explanation nor case studies as the focus was on the drawbacks and solutions. In this paper, we are trying to fix the gap and discuss three categories of corporate donations more deeply and demonstrate with cases in the fifth part as well.

Discretionary donations -- Corporates as pure donors

“Discretionary donations”means that an enterprise transfers its own resources, such as financial resources, to a third-party organization, who is solely responsible for the operation of charitable undertakings. The typical discretionary donations mostly occur in the case of scattered and random charitable behaviors of enterprises. For example, under the call of the government, enterprises donate money and materials for disaster relief.

The advantage of this type of donation is that it can make full use of the professional capabilities of charitable organizations; it saves manpower and management expenses for the enterprise, and reduces the impact on the normal operation of the enterprise. The disadvantage is that it cannot participate in the specific planning and management of charitable projects, and lacks the business characteristics of the enterprise itself; the inability to monitor the use of donations makes it impossible to evaluate the efficiency and effectiveness of charitable behaviors in a timely and accurate manner.

Cooperative development-- Corporates as Collaborators

"Cooperative development" refers to the joint design of charitable projects and the implementation of charitable behaviors between enterprises and third-party organizations (including government departments, non-profit organizations, business partners, etc.). Due to different purposes, characteristics, and requirements of various charitable projects of enterprises, the third parties they cooperate with are also different, not only charitable foundations, but also international organizations, government departments, institutions, industry associations and even business partners.

On the one hand, it is to have a more comprehensive and in-depth understanding of the development status of the project and donation needs, on the other hand, it is also to arouse the attention and support of the government departments to the education of the region.

The advantage of this kind of donation method is that the company donates property, and the third-party organization provides credibility, reputation, and a strong organizational management mechanism to achieve complementary advantages; because of the corresponding autonomy, the company can design charitable projects that meet its own characteristics. Conducive to shaping the charity brand belonging to the enterprise itself.

The disadvantage is that the cooperative development donation is carried out based on the willingness and ability of both parties. The cooperation attitude of the two parties in the whole process largely determines the success or failure of the project, and therefore carries certain risks.

Independent Operation -- Corporates as independent agencies

Independent Operation refers to the independent development, implementation, evaluation, and management of charity projects by the enterprise. Individually operating enterprises are more proactively involved in charity. According to different organizations responsible for charitable activities, they can be further divided into two types:

1) Companies can set internal functional department responsible for corporate charitable affairs. In this case, the company often stipulates the functions of the relevant departments through the articles of association or job descriptions, and allocates a certain amount of manpower, material resources and institutional guarantees to support the development of related departments.

2) In accordance with relevant national laws and regulations, enterprises set up corporate foundations to specialize in charitable activities. Compared with the former type, the establishment conditions of a corporate foundation are more stringent and management is more stringent, but its decision-making power over charitable behavior is more autonomous, and its

available resources are more stable and abundant.

The advantage of "independent operation" is that it makes the corporate charitable donation mechanism more durable and stable, and charitable donations have more corporate operating characteristics. The disadvantage is that it will have a certain impact on the operation of the enterprise because it will consume considerable manpower, material, and financial resources to set up special departments and foundations to operate.

According to *A Survey Report on Business and Sustainability in China* (UNDP, 2020), it has been found that there are two trends of CSR in China under the SDG 2030 agenda. (1) Corporate Social Responsibility is becoming more professional When it comes to SDG-related activities, Chinse enterprises tend to carry them out through their CSR teams as well as donations, with a rising contribution rate of corporate foundations. This is probably because setting up independent foundations has become a corporate option. On the other hand, it is worth noting that CSR management is increasingly being handled by people with the expertise. (2) The SDGs will be tied more closely with corporate strategy and business. Corporate willingness to closely combine the SDGs with their strategy and business has increased noticeably, along with demand for pro-SDGs programs. Regularly sharing corporate concepts, strategies, methods of CSR and business activities in economic, social, environmental, and other dimensions with stakeholders can help to sort and analyze various liability risks faced by companies and improve internal management strategies. Internationally, firms are becoming familiar with releasing social responsibility reports and facing ESG reports issued by institutional investors. Besides, it is worth noting that when approaching sustainable development goals, multiple partnerships among corporations, philanthropic foundations, governments, and international organizations have been established in recent years. Private funding from corporations and philanthropic foundations for UN activities has increased steadily (Karolin Seitz and Jens Martens, 2017).

3. Data and Methodology

In response to the research and practice gaps mentioned above, we conducted our empirical research using the following methods. First, as research assistants in the Institute for Sustainable Development Goals, Tsinghua University (TUSDG), we jointly constructed the Chinese corporate SDG donation database with Yishan Datacenter, in which we centralized information of corporate donation events and charitable projects from publicly available channels. Second, utilizing our research experience and comprehension of SDGs, we traced the chain of charitable funds behind the raw data and categorized these funds into 17 subgoals of SDG based on an SDG keyword dictionary constructed by ourselves. Third, with this centralized database and sanitized charitable data which have been matched with SDGs, we calculated the donation amount of each individual enterprise in our database to each subgoal of SDG from 2008 to 2020 and conducted quantitative analyses in different scenarios to investigate corporate donations to SDGs in different industry at different time. Fourth, to further analyze the contribution route and explore the mechanism of corporates' collaboration with other organizations, we conducted several case studies through interviews with people in charge, documents, and second-hand coverage. In this section, we will introduce our corporate donation database, methods of fund tracing and program matching, and process of interviews and case study specifically.

3.1 Corporate SDG donation database

3.1.1 Introduction to Institute for Sustainable Development Goals, Tsinghua University and Yishan Datacenter

Aiming at comprehensively tracing and evaluating the Chinese corporate donations to SDGs, this database is co-founded by the Institute for Sustainable Development Goals, Tsinghua University (TUSDG) and Yishan Datacenter in 2019. Supported by the School of Public Policy and Management, Tsinghua University, TUSDG is committed to in-depth multidisciplinary research on the overall framework, policy implementation and specific goals of the UN SDGs, and exchange of experience and mutual learning with relevant UN agencies and international counterparts in the field of SDGs. Among all research topics of TUSDG, this database serves as a bedrock to investigate Chinese private sectors' contribution towards the implementation of SDGs in China. Based on its rich research experience and comprehension of SDGs, TUSDG mainly provides intelligence support to the categorization of charity programs into each SDG subgoal and impact evaluation of corporate donations to SDGs in this research.

Yishan Datacenter is dedicated to the big data analysis of philanthropy in China in recent years, and equipped with rich experience in cooperation with international organizations, governments, enterprises and institutions, foundations, trade associations, and public welfare organizations. With the rapid development of philanthropy in the world, new donors and charitable organizations are constantly emerging. Artificial intelligence, blockchain, cloud computing and big data profoundly affect the pattern of the philanthropic industry. Using more than a decade of industry platform experience, Yishan transforms raw data into the basis for leaders' decisions, making it easier for government, corporate and philanthropic decision makers to create positive social impact. Similarly, in this research, Yishan is responsible for the raw data collection, compilation, and transformation with the help and request from TUSDG.

3.1.2 Data source and profile of the database

All information and data are collected from publicly available channels, which mainly include official websites and WeChat accounts of foundations, charity federations and Red Cross (three main categories of fundraising organizations), annual report and official websites of enterprises, and public donation news. We then categorize these raw data into two fundamental types, namely donation events, which trace charitable funds from contributing enterprises to charity organizations, and charity projects, which trace the funds from charity organizations to final beneficiaries in specific projects and programs. All duplicated amount of donation income and donation expenditure of all donation institutions has been removed and the amount of donations that have been publicized between donation institutions has been excluded. The donation amount includes cash donation and material donation. By June, 2021, our database involves 127,083 contributing enterprises, 896,047 charity organizations, and over 6 million donation events from 2008 to 2020. For raw data generated before the presence of UN 2030 Agenda, we could still categorize those projects into different areas using the following method to evaluate the enterprises' de facto contributions to corresponding social issues which had not been systematized as SDGs, though.

3.2 Method of fund tracing and program matching

As mentioned above, the charitable funds stem from the original donors (i.e., Chinese enterprises), flow through different kinds of charitable institutions and foundations, and finally function in multitudinous charitable projects. To clearly attribute each charitable fund to its original enterprise correspondingly and avoid repeated calculation, five main technical issues must be addressed, which include the construction of standard lists of branches of leading group companies, matching donors' names with standard lists of branches, cleaning up repeated calculation of donations, matching donation events and charity projects, and matching charity projects with the 17 SDGs.

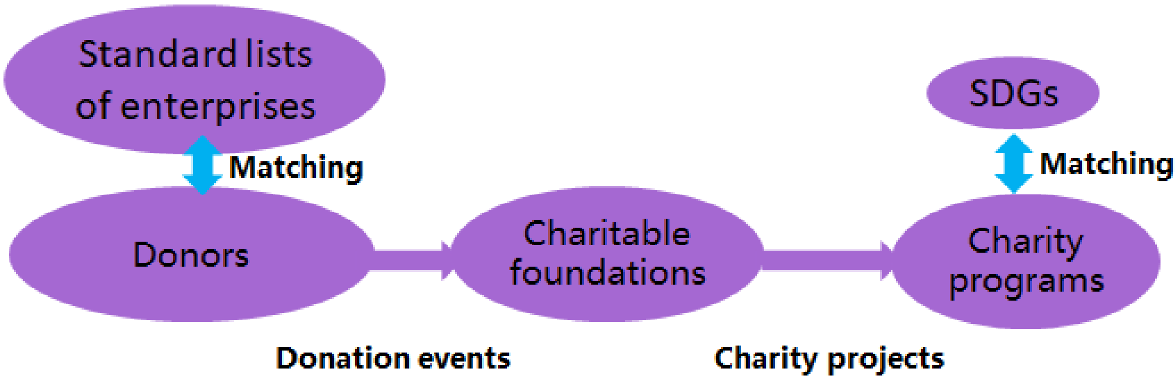


Figure 3: Chain of charitable funds

3.2.1 Construction of standard lists of branches of leading group companies

Leading group companies are inclined to set branches in different provinces or cities and the related charitable funds may be donated in the name of these branches. For example, Tencent, one of the biggest Internet enterprises in China and initiators of internet philanthropy, has 10 officially registered branches and each of them has relatively independent charitable businesses. Therefore, a standardized list of branches of these leading group companies must be constructed beforehand to enable us to recognize these apparently unrelated donations and attribute them to their parent company. To address this problem, we mainly refer to two types of information. One is the annual financial reports of these group companies on Wind or CSMAR financial database. The other is third-party enterprise information platforms such as Tianyancha or Qichacha where basic information of all officially registered corporate entities could be found.

3.2.2 Matching donors' names with standard lists of branches

Since our raw data are collected from publicly available channels such official websites of foundations and news of donation events, the donors' name in these information sources may not perfectly match with the enterprise name in our constructed standard list. To avoid the problem of missing matching, we adopt two methods. First, we utilize the unified social credit code for national organizations, which is a unique code system for corporate entities. Especially for information from three main categories of fund-raising organizations, corporate donors are normally identified with this code, which facilitate the process of matching. Second, for entities without this code, like donation news from social media, we match the names based on the calculation of text similarity and manually recheck the results to avoid programming errors.

3.2.3 Excluding double counting of same donations

Considering that different foundations and charity organization could be involved in a same donation for different reasons like fund-raising or operating, a fundamental problem in the statistics of charitable funds is double counting. For example, an enterprise may donate a sum of money to its corporate foundation and then this fund could be further donated to an educational foundation for some specific charitable projects. In this scenario, two transitions of the same funds should be only counted as one donation to avoid overestimating the contribution of benefactors. In the construction process of our database, we take two measures to address this problem. First, we manually recognize enterprise foundations and family foundations where repeated counting normally exists and ensure that all charitable funds flowing through these foundations are counted once. Second, we reconstruct the data form from chains of funds into node data, identify the inflow capital and outflow capital of each node, and retain only the original source of capital with zero inflow.

3.2.4 Matching donation events with charity projects

After excluding repeated items in our database, the next step is to match the donation events with charitable projects. The method is that we calculate the text similarity between the "use of donated funds" and "brief introduction of charitable projects". If the text similarity is higher than a certain threshold, the matching is successful and the fund of a certain donation is determined to flow to a specific charitable project. If the "purpose of donation event" is not clear or empty, the funds will be allocated according to the proportion of the fund recipient (foundation) 's business, such as education, poverty alleviation, medical care, etc.

3.2.5 Categorizing charity projects into 17 SDGs

To clearly identify each enterprise’s donations to each SDG sub-goal, the final but most important step is to categorize charity projects into 17 SDGs based on the descriptive texts of projects. After trying different methods of categorizing such as supervised machine learning or unsupervised machine learning, the final method we adopted is a relatively classic keyword matching for the highest accuracy rate compared to that of other methods. The detailed processes are as follows: first, we construct the keyword dictionary for each SDG sub-goal from both top-down and bottom-up perspectives. Based on rich research experience and comprehension of SDGs, researchers from TUSDG proposed preliminary keyword sets for each subgoal in a top-down way. In addition, 3000 words with highest frequency appeared in all description texts of charitable projects were also extracted and categorized into 17 SDGs in a bottom-up way. Second, all charitable projects in the database were categorized based on this fundamental keyword dictionary and multi-labels were permitted. Since the descriptive text of one charitable project may indicate different domains of SDG, the matching rate were also calculated and we normally kept one to three labels with top matching rate. Third, with the results of first round matching, we entered the period of keyword-refining and modifying. Thousands of items were randomly sampled for manual check and we kept this process for several rounds to ensure the robustness of matching. Finally, almost all the charitable projects with concrete descriptions were categorized properly and for items without useful information, they were also be categorized based on the main businesses of beneficiary foundations.

3.3 Interviews and case study

This study has conducted comprehensive qualitative analyses to track corporate contributions in different scenarios and several case studies on projects under SDGs donated by Chinese corporates, in order to have a closer look at the contribution route and explore the mechanism of their collaboration with international organizations.

Given that there are mainly three types of corporate charitable donations --discretionary donations; cooperative development; independent operation, corporates are likely to take hybrid approach towards a certain Sustainable Development goal, or even participate as different roles during the cooperation with a certain third-party. In their charitable contributions, corporates tend to take different approaches in accord to the request scale, urgency, its own strategic arrangement, and previous experience in interactions with third-party agencies.

We have chosen several case studies respectively from the perspective of corporate foundation (Tencent's Charity Platform), international organization based in China (UNESCO-ICHEI) and the targeted Sustainable Development goals (e.g., SDG1), and intended to find out the working mechanism of corporate donations and have a big picture of the cooperation pattern among agents. The case study has been chosen based on its influence on SDGs and typical status as representative, and they are conducted through interviews with people in charge, documents, and second-hand coverage.

4. Descriptive Analysis

To better illustrate the panorama of Chinese corporate donations to SDG, we select different perspectives to conduct our statistical analyses and present the results and findings. First, since the size, influence, and importance of the head companies are incomparably dominant in the national economy and the domain of corporate philanthropy, we firstly conducted a leading company analysis based on the donation of top 500 Chinese enterprises to SDG. Second, Second, considering the specialty of year 2015, which is the initial year when the 2030 SDG agenda was adopted by member states of the UN and the China's State Council launched a persistent battle against poverty, we conducted an annual analysis of all Chinese corporate donation to SDGs in 2015. Third, since the donation behaviors and emphases might vary greatly among different industry, we also conduct an industry-specific analysis and select all power enterprises to study for their importance in the nation's economy as well as their affinity to energy transition and climate change. Fourth, in view of the outstanding performance and vibrant participation of Chinese enterprises in the fighting against COVID-19, we add an event analysis of the Chinese corporates' donations in COVID-19 to quantify the contribution of enterprises under this unprecedented public health crisis.

4.1 Leading company analysis: Donation of top 500 Chinese enterprises to SDG

4.1.1 Overview of top 500 Chinese enterprises and their donations to SDG from 2015 to 2019

Since 2010, the *Fortune* magazine has been publishing rankings of the top 500 companies from mainland China that are listed on the stock market on an annual basis. The ranking for the top 500 Chinese companies in 2019 was published on July 2020, compiled by the China branch of *Fortune* magazine and the Wealth Management Department of China International Capital Corporation (CICC). To be included in the ranking, companies need to have an annual revenue of 17.8 billion yuan at least, a 10% increase as compared to 2018. In 2019, the total revenue of the 500 Chinese companies amounted to 50.5 trillion yuan, a 11% increase over the previous year, taking up more than half of China's GDP in 2019 (99 trillion yuan); their net profits increased by 16% and reaches 4.2 trillion yuan.

In terms of revenue size, as compared to companies providing Internet services, companies in infrastructure, construction, power industry, engineering machinery, ports, and logistics remain important participants in the national economy, contributing 17% of the total revenues, amounting to 8.6 trillion yuan. In terms of profitability, companies providing financial, Internet and telecommunication services performed better; the 10 most profitable companies from these industries made a gross profit of 1.7 trillion yuan, covering almost 40% of the total profits made by the 500 companies (Fortune China, 2020).

Judging from their donations, the 500 companies displayed strong sense of CSR. From 2015 to 2019, donations to SDGs increased steadily, totaling 26.2 billion yuan. Donations in 2019 experienced a slight drop, but donations of 2019 still exceeded 7 billion yuan, as did donations of 2018, more than fourfold the donations of 2015 (1.6 billion yuan).

Ranked by SDG subfields, SDG 1 and SDG 4 received more donations than other fields. In 2018, donations to SDG 9 increased by almost sixfold, probably as a result of the nation's new ambition in constructing new type of infrastructure, including facilities related to artificial intelligence, industrial Internet, and Internet of Things.

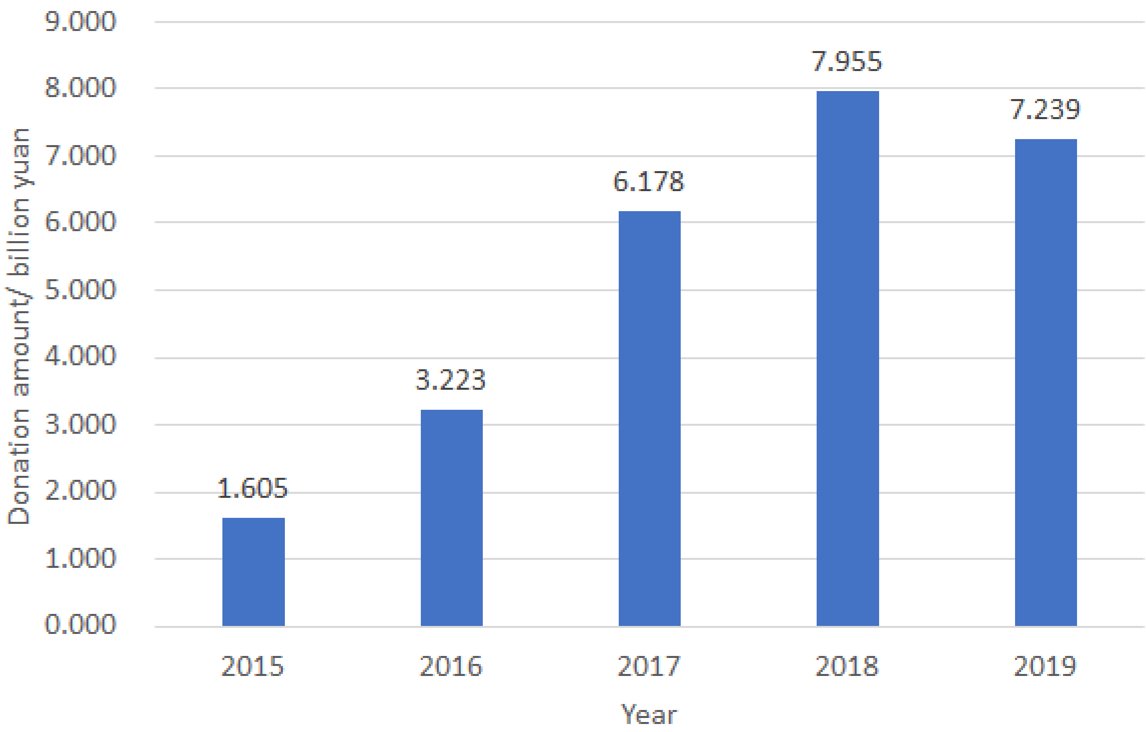


Figure 4: Top 500 Chinese enterprises donation to SDGs

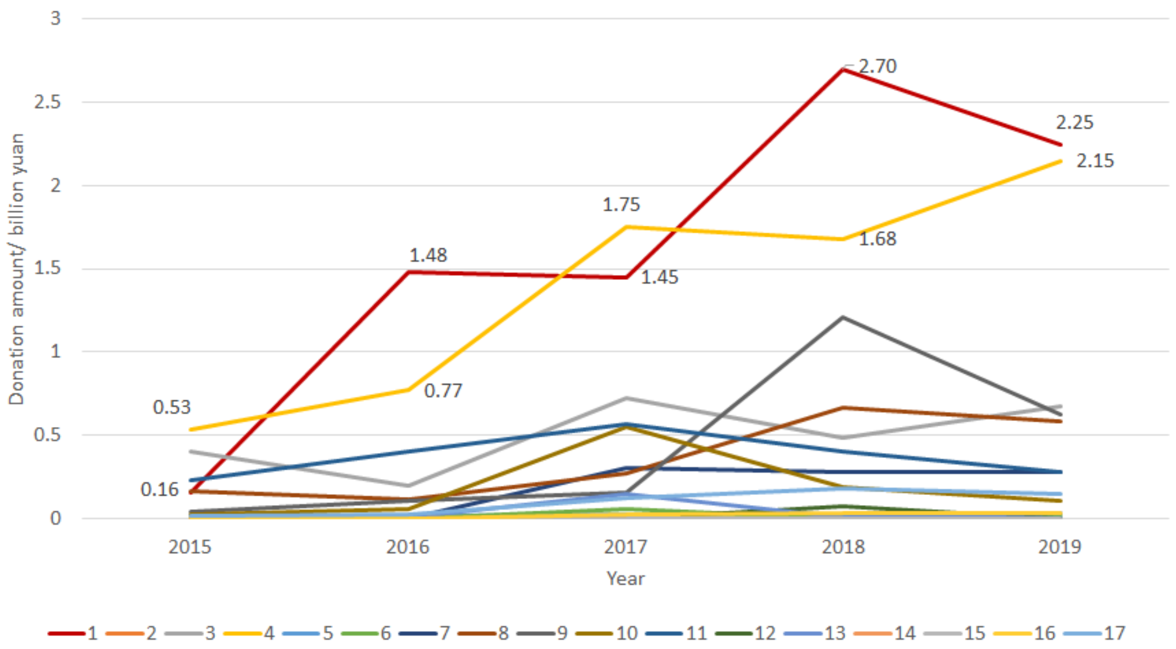


Figure 5: Distribution of Top 500 Chinese enterprises donation to SDGs from 2015 to 2019 (Total amount: 26.2 billion yuan)

4.1.2 A closer look into the leading companies' donations to SDGs

In order to better capture the donation focus of the companies, we further selected the top tenth of the 500 enterprises, which consists of 1-2 leading companies from each industry. In an extended timespan from 2010 to 2018, it is evidenced that donations are distributed unevenly among the 17 fields, where SDG 1 and SDG 4 attracted more funds than other areas. Donations to poverty reduction increased the most, from 0.08 billion yuan in 2010 to 2.43 billion yuan in 2018, exceeding those to all the other areas combined. Donation growth in education development ranked the second, from 0.07 billion yuan in 2010 to 1.02 billion yuan in 2018.

The concentration of funds in these two areas reflect that corporates behaviors are molded by government policies in China, since poverty reduction and education development are priorities on the government's agenda. The surge of donations to SDG 1 in 2016 appeared to be a response to the policy published by the Central Committee of the Communist Party of China (CPC) and the State Council in late 2015, the *Decision on Winning the Poverty Reduction Battle,* calling on both public and private enterprises, as well as the civil society to participate in poverty reduction, and pledging to implement supporting policies to promote employment through tax reductions or exemptions and vocational training subsidies (State Council, 2015). Similarly, the rebound of poverty reduction donations in 2018 could be a consequence of the policy issued in 2017 on creating better market environment to encourage entrepreneurs to start businesses and undertake social responsibilities (State Council, 2017). These findings are preliminary and could use further quantitative research to explain and boost corporate donating behaviors.

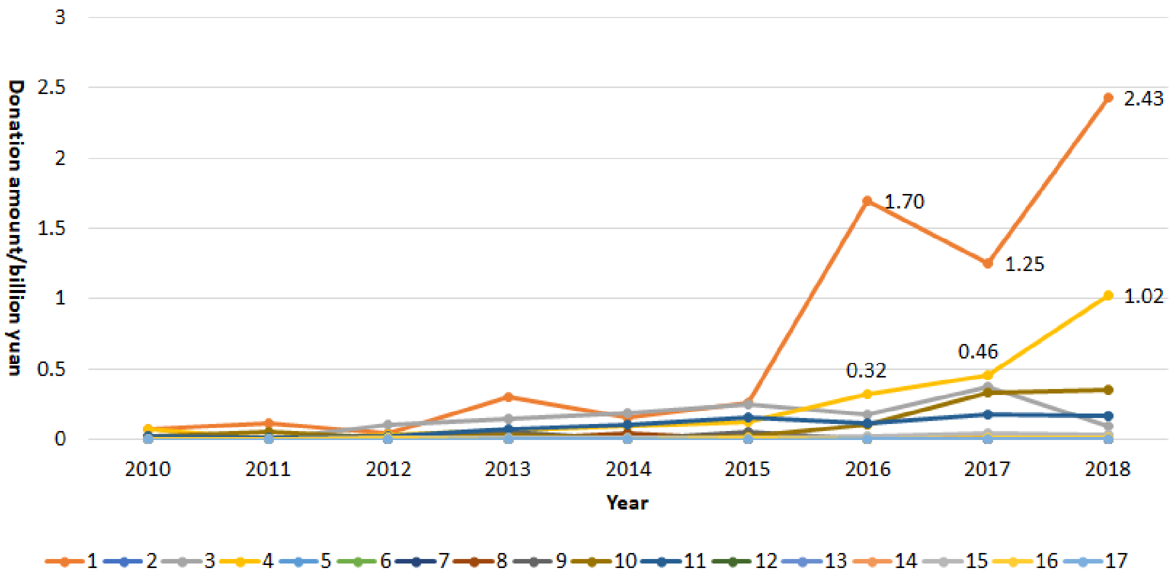


Figure 6: Distribution of Top 50 Chinese enterprises donation to SDGs from 2010 to 2018 (Total amount: 12.3 billion yuan)

The vision and strategies of a corporate would also influence whether it donates and where the donations go. Take Tencent as an example. As the 25th company in the 2019 Fortune China 500 ranking, Tencent made a total revenue of 377 million yuan in 2019 with a net profit of 93 million yuan. Founded in Shenzhen in 1998, Tencent has become a world-leading company, providing a range of internet and technology products and services including instant communication applications, social media platforms, video games, cloud services, and advertising.

As one of the first companies in the Internet industry to commit to practicing CSR, Tencent has established a vision of “value for uses, tech for good”, aiming to incorporate social responsibility into their products and services (Tencent, 2021). It established Tencent Charity Foundation in 2007, the first in Internet industry in China, and started publishing CSR reports in 2008. It also made other innovative endeavors to promote philanthropy, including setting up Tencent Charity Platform and launching the “9.9 Giving Day”. According to the China Enterprises Evaluation Association, Tencent ranked No. 7 among the Top 500 Chinese

Enterprises in terms of its CSR performance in 2019 (China Enterprises Evaluation Association, 2020).

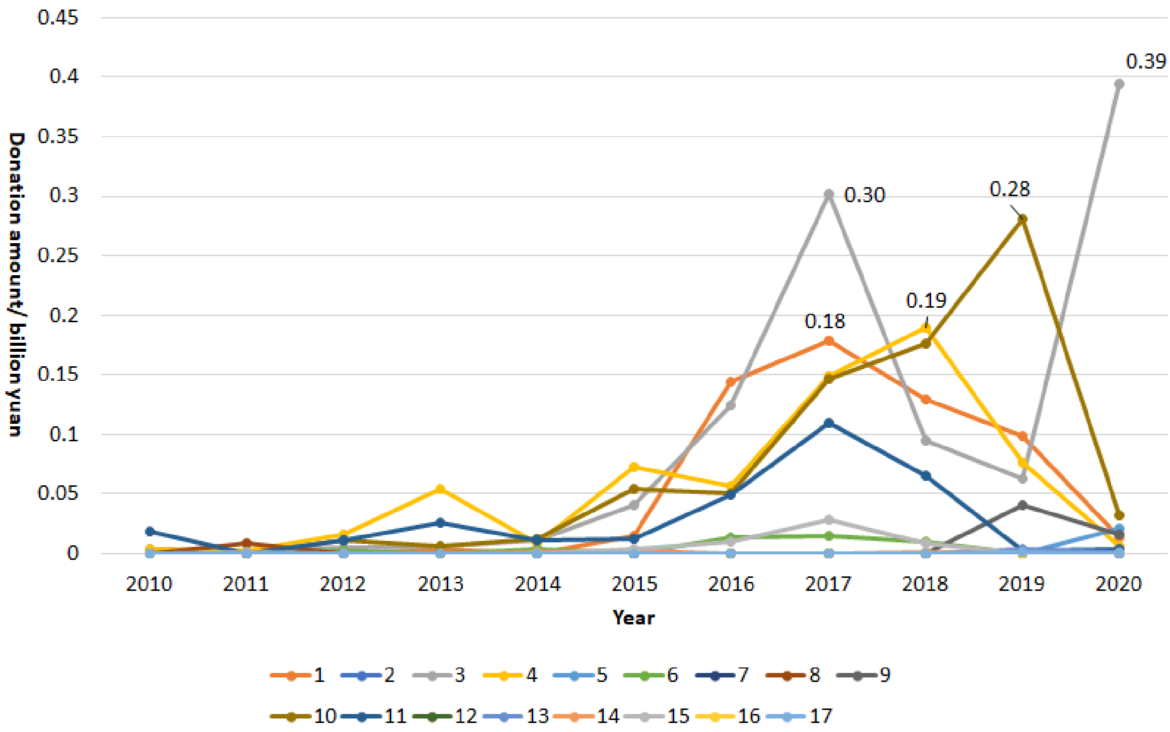


Figure 7: Distribution of Tencent donation to SDGs from 2010 to 2020 (Total amount: 3.5 billion yuan)

Tencent has displayed increasing willingness to donate. Donations to SDGs have experienced a significant growth in 2016, which corresponds to its ambition to take on more social responsibility. Examining donations to each subfield, it is evident that Tencent is attentive to promote social development: poverty alleviation (SDG 1), health promotion (SDG 3), inequality reduction (SDG 10), and education development (SDG 4) are major recipients of donations. By the end of 2019, Tencent Charity Foundation had donated 2,957 million yuan, 95% of which went to poverty alleviation (Tencent, 2020b). The surge in SDG 3 in 2020 could be interpreted as efforts to make up the weaknesses of the public health system revealed in the response to the COVID-19 pandemic. A more detailed analysis of Tencent's donating behaviors would be provided in 5.3.

4.2 Annual analysis: Chinese corporate donation to SDGs in 2015

This section provides an analysis of Chinese corporate donations to the SDGs in 2015, which marks the year when the 2030 SDG agenda was adopted by member states of the UN, a milestone for the collective global efforts to tackle the most pressing challenges in our times. This year also stands out as a special year in China's persistent battle against poverty, which corresponds with the primary goal of the SDG agenda. It is in the November of 2015 that China's State Council issued the *Decision on Winning the Fight against Poverty*, demonstrating the determination and commitment to eradicate poverty in the rural areas by 2020.

4.2.1 Distribution of Chinese corporate donation to SDGs in 2015

In 2015, Chinese enterprises directed nearly 80% of their donations to economic and social development, leaving out the environmental dimension. More than 40% of the donations went to the field of SDG 1, poverty alleviation, which constitute the largest share, followed by donations to education, corresponding to SDG 4, accounting for 36% of total donations. These two areas are both political priorities for the Chinese government, as can be seen from the sustained and strenuous efforts devoted to them. As a result, Chinese enterprises, especially SOEs are more attentive to these fields when making donations.

Poverty reduction has been high on China's political agenda since 1949. The Chinese government has displayed strong political determination in eradication poverty, as can be seen from the number of poverty alleviation strategies published, including the *Seven-Year Program for Lifting 80 Million People out of Poverty (1994–2000)*, the *Outline for Development-oriented Poverty Reduction for China's Rural Areas (2001–2010)*, the *Outline for Development-oriented Poverty Reduction for China's Rural Areas (2011–2020)*, the *Decision of the CPC Central Committee and the State Council on Eradicating Poverty in China*, and the *National Plan for Poverty Reduction in the 13th Five-Year Plan Period* (Wang & Zhang, 2020).

As the largest developing country in the world, China has made great achievement in poverty alleviation. From 1981 to 2013, population living below the 1.9 dollars poverty line decreased by 850 million, contributing 70% of poverty reduced in the world (Tan, 2018). China has been forging partnerships with global communities to promote knowledge exchange in poverty reduction across the world, especially the Global South. In 2005, the United Nations Development Programme (UNDP) and the Chinese Government jointly established the International Poverty Reduction Centre (IPRCC), aiming to promote global knowledge and information dissemination. Since 2005, IPRCC has organized a series of training and global knowledge initiatives on poverty reduction, benefiting 1305 participants from 96 countries.

Despite the grave challenges brought by the unexpected Covid-19 pandemic, China managed to eradicate extreme poverty by 2020, 10 years earlier than the deadline proposed by the UN 2030 Agenda.

Similarly, the Chinese government attaches great importance to the development of quality education. Beginning in the 1985 educational reform, China started to establish a comprehensive education system consisting of pre-primary education, primary education, secondary education, higher education, and adult education. The 1986 Compulsory Education Law made it mandatory for school children to attend to basic education from Grade 1 to 9. Higher education was resumed in 1977 and given particular attention as Chinese leaders came to realize the enormous economic and social returns of education (Chi, 2018). Today, China boasts the largest education system in the world with over 154 million students enrolled in compulsory education and 40 million students enrolled in higher education in 2019, with a net enrollment rate in primary schools of 99.9% and gross enrollment rate of higher education of 51.6% (Ministry of Education, 2020).

Under the overall strategy to develop in an innovative, coordinated, green, open, and shared way, the Chinese government pledges to further increase the fairness and quality of education and reduce the gap among different population groups and regions under the framework of the *Education Modernisation 2035* and the *Implementation Plan for Accelerating Education Modernisation (2018-2020) (Ministry of Foreign Affairs, 2019).*

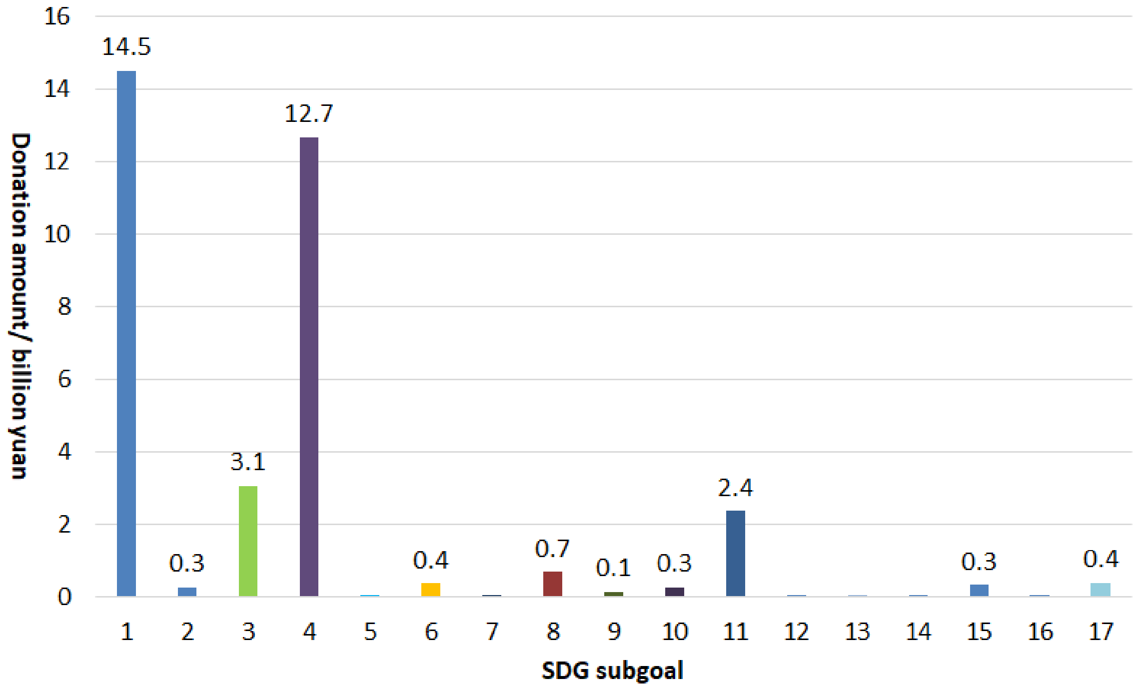


Figure 8: Distribution of all Chinese corporate donation to SDGs in 2015 (Total amount: 35 billion yuan)

4.2.2 Targeted poverty alleviation and enterprise participation

Although the government is the leading force in the combat against poverty, enterprises as market entities also constitutes an important part. As an integral pillar of national economy, Chinese SOEs play a leading role in providing public goods and services. SOEs can be further divided into two groups, those owned and/or managed by the central government (central SOEs), and their counterparts that are owned and/or managed by local governments. By the end of 2020, central SOEs in China reached a total asset worthy of 69.1 trillion yuan, growing at an average annual rate of 7.7% from 2015 to 2020 (Xinhua, 2021a). Their net profits expanded to 1.4 trillion yuan in 2020, despite the impact of the Covid-19 (Xinhua, 2021b). In addition to enhancing the quality of products and services they provide, central SOEs are expected to take more CSR in areas such as resource preservation, environmental protection, technological innovation, and social welfare promotion to stimulate innovation, improve brand image, and strengthen corporate cohesion. The Chinese government has published documents promoting central SOEs to combine social responsibilities with the development of enterprises, such as

Guiding Opinions to the Central State-owned *Enterprises on Performing Social Responsibilities* (State-owned Assets Supervision and Administration Commission of the State Council, 2008) and *Measures to Assess the Poverty Alleviation Work of Central SOEs in Designated Regions (on trial)* (Leading Group for Poverty Alleviation and Development of the State Council, 2017). Although central SOEs have been performing CSR previously, the issue of these documents reaffirmed their determination to exploring better mechanisms in performing CSR. As of 2020, 65% out of the 96 central SOEs have established CSR leadership agencies in the form of CSR work committee or leadership groups, and 61% of them have included CSR key performance indicators into their annual work performance appraisal (CNR News, 2020).

In order to fulfill the goal of eradicating absolute poverty by the end of 2020, all 96 central SOEs (State Council, 2021a) are assigned with poverty alleviation tasks targeting specific areas thus are under obligations to devote considerable resources to areas that are prioritized on the government's agenda. It is estimated that since 2019, central SOEs have invested more than 8 billion yuan to the counties that are not yet out of the impoverished state, and have raised poverty alleviation fund of 31.4 billion yuan for industrial development (Economic News, 2020).

On the other hand, the government has been mobilizing the POEs to play a larger part in the concerted efforts to eradicate poverty. In October 2015, the government launched a targeted poverty alleviation action named "ten thousand enterprises helping ten thousand villages", calling on POEs to help develop the impoverished areas through various mechanisms including developing industries, providing more job opportunities, and making direct donations and investment (ACFIC, 2016). Under this appeal, POEs across the country explored different ways to help remove the obstacles to development in the poverty-stricken areas.

As of the end of December 2020, 127 thousand POEs have participated in the poverty alleviation action and provided help to over 139 thousand villages, including 73 thousand impoverished villages registered in the national system, with an overall investment in industrial development reached 110.6 billion yuan, along with investment in public welfare mounting to 16.9 billion yuan. The POEs have provided job opportunities for 900 thousand people, skill training for 131 thousand people, benefiting 180 thousand people (All-China Federation of Industry and Commerce, 2021).

4.2.3 Quality education and enterprise participation

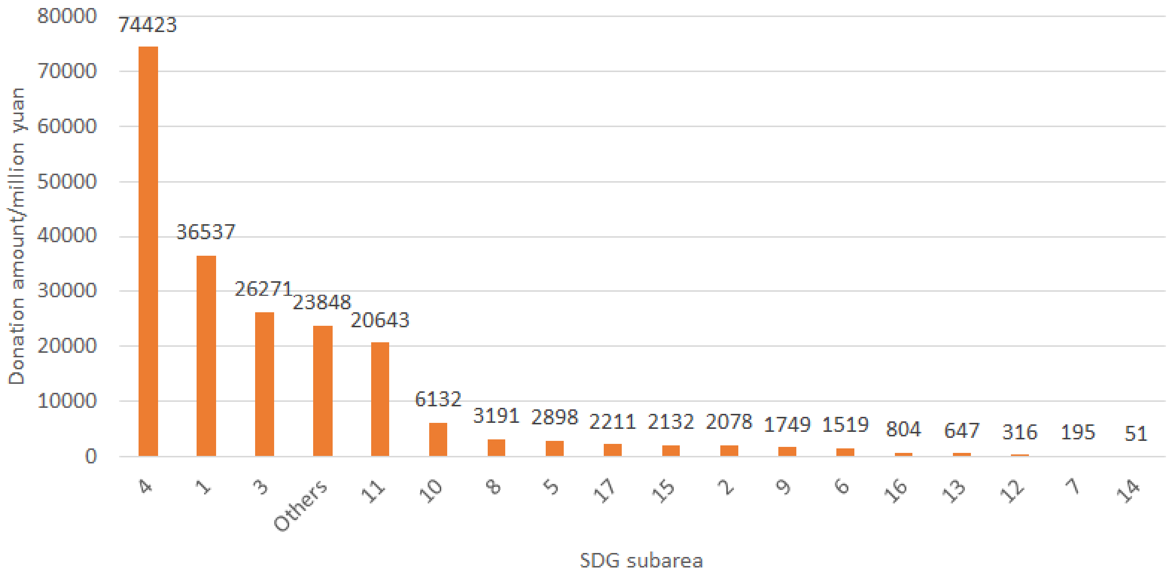


Figure 9: Total expenditure on each SDG from 2008 to 2015

Extending the timeframe to encompass the period between 2008 and 2015, it is evident that Chinese enterprises' donations to education rank top among all 17 SDG subfields, the amount of which is twice that of the second-ranking field of poverty reduction. Donations to health promotion and sustainable cities and communities' development are ranked third and fourth respectively, excluding the donations that cannot be categorized. As explained in 4.2.1, with the onset of the final battle on poverty eradication, the gap between donations to SDG 4 and SDG 1 is reduced in 2015, where donations to SDG 1 exceed donations to SDG 4.

4.3 Industry-specific analysis: power enterprise donation to SDGs from 2010 to 2020

4.3.1 Brief introduction to Chinese power industry

The power industry plays a pivotal role in the development and functioning of a nation's economy as well as people's livelihood. The power industry can be divided into five major processes: power generation, power transmission, power transformation, power distribution and power consumption. As fossil fuel resources deplete, climate changes and environmental pollution aggravates, countries in both developed and developing countries are faced with the challenge of reducing greenhouse gas (GHG) emission while fulfilling energy demand. In order to cut down the dependence on fossil fuels and transition to more sustainable development, governments across the world have been taking measures to improve energy efficiency and the utilization of renewable energy.

In China, the power industry is one of the backbones of the national economy. The fast economic expansion has raised energy demand. After years of development, China has experienced significant boosts in the volume of power generated, transmitted, and consumed. China superseded the US and became the largest power producer in the world in 2011 and generated 7,779 billion kilowatt-hours (kWh) of electricity in 2020, taking up nearly one third (29%) of power generated across the world (BP, 2020). By the end of 2020, the total length of all transmission lines having a voltage of 220 kV or above reached a staggering 794 thousand kilometers, national trans-regional power transmission capacity reached 15 million kilowatts, and cross-regional power transmission grids circulated a total of 647 billion kWh power nationwide, an increase of 13.3% over the previous year (China Electricity Council, 2021). Correspondingly, total energy consumption in 2020 amounted to 7,521 billion kWh, a 80% growth compared to 4,193 billion kWh in 2010 (China Electricity Council, 2021; China National Bureau of Statistics, 2021). It is estimated that China's power demand under different mitigation scenarios would increase to 1.1-1.4 trillion kWh by 2050, posing great challenge for the power sector (Institute of Climate Change and Sustainable Development Tsinghua University, 2020). In 2020, the power industry made a 2.8% increase in profits, obtaining 401 billion yuan in total, 88% of which were reaped by power generation enterprises (China Electricity Council, 2021).

Meanwhile, China has become a heavy GHG emitter, producing 4.3 Gt CO_2 emissions out of power generation in 2020 (China Electricity Council, 2021). In China, power generation has been carbon-intensive for the past several decades, since coal has been the primary source of electricity generation (International Energy Agency, 2021b; Ma, Wang, & Wang, 2017). But the dependence on coal has seen a gradual scaling down ever since 2011, as the Chinese government decided to transform its pursuit of high-speed economic growth into a more comprehensive development logic embracing the notion of economic, social, and ecological sustainability, decoupling the relationship between CO_2 emissions and economic development (P. Xie, Yang, Mu, & Gao, 2020; Zheng et al., 2020). Starting from the 11th Five Year Plan (2006-2010), mandatory targets were included to improve energy efficiency, mitigate energy consumption and GHG emissions. The 12th Five Year Plan (2011-2015) set a target of 17% reduction in carbon intensity by 2015 and that indicator further increased to 18% in the 13th Five Year Plan (2016-2020). The 13th Five Year Plan also set the target to increase the share of non-fossil fuels in primary energy consumption to 15%. China has made steady progress on realizing the carbon reduction targets, although its emissions has yet come to the peak (Zhou, 2020). By the end of 2019, the carbon intensity of China is cut by 18.2% as compared with that 2015, and the share of non-fossil fuels in primary energy consumption reached 15.3%, overfulfilling the binding targets in advance (China National Bureau of Statistics, 2021; Zou, 2020).

The Chinese government has made solemn commitments to shoulder “common but differentiated” responsibility in mitigating climate change at multiple occasions, and issued a series of policy instruments to reduce carbon intensity and the use of coal in primary energy (X. Zhang, Karplus, Qi, Zhang, & He, 2016). At the 75th United Nations General Assembly held in September 2020, China declared to peak emissions by 2030 and net zero by 2060 (The Economist, 2020). This is an ambitious target and displays the country’s strong resolve to combat climate change. In July 2021, China launched its national carbon market platform, the largest emissions trading system (ETS) worldwide, representing a significant step towards its decarbonization goal (H. Zhang, 2021).

Consequently, emission growth has slowed, as China began to shift towards cleaner power generation by reducing transmission loss and developing non-fossil power generation sources including oil, natural gas, hydropower, wind power, photovoltaic power, nuclear power, and biofuels (International Energy Agency, 2021a, 2021b; Liang, Yu, & Wang, 2019).

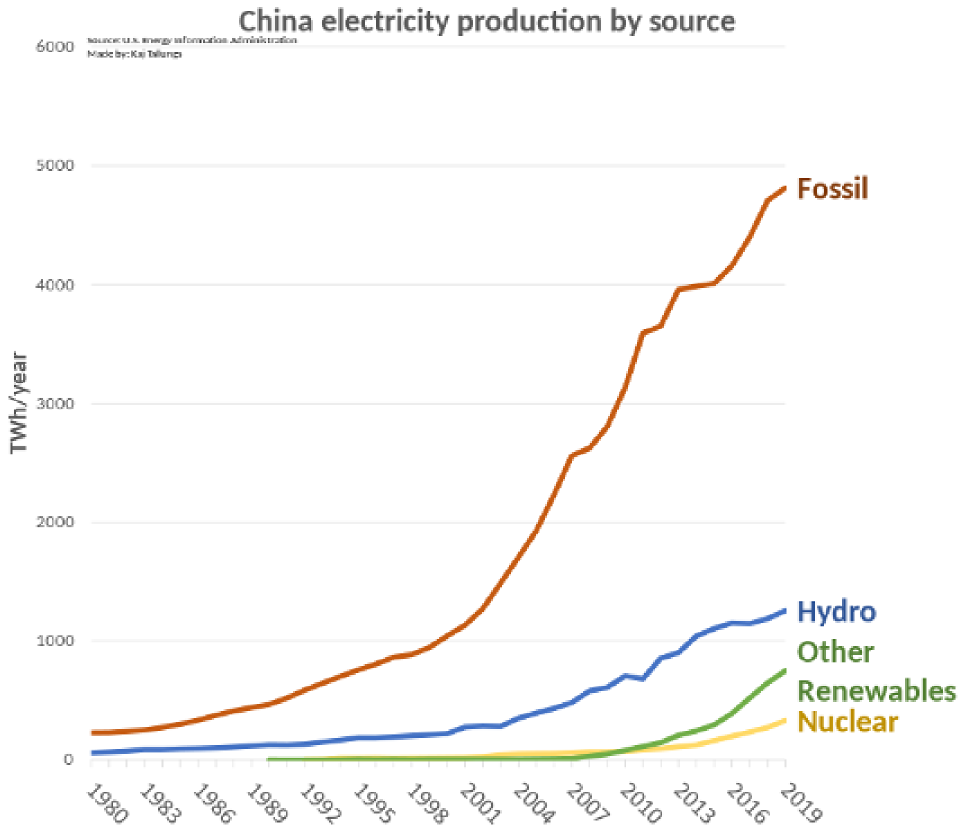


Figure 10: China electricity production by source (International Energy Agency, 2021a)

With policy incentives and technological innovations, China has already made considerable progress in emission reduction. It is evidenced that China's power industry has cut approximately 18.5 billion tons of CO_2 from 2006 to 2020, and CO_2 emissions per unit of thermal power generation have reduced to 832 g/kWh in 2020, a substantial decrease of 20.6% as compared with 2005 (China Electricity Council, 2021).

Before the reform and opening up, power supply in China is the sole responsibility of the state. In order to enhance the efficiency and competitiveness of the power enterprises, the Chinese government launched the marketization reform of power industry in 2002, aiming to separate power plants from grids. Nevertheless, the power sector is still considered one of the basic public utilities and dominated by state owned enterprises (SOEs). Five power generation enterprises, China Huaneng Group (CHNG), China Datang Corporation (CDTC), China Huadian Corporation (CHDC), China Guodian Corporation (CGDC), and State Power Investment Corporation (SPIC), were established as independent power generation entities detached from the direct command of the government. Later on, four other groups of smaller scale were set up, China Resources Power (CR Power), Shenhua Group Corporation (SHGC), China Power Investment Corporation (CPIC) and China General Nuclear Power Corporation (CGNP); along with some minor local power generation companies (B.-C. Xie, Chen, Gao, & Zhang, 2021). In addition to the power generation groups, another two companies, the State Grid and China Southern Power Grid, were also inaugurated in 2002 in charge of the transmission, transformation, distribution, and sale of the power nationwide.

There are two major government agencies regulating the power sector, namely, the National Development and Reform Commission (NDRC) and its subordinate National Energy Administration (NEA). The NDRC, as the macro-control department of the national economy, is mainly responsible for formulating national development plans for energy and electricity, making power pricing policies and approving power projects. The duties of NEA, which incorporated the responsibilities of the former National Electricity Regulatory Commission in 2013, including managing power pricing, supervising safe construction and operation of the power sector, and making energy-relevant policies (National Energy Administration, 2021).

4.3.2 Distribution of power enterprise donation to SDGs from 2010 to 2020

Based on the industry code of enterprise in our database, we abstracted donation information of 1146 Chinese power enterprises (including their listed subsidiaries) from 2010 to 2020. The total amount of donations accumulates to 5.9 billion yuan. These donations are concentrated in the following areas: Poverty Reduction (SDG1), Health Care (SDG3), Education (SDG4), Clean Energy (SDG7), Decent work and economic growth (SDG8), Reduced Inequality (SDG10). Meanwhile, donations to Climate Action (SDG13), which is closely intertwined with the power sector, appears to be less generous.

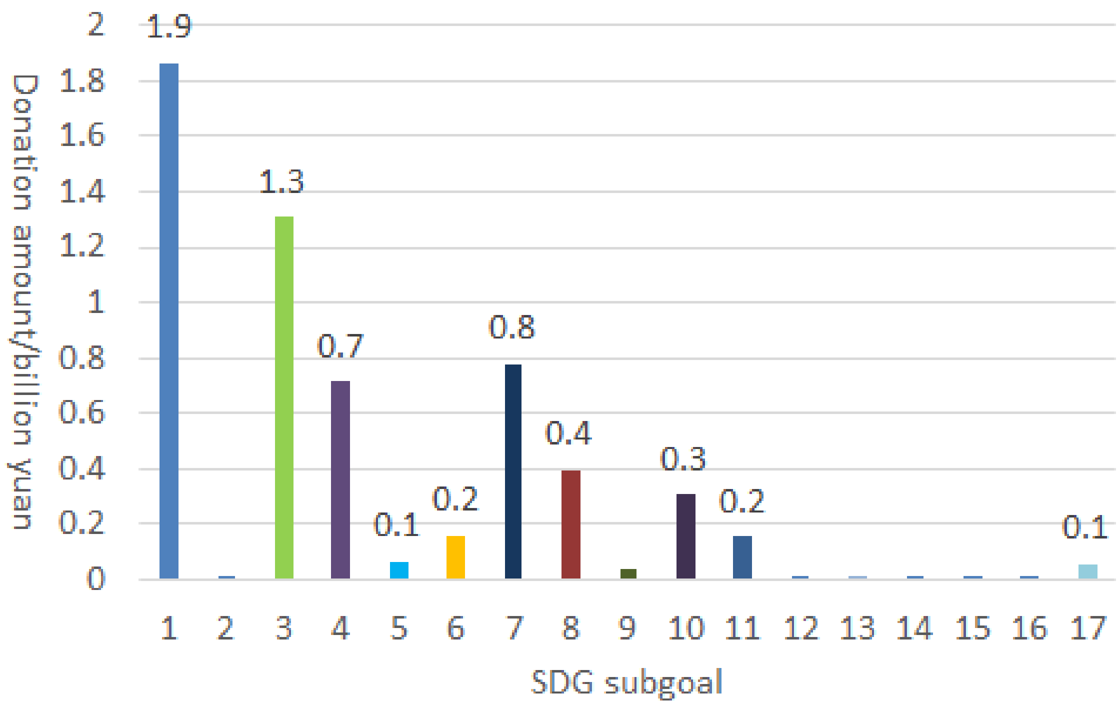


Figure 11: Distribution of power enterprise donation to SDGs from 2010 to 2020 (Total amount: 5.9 billion yuan)

As illustrated by the figure above, from 2010 to 2020, Chinese power enterprises' donations to SDG 1 rank highest among all donations, followed by donations to SDG 3 and SDG 7. As mentioned in the previous section, principal enterprises in the power sector in China are SOEs. The 15 power enterprises among the central SOEs were all assigned tasks to help meet basic sustenance needs, build or enhance infrastructure and develop local industries.

Following poverty alleviation and health promotion, the provision of affordable and clean energy is another major area of donations. With more stringent environmental regulations and an increasing number of policy incentives for developing renewable energy to fulfill the country's ambition for energy transitions, enterprises in the power sector have taken measures to reduce their dependence on coal-fired generation and increase the use of renewable energy sources. In 2020, full caliber power generated in China amounts to 7,626 billion kWh, more than twofold of the power generated in European countries combined, among which, 32% is generated from renewable and nuclear energy sources, despite coal remains the primary source of generation (China Electricity Council, 2021; Dombrowski & Göss, 2021). As compared to the previous year, hydropower increased by 4.1%, nuclear power increased by 5.0%, wind power made an increase of 15.1% and solar power grew 16.6%, the greatest one in term of percentage (China Electricity Council, 2021). Moreover, newly installed generation capacities in renewables also marked an unprecedented expansion of 136 Gigawatts, contributing around half of world's total renewable capacity growth (Dombrowski & Göss, 2021). Under this backdrop, it is not difficult to understand why power enterprises have made significant contributions to SDG 7, as it is closely associated with the development needs of the industry itself.

To sum up, donations from Chinese power enterprises appear to be more skewed to social and economic development, with less attention to environmental aspects. Despite impressive progress has been made in social development, some important areas remain overlooked, for example, donations to SDG 2 (zero hunger) are inadequate. Scarce input does not mean satisfying performance in the area. As a matter of fact, malnutrition still threatens the health of Chinese people: there are over 15 million overweight and obese children in China, constituting the largest group in the world, although undernourished school children shrunk from 16% in 1985 to a mere 2% in 2020 (Narayan, 2021). Similarly, more resources should be directed to these areas given that malnutrition is not yet eradicated. Moreover, it is bewildering that SDG 9 receive little donations, especially as technological advances are crucial to the power industry's demands for higher energy efficiency and lower carbon emission.

It is disappointing to find almost no contributions to SDGs centering environmental development. Fortunately, as revealed by the CSR reports of many central SOEs in the power sector, there has been a growing number of ecology-friendly practices in the construction, operation, and maintenance of power-related projects (State Council, 2021b; State Council, 2021c), indicating growing awareness in environment and biodiversity preservation. As China scales up its strategy to strive for ecological civilization (Marinelli, 2018), it could be anticipated that power enterprises would devote more resources to mitigate and adapt to climate change and provide some valuable references for enterprises in other sectors as well.

4.3.3 Ranking of donation amount of electric power enterprises

As illustrated by the chart below, different enterprises in power sector have varied willingness to donate. The top three companies making the most donations, China Energy Engineering Group (CEEG), China Yangtze Power Company (CYPC) and State Grid, contributed 85% of the total donations in the examined timespan.

Table 3: Ranking by donation amount of power enterprises

Rank	Name of company	Donations in total / million yuan	Proportion as in all donations
1	China Energy	2,075	**35.5%**
2	China Yangtze Power	1,875	**32.0%**
3	State Grid	1,029	**17.6%**
4	China Southern Power Grid	57	1.0%
5	China Huadian	50	0.9%
6	China Datang	39	0.7%
7	China General Nuclear Power	31	0.5%
8	Huaneng Power	28	0.5%
9	Guangdong Baolihua Power	27	0.5%
10	CR Power	26	0.4%
11	Others	613	10.5%
	Total amount	5,852	100.0%

A wide range of factors may determine enterprises' willingness to contribute. The size and financial performance of the enterprise, as indicated by the annual turnovers and profits, is one of the important determinants. In 2020, ten enterprises in the power sector entered the Fortune Global 500 list, including State Grid, Shandong Energy Group, China Southern Power Grid, China Energy, CHNG, SPIC, CEEG, CHDG, CDTC and China National Coal Group. Among the top ten contributors, over half of them are ranked in the Global 500 list, except for China Yangtze Power, China General Nuclear Power, Guangdong Baolihua Power, and CR power.

Financial performance is not the only reason behind enterprises' donating behaviors; the nature of the business also has an impact on the willingness, scope, and amount of the donations. Take the example of the CYPC. CYPC is a limited liability company established by China Three Gorges Corporation (CTGC) under the approval of the State Council in 2002 and went to initial public offering in November 2003 on the Shanghai Stock Exchange. Main businesses of CYPC include hydropower generation, power distribution, smart integrated energy platform and financing businesses with business operation outside China as well, in Portugal, Peru, Brazil, Pakistan, etc. The company owns 82 hydropower generation units as of August 2021, with full ownership of Three Gorges, Gezhouba, Xiluodu, and Xiangjiaba hydropower plants. The installed hydropower capacity amounts to 45.495 GW, accounting for 12.3% of the total installed hydropower capacity in China. CYPC is the largest listed electric power company in China and the largest listed hydropower company in the world (CYPC, 2021a).

As suggested by CYPC's 2020 Social Responsibility Report, CYPC has incorporated poverty alleviation of two state-designated counties in Chongqing—Wushan County and Fengjie County—Into the corporate's social responsibility plan and annual work plan. CYPC has taken a series of measures to reduce poverty in the localities by dispatching staff, introducing funding and resources, investing in infrastructure, as well as providing training to medical professionals, teachers, and farmers (CYPC, 2021b). In 2020 alone, the company spent 200 million yuan to implement 28 poverty alleviation projects in reimbursing medical expenses, developing tourism, education, purchasing agricultural products and constructing infrastructure (CYPC, 2021a). The following sections will provide an account of CYPC's poverty alleviating efforts in health promotion and tourism development in the two counties.

In China, high medical expenditure is an important cause for poverty. It is estimated that up to 42% of rural people living under the national poverty line (2300 yuan) become or return to impoverished due to illness-induced expenditure as of 2014 (Zhou, Guo, & Liu, 2020). In order to address this problem and improve the quality of health services, CYPC has invested a total of 126 million yuan to provide financial support on medical and daily sustenance expenses for the poor households, expanding or renovating village clinics and health centers, carrying out medical and public health training for doctors in the counties. The donations have helped limit out-of-pocket medical payment of 110 thousand poor residents under 10% (CYPC, 2021b).

To sum up, the size, nature and revenue of the companies would influence the amount of donations, while SOEs demonstrated strong adherence to donate in areas prioritized by the government.

4.3.4 Max amount of individual donation to each SDG subgoal

Although the last section has found donations from power enterprises tend to converge on a cluster of SDG subgoals, donations received by each subgoal differ considerably. As illustrated by the statistics on the maximum amount of a single donation, power enterprises display disparate interests in different subgoals. The maximum amount of a single donation has a staggering large 1,000-fold difference, ranging from less than 0.4 million yuan to 400 million yuan.

Besides the uneven contribution across different subgoal areas, enterprises' involvement in each subgoal area is also biased. The following chart demonstrates that in some areas, SDG 2, 9, 12, 14, and 17, contribution from one enterprise could outweigh the rest enterprises, as a single donation from a single enterprise could make up more than half of the total donations. It also reflects power sector's insufficient attention in these areas.

Table 4: Max amount of individual donation to each SDG subgoal

SDG subgoal	Max amount of a single donation/million yuan	Donor	Proportion as in the total donations to the subgoal
1 No poverty	400	China Yangtze Power	21%
2 Zero hunger	**0.37**	**State Grid**	**51%**
3 Good health and well-being	100	China Yangtze Power	8%
4 Quality Education	67	China Energy	9%
5 Gender Equality	8	China Energy	13%
6 Clean water and sanitation	21	China Yangtze Power	14%
7 Affordable and clean energy	283	China Yangtze Power	36%
8 Decent work and economic growth	120	China Yangtze Power	30%
9 Industry, innovation and infrastructure	**22**	**China Yangtze Power**	**61%**
10 Reduced inequality	63	State Grid	20%
11 Sustainable cities and communities	13	China Energy	8%
12 Responsible consumption and production	**0.6**	**Boer Power**	**59%**
13 Climate action	4	China Energy	40%
14 Life below water	**1**	**Meizhou Power**	**88%**
15 Life on land	0.15	Songjiaping Power	35%
16 Peace, justice and strong institution	1	State Grid	26%
17 Partnerships for the goals	**50**	**State Grid**	**92%**

In order to attain the SDG more comprehensively, power enterprises should be more dedicated in areas related to environmental preservation and development. As China continue to expand the use of renewables in power generation, expediating an energy transition to non-fossil fuels in accordance with SDG 7, power enterprises should also pay more attention to SDG 14 not only by making more donations, but also by incorporating environmentally sound ocean protection strategies into their operations. For example, they should find sustainable ways of gas and oil excavation, reduce waste water drainage to the coastal waters and explore eco-friendly measures to develop wind, solar and tidal power at sea. Devotion in SDG 14 would also be conducive to the attainment of SDG 9 and 12, by encouraging innovation and minimizing resource use and pollution. In addition to offering direct funding, power enterprises are also encouraged to share expertise, technologies, and experience with stakeholders in less developed countries to help strengthen their capacities as a way to forge partnerships.

4.4 Event analysis: Chinese corporates' donations in COVID-19

Ever since their inauguration, Chinese enterprises have been playing an indispensable role at times of crises. China has long been plagued by all kinds of disasters, including extreme weather events, geological disasters as well as public health emergencies, during which enterprises turned out to be reliable sources of support and rescue. In this section, we would provide a case study on the role of Chinese enterprises during the coronavirus disease 2019 (COVID-19) pandemic.

The COVID-19 pandemic is unprecedented in its scale, spreading speed and gravity, posing serious challenges to many countries, where public health systems were put under enormous strain, and national economy went into stagnation. In order to contain the spread of the virus, governments around the world have taken a variety of strategies, yet the government alone cannot effectively without the conformity, cooperation and support of other stakeholders including the private sector and the civil society. This gives rise to the whole-of-society approach, which assumes that no single actor is capable of tackling the complexities of a pandemic, thus it requires united collaboration from each and every stakeholder to ensure effective response to the situation (Dubb, 2020; WHO Western Pacific, 2021).

In the combat against the pandemic, Chinese enterprises, SOEs and private-owned enterprises (POEs) alike, appear to be indispensable participants. In order to stimulate economic recovery and development, the Chinese government has published policies calling on SOE properties owners to reduce or defer the collection of rent payment of the middle, small and micro-sized businesses as well as those self-employed, along with policy and financial incentives to encourage enterprises to maintain or expand their recruitment plans (National Development and Reform Commission et. al, 2020; Office of the State Council, 2020).

Apart from scaling up production, giving rent reduction or exemption and providing more job offers, many enterprises also made voluntary contributions to help withstand the shock of the pandemic. Three days after COVID-19 was recognized as a major public health emergency in China on January 20, 2020, the Wuhan Red Cross Society opened a 24-hour channel to accept donations. Later on, the Wuhan government as well as the Ministry of Civil Affairs published documents, clarifying the receiving party of the donations, along with the resources in urgent need such as disinfectant, protective masks, goggles and other medical equipment to ensure donations were well organized (Wuhan Headquarter of Disease Prevention and Control, 2020; Ministry of Civil Affairs, 2020).

4.4.1 Profile of contributing enterprise during COVID-19 pandemic

Enterprises across the country have dedicated huge amounts of funds in response to COVID-19. On the whole, more than 70,000 Chinese companies have raised donations adding up to around 40 billion yuan. In terms of amount per donation, over 30% of the donations (12.4 billion yuan) from 505 enterprises exceed 10 million yuan.

As illustrated by the following chart, SOEs and POEs demonstrate great solidarity and share donating responsibility almost equally, where SOEs shoulder 47% of donations, POEs take on 41% of donations, and foreign-funded enterprises contributed 12%. Enterprises from each industry all take their part in the donation, where enterprises in manufacturing distinguish themselves with the largest amount of donations, taking up 22% of the total donations, followed by enterprises from financial industry (16%), wholesale and retailing (14%), business services (13%) and IT services (11%).

Judging from the origin of donations based on the location of the enterprises' headquarters, it is demonstrated that corporates based in Beijing are the most generous donors, accounting for one fourth of the total donations; together with those based in Guangdong and Inner Mongolia, they make up more than half of the total donations.

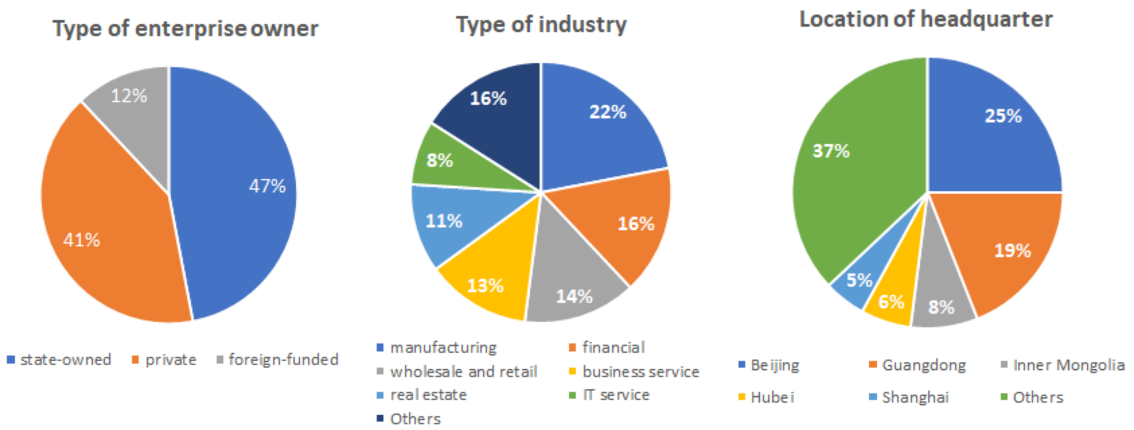


Figure 12: Profile of contributing enterprise during COVID-19 pandemic

Judging from the destination of the donations, three regions stand out receiving donations of more than 2 billion yuan each: Hubei Province (13.3 billion yuan), Beijing (6.7 billion yuan), and Zhejiang Province (2.3 billion yuan).

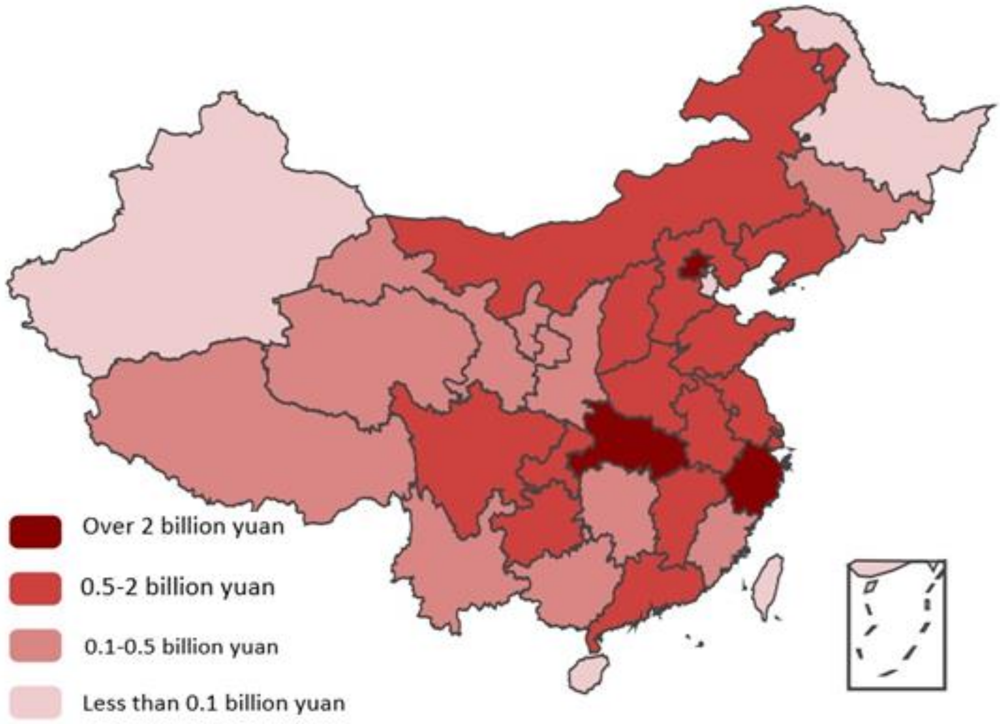


Figure 13: The destination of charitable funds related to COVID-19

Many corporates have displayed great generosity in their donations. According to our calculation, 109 enterprises have donated more than 30 million yuan to tackle the COVID-19 pandemic through foundations, charities, and the Red Cross Society, totaling a staggering 7.7 billion yuan, among which, 18 companies, as listed below, make donations of at least 100 million yuan.

Table 5: Rank of large donation enterprises

Donor enterprises	**Donations in total (Million yuan)**
Inner Mongolia Mengniu Dairy (Group) Co., Ltd.	595
Evergrande Real Estate Group Co., Ltd	400
Tencent Charity Foundation	386

Bosideng Charity Foundation	300
Midea Group Co., Ltd.	291
Beijing ByteDance Network Technology Co., Ltd.	232
China Merchants Bank Co., Ltd.	200
Heilongjiang Feihe Dairy Co., Ltd.	200
Liaoning Fangda Group Industrial Co., Ltd.	200
Inner Mongolia Yili Industrial Group Co., Ltd.	131
China Three Gorges Group Co., Ltd.	130
Beijing Kuaishou Technology Co., Ltd.	111
Sunac China Holdings Limited	110
Cotai Paper (China) Investment Co., Ltd.	104
Vanke Enterprise Co., Ltd.	100
Hengli Group Co., Ltd.	100
Fuyao Glass Industry Group Co., Ltd.	100
Guangzhou Hexiang Trading Co., Ltd.	100

4.4.2 Evolution of SDG donations from large donors between 2016 and 2020

Through the analysis of the changes in SDG donations from large donation enterprises over the years, we find that the epidemic donation has to some extent crowd out the enterprises' attention to other areas of donations.

Comparing data on enterprises' donations from 2016 to September 2020, we find a redirection of funds. Donations to SDG 3 surge almost thirty-five-fold from 0.2 billion yuan in 2016 to around 7 billion yuan in 2019-20. Nevertheless, this change of track is accompanied by plunges in other areas: donations to poverty reduction plummet from 3.5 billion yuan in 2016 to 0.8 billion yuan in 2019-20, and donations to education development experience a slighter dive from 1.3 billion yuan to 0.4 billion yuan.

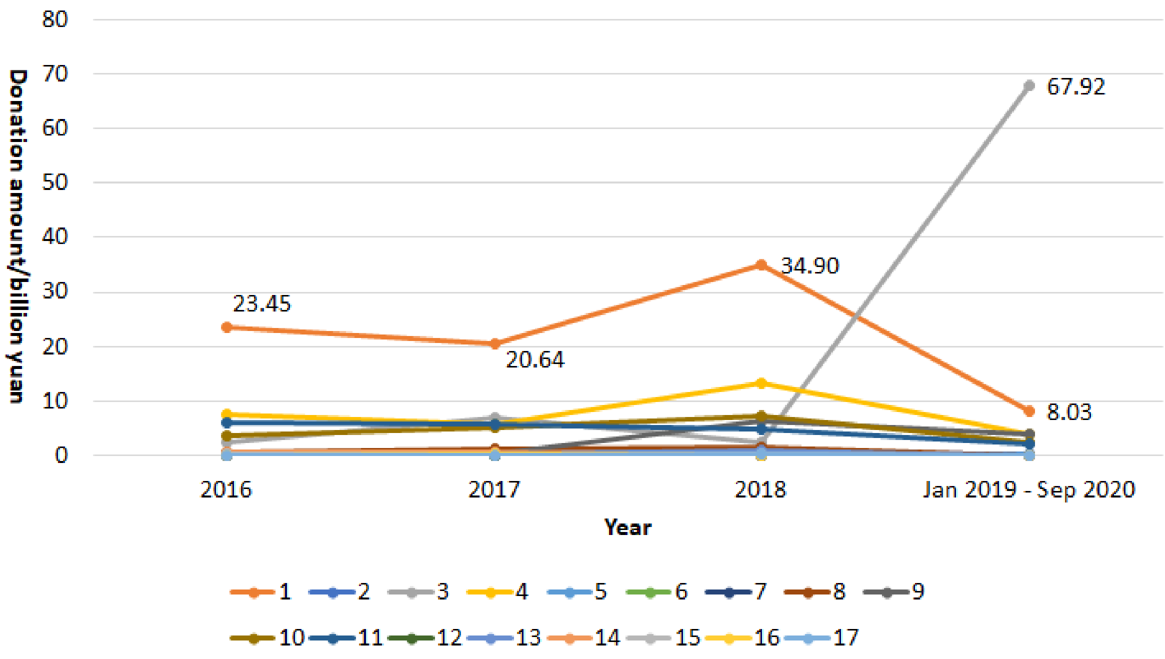


Figure 14: Changes in SDG donations of large COVID-19 related donation enterprises over the years

The results have several indications. Firstly, Chinese corporates turn out to be strong and positive actors by joining efforts to contain the pandemic. Not only did they respond to the call of the government to donate, but also meet this call with great enthusiasm by donating in large quantities with great rapidity. Secondly, although corporates show impressive capability to mobilize resources promptly, the redirection of funds to health-related areas appear to have crowded out donations to other SDG areas.

Thirdly, the COVID-19 pandemic is detrimental to the obtainment of the SDGs in economic, social, and environmental development, as the global average SDG index score witnesses a fall for the first time since its adoption in 2015, according to the *Sustainable Development Report 2021* (Sachs, Kroll, Lafortune, Fuller, & Woelm, 2021). Prior to the COVID-19 pandemic, the world has made significant progress in poverty eradication, which was reversed as many countries saw a rise in poverty rate and unemployment (Sachs et al., 2021). Obstacles to gender equality increased as many countries saw a rise in domestic violence incidents (Sharma & Borah, 2020). As sustained economic growth became things in the past, scholars question the attainability of the SDGs in 2030 and propose the needs to recalibrate the SDGs in target setting, progress measurement and data collection ("A better way for countries to track their progress on sustainability," 2020; Naidoo & Fisher, 2020; "Time to revise the Sustainable Development Goals," 2020). In order to document, track, and evaluate countries' progress towards the SDGs, it could be salutary to adapt the old targets, methods and ways of thinking which could not match with the new problems posed by the COVID-19.

Overall, Chinese enterprises have a high degree of recognition of SDGs and actively link their corporate social responsibility with SDGs. Especially during the epidemic period, they actively participated in charitable donations, deepened cooperation with the government and scientific research institutions in the fight against the epidemic, and assumed social responsibilities. This is a microcosm of China's whole-society response to the epidemic, and a strong proof that China is in an era of "strong government and strong society". In contrast, the contribution of Chinese enterprises to the 17 SDG goals is unevenly distributed, and the progress of achieving some SDG goals has been slowed by the epidemic. It is suggested that enterprises should further integrate resources, seek for a new combination point between the main business and SDG goals, and create new value for the sustainable development of enterprises and society.

5. Case Study

To better understand Chinese corporate contribution to SDGs, we will illustrate several case studies in order to shed light on how the donations have been used, how the SDG programs are managed among multiple actors, how these projects reach beneficiaries, and how they serve the SDGs. Four cases are included in our analysis, which are categorized into four models according to the different roles corporates play in the projects: (1) the pure donor model where enterprises make donations to targeted key projects designated by the government or International Organizations, such as Jala's donations to UNDP's project in Yunan Province; (2) the collaborator model where enterprises and other stakeholders join efforts to launch a cooperative project sharing resources and benefits, such as innovative competitions co-initiated by companies and NGOs; (3) the independent agency model where the enterprise decide how to allocate the money at its own discretion, as illustrated by the projects launched by Tencent Charity Foundation; and（4）the mixed role model where multiple stakeholders involved in a cooperative project have mixed roles and that is why we have also chosen International Institute of Online Education as an example for mixed pattern.

5.1 Enterprises as pure donors in Achieving SDG 1: No Poverty

Many medium-sized enterprises tend to join the charitable projects launched by governments or third-party organizations by donating discretionary grants and resources, rather than build up their own foundations, in order to save the management cost but shoulder CSR at the same time. Additionally, the role of pure donor sometimes also goes for large companies who do not want to shoulder the responsibility of operating and managing in certain projects.

5.1.1 Jala and UNDP for ethnic minority groups

Ethnic minorities comprise 8.49% of the national population in China. According to the State Ethnic Affairs Commission (SEAC, 2011), over 40 million ethnic minority individuals are still living in extreme poverty, constituting 32% of the country's poor. The endangerment of their culture as well as the impoverishment of its people is partly due to lack of political, social, and economic resources for approaching audiences and expanding the markets.

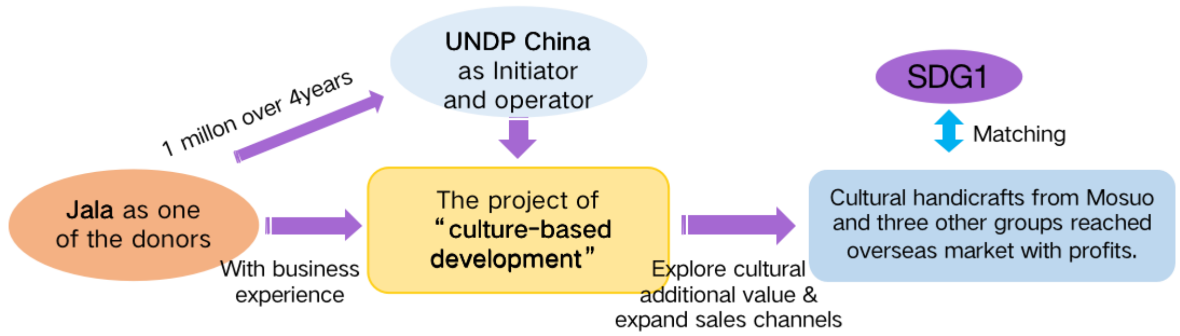
To help the struggling community improve the life quality and protect their ethnic and cultural heritage, UNDP has been working with the SEAC and the China International Centre for

Economic and Technical Exchanges since 2006 to plan and implement poverty-reduction initiatives for these groups, and the project has been called "culture-based development".

Jala's participation

UNDP's partnership with the Jala Group was launched in 2011 with the Poverty Reduction for Ethic Minorities in China project focusing on assisting some of China's most vulnerable and impoverished ethnic minority communities in Yunnan province.

Investing $1 million over four years, Jala Group in cooperation with UNDP China has made efforts to build inclusive markets by strengthening the comparative advantage of ethnic minority products over mass-produced goods. UNDP work with the Jala Group to empower ethnic communities, especially ethnic Chinese women, by supporting the production of ethnic minority handicrafts; generate income and build capacity for sustainable household and community livelihoods; promote ethnic products in corporate platforms such as using hand-woven scarves by Musuo community as corporate gifts during Jala Group events.



Graph 1: How Jala's donation works for Ethnic Minority Groups

Jala as one of the stakeholders

The cooperative project involves fact-find missions such as that by UNDP, Jala Group, the Chinese International Centre for Economic and Technical Exchange (CICETE) and the State Ethnic Affairs Commission (SEAC) in 2011, aimed to help the ethnic minority groups such as Mosuo bring in economic opportunities while preserving their cultural identity and traditions.

Mosuo is one of the four most vulnerable ethnic minorities who are currently supported by the project. While women of Mosuo are good at weaving and handicrafts, but they have difficulties in raising additional value to their products and expanding markets. Jala Group brought in more financial knowledge and marketing experience. The project helps digging out the stories hidden behind the Mosuo's weaving – trying to incorporate the cultural meanings into the specific products, such as the ethnic beliefs, long-standing lifestyle and personal traits that are deeply embedded in their culture and daily life.

Picture 2: Weaving craft of Misuo ethnic minority in Yunan Province (UNDP China)

Afterwards, the culture-in-development project sought to introduce the scarves made by Mosuo women to an international audience in order create new markets for their wares. In a milestone move validating the business potential for Mosuo women, iconic department store Tangs placed an order for 160 custom-made pieces as a part of an exclusive collection. Although that was a relatively small order in Tangs, the opportunity represented a huge leap forward for the Mosuo community, allowing it to step out and claim its own market niche.

The outcomes of donation

Picture 4: news on UNDP China

Finally, the scarves reached the cosmopolitan center in Singapore, more than 3,000 kilometres away from the humble village in Yunnan, marking an international debut for the Mosuo. The opportunity to reach the market in Singapore has greatly raised the value of Mosuo products. The scarves sell, on average, at 200 RMB, with the weavers making the profit of 120 RMB per item. What the international crowd are really paying for is the time it takes to make something by hand, its intricate quality, and respect for the long-standing tradition. Currently, the partnership supports four of the most vulnerable ethnic minorities across three culture-based development projects, benefiting over 500 people, especially economically.

5.1.2 CYPC and Wushan County government for Ganyuan villagers

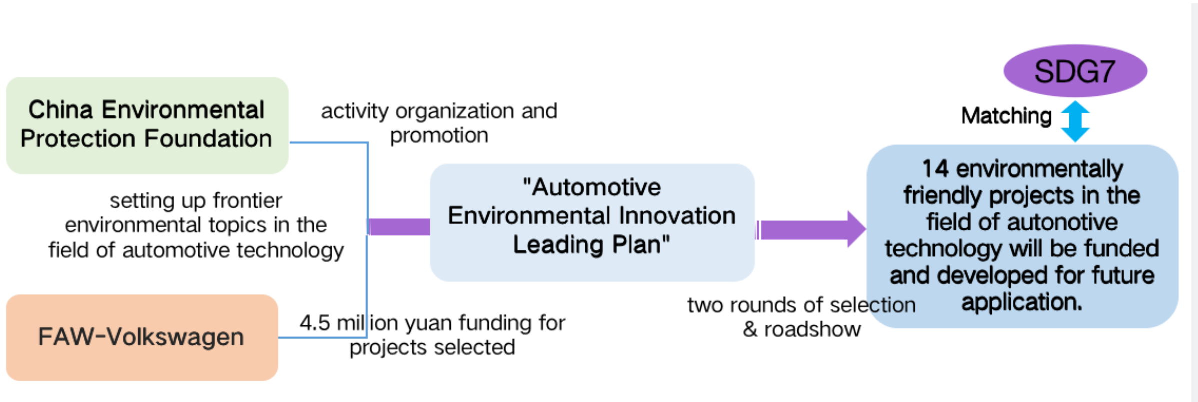
Many villages in southeastern China are underdeveloped due to their mountainous geography, isolating them with the rest of the country. So is Ganyuan village of Quchi Town in Wushan county. Located at the hillside of the Qiyao Mountain at the heart of the Three Gorges alongside the Yangtze River, Ganyuan village used to be one of the main poverty-stricken counties in China, with barren land full of stones. Most of the residents in the village were relocated here as immigrants of the Three Gorges project (Xianglin Liu & Lu, 2021). But the county is endowed with unique pastoral scenery and some well-known fruit products, citruses, and crispy plums, giving it advantages to develop featured tourism.

The requests of Ganyuan village

Although Ganyuan village had made some attempts to attract tourists, it remained an unattractive site for tourism: lodging and leisure facilities were insufficient, sanitary conditions were poor with rubbish lying everywhere, and farmhouses looked messy due to the lack of unified planning; meanwhile, unfinished infrastructure continued to be a drawback, as pipelines were still under construction, and gas supply did not start.

The hardware support from CYPC

In order to make Ganyuan village better-equipped to welcome tourists, CYPC engaged in the rural revitalization demonstration project launched by the government of Wushan county in 2019, building and renovating a series of supporting facilities, including trails, signposts, parking lots, restaurants of different themes, handicraft workshops, viewing platforms, public toilets and garbage transferring facilities (Zhi, 2020). A sum of 76 hectares of land along the road was beautified and 200 lighting units were installed. After nine months' construction, the unsanitary, disorderly Ganyuan village took on an entirely new look, attracting not only tourists, but also more young people to return to the village and start their own businesses—600 out of 2,700 residents in Ganyuan village came back to the village to build new business (China Three Gorges Group, 2021).



Graph 2: How CYPC contributes to the revitalization of Ganyuan village

The outcomes of engagement

Ganyuan Village, along with 120 other villages in the county, were lifted out of poverty in July 2020. In September 2020, Ganyuan Village was appraised as a "Beautiful Leisure Village"_(Ministry of Agriculture and Rural Affairs, 2020). The refreshing scenery of the village has already brought increasing tourists, bringing new vitality to the site. In July 2020, Wushan

County successfully passed the national comprehensive survey of poverty alleviation, and the county's 120 poor villages, 24,600 households and 89,000 poor people were all lifted out of poverty.

Picture 3: An overlook of Ganyuan Village (by Qiang XU)

Picture 4: Houses in Ganyuan Village (by Xuan CHEN)

5.2 Enterprises as collaborator in Achieving SDG 7: Clean Energy -- the case of "Automotive Environmental Innovation Leading Plan"

The non-governmental organizations as well as civil society can be a more flexible and active partner for corporates in the course of approaching SDGs with innovative solutions. China Environmental Protection Foundation (hereafter CEPF) is China's first national public fundraising foundation to engage in environmental protection public welfare undertakings registered by the Ministry of Civil Affairs. With scholars and professionals on board, the Foundation has carried out multiple projects in the fields of environmental pollution prevention and control, ecological environment improvement, biodiversity protection, green development, and water resources protection.

Incorporating the innovative requests of FAW-Volkswagen to SDG7

In 2020, FAW-Volkswagen and CEPF launched the first "Automotive Environmental Innovation Leading Plan", aiming to select and fund the environmentally friendly innovation in the automotive technology field by setting up core frontier topics in the field of automotive environmental protection technology, focusing on the national carbon neutral strategy, new energy automotive industry strategy and breakthrough key core technologies.

The first "Automotive Environmental Innovation Leading Plan" was successfully conducted the program under the adverse conditions of the COVID-19 pandemic. 19 universities and other scientific research institutes from across the country participated in the application, and after an online inspection and two rounds of review, 14 projects finally received a total of 4.5 million yuan funding. The successful implementation of "Automotive Environmental Protection Innovation Leading Program" effectively made up for the lack of existing public welfare projects of domestic and foreign auto companies that have low relevance to the industry.

Funding process is conducted in the form of open solicitation from universities and research institutes. In order to ensure the scientificity, feasibility and influence of the applied projects, the activities invited experts and scholars from universities and scientific research institutions, automotive environmental monitoring experts, and car company managers.

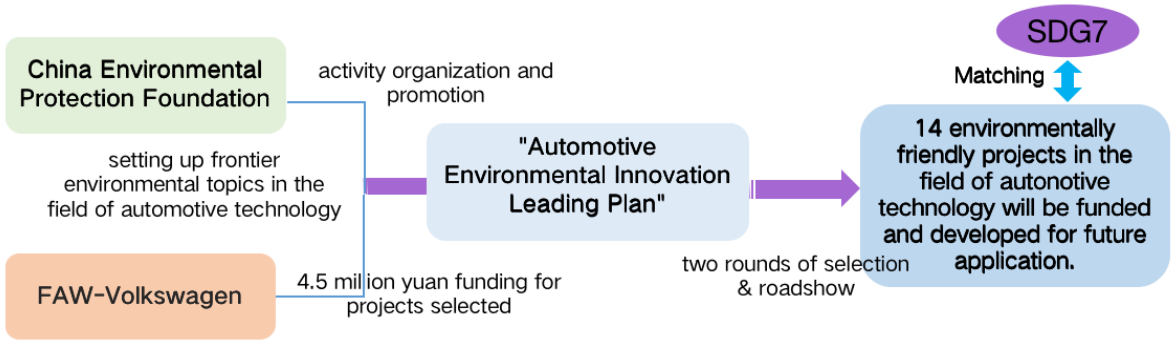


Figure 3: FAW-Volkswagen and "Automotive Environmental Innovation Leading Plan"

Continually motivating intime responses and innovative solutions

The launching of "Automotive Environmental Protection Innovation Leading Plan" is not only aimed to jointly promote the development of China's automobile environmental protection technology level, but more importantly, to help find intime responses to the national and international sustainable requests, such as China's "carbon peak" and "carbon neutral" goals set in 2021.

In 2021, the second "Automotive Environmental Protection Innovation Leading Plan" focuses more on key bottlenecks in science, technology, and engineering in the field of automotive environmental protection in China, focusing on supporting automotive carbon neutralization strategies, charging infrastructure, new energy vehicles, research on energy-saving vehicles, intelligent transportation and environmental protection, and automobile pollution prevention and control. The amount of funding is divided into 1 project with 1 million yuan, 3 projects with 500,000 yuan, and 10 projects with 200,000 yuan, and the research duration of each project is one year.

Selecting and supervising the promising projects

There are two rounds of selection: (1) Experts and scholars from universities and scientific research institutions, automotive environmental monitoring experts, car company managers and engineer teams, foundations, international organizations, and industry experts to jointly conduct a preliminary review of the application project, and select 20 projects to enter the next round of roadshow defense.

(2) Final review of the roadshow. 20 candidate project teams conducted on-site roadshow defenses, and a judging panel composed of experts and scholars from universities and scientific research institutions, automotive environmental monitoring experts, car company managers and engineer teams, foundations, international organizations, industry experts, etc., selected 14 The project is funded. The review process is supervised by an authoritative notary institution.

The projects that pass the roadshow defense will be granted funding, and experts from international organizations, foundations, car companies, authoritative departments, universities, and scientific research institutions will hold forums and meetings for results announcement and further suggestions on final outputs.

5.3 Enterprises as independent agencies serving Multiple SDGs -- the case of Tencent's commitment to charity

Philanthropic foundations worldwide are becoming increasingly prominent, not only in their amount and funding, but also in their growing role in global policy-making (Martens and Seitz, 2015). With the adoption of the 2030 Agenda, it is clear that the public sector alone cannot attain the SDGs and it is crucial to mobilize the private sector to take on more responsibility in the collective efforts towards a sustainable future.

As expounded in the previous section, Chinese enterprises are important subsidizers to the attainment of SDGs. Delightfully, their contribution to SDGs also takes other forms. This section would examine how technology-driven enterprises could fulfill their commitment to social responsibility through the combination of charity and businesses, especially in a digital age where digital divide among different groups is deepened by unequal access to the Internet and digital devices.

Tencent has been one of the pioneers in the Internet industry to engage in social responsibility. The following section would probe into the company to find out how it leverages its technological edge to create more opportunities, including online tools, platforms, and programs, to mobilize and match resources for poverty reduction, rural revitalization, health promotion as well as education development.

Poverty Alleviation

In China, poverty alleviation is closely linked to rural development, since most of the poverty-stricken areas are in the villages. The Chinese government has declared to eradicate absolute poverty in rural areas by 2020.

Tencent has been taking actions targeting poverty alleviation in the rural areas quite early, including donating learning and teaching equipment, financing teaching buildings and sports fields construction, and providing training for rural teachers (Tencent, 2019). Although these early efforts were fragmented, intermittent, and lacked long-term influence (S. Liu, 2012), they turned out to be useful explorations and provided valuable lessons for later attempts.

In 2009, Tencent Charity Foundation started a village vitalization project, later known as WeCounty. WeCounty is a digital platform providing information and services to villagers and rural administration to bridge the digital gap between urban and rural areas and promote rural development. WeCounty has three main functions. First, it can be used as an online displaying card for the poor villages. Through the WeCounty platform, villages could establish their own WeChat official accounts to show their regional characteristics and agricultural products, attracting visitors and resources. Second, it serves as a digital tool for villagers to acquire services and for administrators to govern local affairs, enhancing governance quality, accessibility, and efficiency. Third, the WeCounty platform builds an online spiritual home for the villagers. Villagers can join the platform after real-name authentication wherever they are, communicating and connecting with their fellow countrymen and countrywomen, participating in rural affairs in the village across the country (Xue Liu & Lv, 2020).

As of 29 February 2020, a total of 15,176 villages (communities) across 2,395 townships, 215 cities and 29 provinces had joined WeCounty, serving over 2.15 million villagers (Tencent, 2020b). By the end of 2019, Tencent Charity Foundation had donated 2,957 million yuan, 95% of which went to poverty alleviation (Tencent, 2020b).

Figure 15: Tencent WeCounty platform (Tencent, 2019)

Another innovation of Tencent in pooling resources to reduce poverty is the establishment of an online fundraising platform, Tencent Charity Platform. The antecedent of the platform is the online fundraising channel opened after the 2008 Wenchuan Earthquake, which was set up by Tencent in collaboration with the One Foundation Project of the China Red Cross to collect donations from the masses. The platform gathered over 20 million yuan from the public for disaster relief, marking the largest amount of Internet-based donations by then (Tencent, 2019c). Tencent Charity Platform has evolved to incorporate both individuals and eligible charitable organizations to launch fundraising initiatives free of charge. There are two types of programs on the platform: programs initiated by Tencent Charity Foundation and others launched by individuals or organizations. The platform has different forms of donations of different timespans, such as single-time donations, monthly donations, one-on-one donations, and family donations. Tencent also innovates in a matching mechanism that allows both Tencent Charity Foundation and other private enterprises to supplement the donations by providing funding equal to individuals' donations, as illustrated in the following picture.

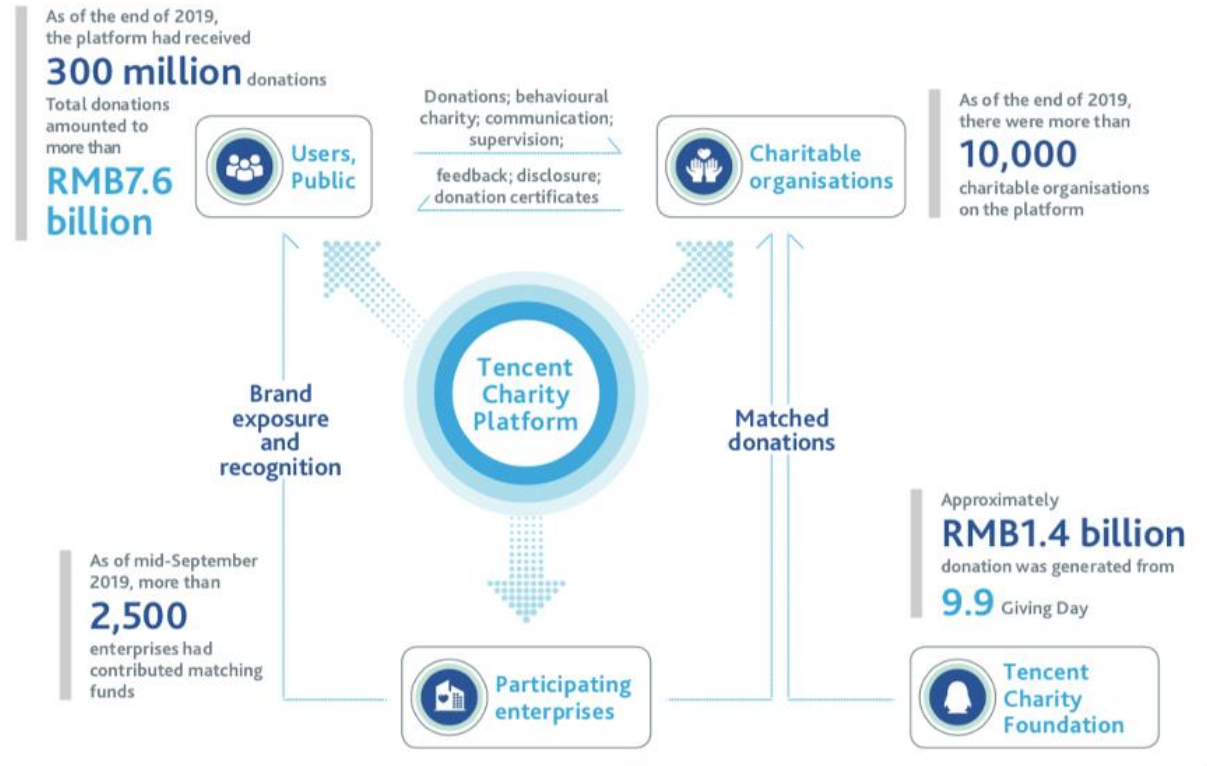


Figure 16: Tencent Charity Platform ecosystem (Tencent, 2020)

The platform turns out to be a catalyst for the general public to participate in charity. On September 9, 2015, Tencent launched an online public fundraising event called “9.9 Giving Day” with hundreds of leading companies and charity organizations in China. The campaign develops into an annual one held from September 7 to 9, and turned into a “phenomenal” philanthropic event (Tencent, 2019a). In 2020, more than 5,780 donors, thousands of institutions and 10,000 enterprises donated over 3 billion funds through the event, and individuals’ donations skyrocketed more than 17 times from 128 million yuan in 2015 to a staggering 2.32 billion yuan in 2020 (Tencent, 2020a).

By the end of 2019, Tencent Charity Platform had supported more than 10,000 charitable organizations, pooling more than 7.6 billion yuan from over 300 million netizens for over 70,000 projects, 92% of which went to poverty relief to help develop local industry, healthcare, education, ecology, and culture (Tencent, 2020b).

Healthcare and Well-being

Promoting health is another objective in Tencent’s mission of “tech for good”. In the collective battle against the Covid-19 pandemic, Tencent has played a crucial part. In addition to setting up domestic and global anti-pandemic funds, it also provided information to the public, developing online consultation platforms and tools for hospitals, governments and upgraded solutions to support remote offices, teaching and sales (Tencent, 2020b).

But Tencent's attentiveness to health started in advance of the pandemic. Since 2017, Tencent has launched multiple products and services to improve the availability of medical information and resources, patients and doctors' medical experience, and information security. This section would examine two of the products: Tencent Medipedia, which provides online medical information to the public, and Tencent Miying, which aims to increase the accuracy of early-stage cancer diagnosis.

Launched in 2017, Tencent Medipedia is the first Internet-based medical information platform with over 8,000 entries on common diseases. It aims to translate obscure medical knowledge into intelligible information for the general public in various forms including text, photo, video, interactive and AI assistant, and 3D visualization (Tencent, 2019b). In order to ensure the creditability of the information, Tencent Medipedia collaborated with WebMD, a well-known global healthcare information platform, to access over 60, 000 research papers.

During the COVID-19, Tencent Medipedia also provides daily updates on Covid related information such as confirmed and suspicious cases nationwide and in each province, and knowledge on the coronavirus to fight misinformation. It also introduces a tool using AI technologies to guide users with symptoms of COVID-19 to do a preliminary diagnosis of themselves. There is a section called "Volunteer Medical Consultation" offering remote consultation services from over 10,000 doctors online (Tencent, 2020c).

Besides efforts in bridging the knowledge gap between the professionals and the public, Tencent manages to find ways to apply AI technologies to medical image analysis, disease detection and diagnosis. It also sets out to incorporate technologies into hospital operations to improve hospitals' service efficiency and patients' experience.

A case in point is Tencent Miying. Initiated in 2017, it is an AI-based medical image analysis product that provides assistance for doctors in disease screening and diagnosis, and could improve the accuracy and efficiency of clinicians' diagnosis. Currently, Tencent Miying has established assistive diagnosing systems for a number of diseases, including fundus retinopathy, breast cancer, colorectal cancer, pneumonia, lung nodules and cervical cancer (Tencent

HealthCare, 2021). This product could address the challenge posed by the large number of cancer patients in China as well as the shortfall in pathologists and medical resources. It is estimated there are 4.57 million new cancer cases and 3 million new cancer deaths in 2020 in China, surpassing all the other countries (International Agency for Research on Cancer, 2021). Many of them suffer from chemotherapy, surgery, and even death as a result of delated detection and treatment. Tencent Miying has been applied in over 100 large-scale and high-ranking hospitals in China, helping doctors read more than 100 million medical images and serving more than one million patients by October 2018.

Quality Education

Increasing access to the network and decreasing cost of devices has brought more opportunities for innovating leaning in the digital age. Technology-enhanced learning (TEL) could serve as a useful tool for online communication and collaboration, expression, and evaluation (Zhu, Yu, & Riezebos, 2016). Tencent has been working on smart education to enhance the availability of educational resources and improve the efficiency and flexibility of education.

In 2014, Tencent Classroom, an online vocational education platform was inaugurated. It integrates a range of educational resources, including courses on language learning, marketing, coding, AI, big data, design and creation, career training and guidance on setting up and operating businesses. Tencent Classroom has applied different technologies to improve the quality of the digital content of the courses, including high-resolution livestreaming, AI homework assessment tool and image identification technology.

The Covid-19 pandemic stimulated an upswing in the needs for online teaching and learning and boosted the development of Tencent Classroom. By the end of 2020, more than 110,000 educational organizations have provided over 300,000 online courses for a maximum of 23 million users via Tencent Classroom (iResearch, 2021).

In addition to its online educational platform, Tencent also released solutions for schools and universities in China to improve their campus management and services. Tencent Smart Campus provides diverse services for students, teachers, and administrative staff, including receiving and sending notifications, tools for mobile payments and digital connections. As of September 2019, Tencent Smart Campus is adopted in more than 18,000 schools, including over 400 higher education institutions (Tencent, 2020b).

Under the philosophy of "tech for good", Tencent has found a way to incorporate CSR into its core businesses, expanding its sources of revenue and delivering value for the larger society. In 2021, Tencent has pledged to invest 50 billion yuan to support "sustainable innovation of social value" through research and development and another 50 billion yuan to promote "common prosperity" with a focus on social development such as revitalizing the rural areas, increasing income for the underprivileged, and improving the health care system, as a response to the government's bid (Global Times, 2021; Xinhua, 2021c). As a leading company in its industry, Tencent has set an example for its counterparts, and it is our hope that such grand gesture could galvanize the private sector to take a larger role in promoting public good.

5.4 Enterprises in a mixed mechanism of cooperative development in Achieving SDG 4: quality education -- the case of IIOE initiated by UNESCO-ICHEI

Partnerships with the private sector are seen as pragmatic, solution-oriented, flexible, efficient, and un-bureaucratic – all attributes frequently lacking in purely intergovernmental projects and processes (Karolin Seitz and Jens Martens, 2017). UNESCO-ICHEI has tried to build up a sustainable cooperation relationship with private sector through smart classroom project and the construction of International Institute of Online Education, in which ICHEI can motivate donors to build up charitable model projects in underdeveloped areas while corporates can build up international reputation and open overseas market in the long run.

UNECO-ICHEI and digital transformation

The International Centre for Higher Education Innovation under the auspices of UNESCO (hereafter UNESCO-ICHEI) was founded in 2016, aiming at strengthening the capacity of universities in developing countries in online and blended teaching and learning (OBTL), as a way of promoting digital transformation in higher education institutions and approaching SDG 4 Quality Education.

Since its inception, UNESCO- ICHEI has been working with partner higher education institutions (HEIs) through the "Digital Education Link" project to effectively promote the ICT competency building for teachers, Smart Classroom construction, and exchanges between teachers, especially in helping the digital transformation of higher education in West Asia and North Africa.

5.4.1 The cooperative projects with Chinese corporates

（1） Smart Classroom building

The project is intended to create a digital teaching environment, integrating intelligent teaching facilities and interactive software tools for instructors and students at local HEIs. The project of smart classroom building not only contributes to the partnership with colleges in targeted countries, but also has built up the initial cooperative partnerships with corporates. Weidong Technology Group and Createview Technology Group, as the first two corporates engaged, have contributed to 18 smart classrooms in total, in 8 Asian countries and 10 African countries.

According to Mr. Tang from ICHEI, who is in charge of the Department of Corporate Partnerships, the cooperation with two technological companies has set up a cooperation mechanism with UNESCO-ICHEI as followed:

●All smart classrooms built are named after the company; each smart classroom can carry out various activities such as lectures, seminars, training, and forums;

●Two months after the landing trial operation, UNESCO-ICHEI, donor companies, Southern University of Science and Technology (SUST) and partner colleges will hold a formal official unveiling ceremony;

● The unveiling ceremony intends to invite officials from the Ministry of Education of the country where the project is located, university presidents, outstanding alumni, leaders of all parties to the agreement, as well as local mainstream media and influential publicity agencies to participate.

Weidong Cloud Education has created “Weidong Smart Classrooms” in HEIs in countries such as Pakistan, Cambodia, Sri Lanka, Egypt, Ethiopia, and Djibouti, to provide local HEIs with intelligent teaching tools and distance learning platforms, thus effectively reducing the impact of class suspensions caused by COVID-19. The project provides intelligent teaching facilities such as large interactive screens, All-in-One PCs, cloud terminals video recording device to design class interaction and learning management platforms. It also provides training of digital skills for teachers, along with subsequent operation and maintenance support. The project value is approximately RMB 6 million, providing important technical support and guaranteeing local digital education development (*CLOUD*, 2021).

Creatview Tech continued to help Ain Shams University in developing online learning and smart classroom expansion during pandemic. The Smart Classroom at Ain Shams University in Egypt served 17,000 students during the pandemic, and recorded online courses covering 18 different subjects. The Weidong Smart Classroom, opened at School No. 67 in Bishkek, Kyrgyzstan, provides students with necessary course materials by introducing electronic teaching facilities and technologies, and effectively tracks students' attendance and academic progress, thereby alleviating the local shortage of paper-based teaching resources.

The first band of smart classrooms was like the model for the followers, and the two companies won its international reputation and expanded the local market by its charitable first-round construction. For example, the smart classrooms at Lahore University of Engineering and Technology in Pakistan, drives the digital transformation of 36 universities in Punjab and their frequent commercial cooperation with the technological companies, which somehow makes the previous charitable donations pays back.

（2）The initiative of International Institute of Online Education

In the process of implementing the project of smart classrooms, ICHEI found that by utilizing the online course management platform to deliver the professional curriculum urgently needed by partner HEIs, it can effectively solve the problems of insufficient teachers, resource shortages and lagged capacity in higher education.

In 2018, when ICHEI held the International Advisory Committee (IAC) Meeting, Professor Zhao Jianhua, Senior Expert at ICHEI, delivered the report titled "Preliminary Design on Establishing an International Institute of Online Education" where he first put forward the concept of "International Institute of Online Education" (IIOE), clearly positioning IIOE as the organizer and provider of professional online courses as well as the operator of the remote professional course platform. At the same time, the IAC also planned for the future organization of IIOE, the construction of the curriculum system, the mode of operation and other implementation details.

The Third Session of the Governing Board Meeting of ICHEI – setting the goal

On October 27, 2018, Professor LI Ming, Director of UNESCO-ICHEI, reported the work plan for establishing IIOE to the governing board members. IOE will collaborate with partner HEIs in Asia and Africa and utilize the Massive Open Online Courses (MOOCs) from HEIs in China to promote the massification of education in developing countries through online training and education.

Holding International Consultative Meeting - jointly initiating IIOE

From December 7 to 8, 2019, the International Consultative Meeting on IIOE was held in Shenzhen. In the opening remark, ICHEI Director Li Ming summarized the functions of IIOE as "Aiming at universities in developing countries, focusing on improving the ICT application capability of university teachers, gathering a group of high-quality curriculum resources in the ICT field, improving the ICT application capability of teachers in partner institutions through online and offline training in various forms, applying it in cultivation of digital talents, and promoting blended learning that combines online learning and offline teaching". IIOE will respond to the Priority Africa and Priority Gender Equality advocated by UNESCO and contribute to the realization of Sustainable Development Goal 4.

In the IIOE co-launching ceremony, 11 partner universities from Asia and Africa, 4 Chinese HEIs and 8 representative enterprises signed the IIOE initiative as co-initiators, witnessed by UNESCO officials, education experts and scholars. Through two months of discussion and negotiation prior to the meeting, UNESCO-ICHEI also agree on the collaboration with every co-initiator of IIOE, and signed cooperation framework agreements, which were released during the meeting.

During the meeting, the participants and organizations agreed on establishing the IIOE Management Centre at UNESCO-ICHEI, which is responsible for the coordination of stakeholders and tasks related to implementing IIOE. Ain Shams University of Egypt was elected as the first rotating presidency unit of IIOE, responsible for organizing the IIOE Annual Meeting in 2020 and building the platform for participating parties to share their annual results in online learning.

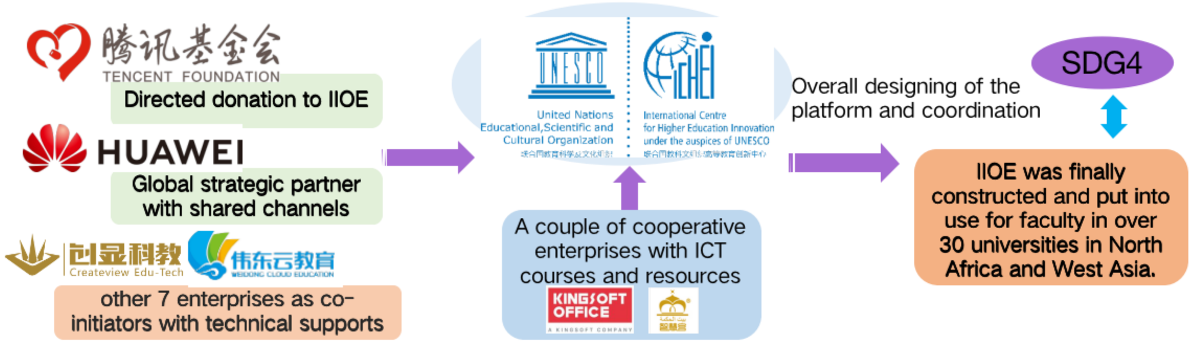


Figure 4: The way UNECO-ICHEI cooperates with corporates in IIOE

The 8 representative enterprises participate as co-initiators the in the IIOE inauguration ceremony, including Huawei, Wedong Cloud Education, CreateView Education Technology, iFLYTEK, UBTech, CIOTimes, CODEMAO and Jiker. Aside from the initiators, Tencent Foundation plays an important role as the main donor of IIOE project, and other corporates continues to join in the project as partners such as Caibei and Zhihuigong. According to Mr. Tang from ICHEI, who is in charge of the Department of Corporate Partnerships, these corporates has played quite different roles in cooperation with ICHEI and in the project of IIOE.

Table 6. Roles of cooperative corporates within the IIOE Initiative

Corporates	Way of participation	Forms of cooperation	Role
Tencent Foundation	Discretionary donation	Directed donation to IIOE whole project	Main Donor
HUAWEI	Cooperative development (strategic)	- Provide online courses through Huawei ICT Academy - share cooperation channels and expand mutual influenc	Global strategic partner

		e; jointly publish regional white papers	
Wedong Cloud Education	Cooperative development (software and hardware)	Provide software and hardware support	Co-Initiator; cooperative enterprise
Createview Education Technology	Cooperative development (software and hardware)	Provide software and hardware support	Co-Initiator; cooperative enterprise
iFLYTEK: Technology Corporation	Cooperative development (software)	Provide technical support for voice conversion	Co-Initiator; cooperative enterprise
Jiker: Online Education Platform	Cooperative development ((platform & courses)	- Design IIOE platform and construct the framework - Provide technical support - Provide course resources	Co-Initiator; cooperative enterprise
UBTech: AI Education Technology Corporation	Cooperative development (courses)	- Provide hardware support -Provide course	Co-Initiator; cooperative enterprise

UBTECH		resources	
CODEMAO: Programming Education and Technology Corporation	Cooperative development (courses)	Provide course resources on coding and programming	Co-Initiator; cooperative enterprise
CIO Times	Cooperative development (courses)	Provide course resources	cooperative enterprise
Kingsoft Office	Cooperative development (software &courses)	- Provide WPS skills training courses and share copyright - Provide WPS training courses for faculty - Equip smart classrooms with WPS software	cooperative enterprise
Tencent Cloud; Tencent Education	Cooperative development (platform)	Help construct platform and construct the framework	cooperative enterprise

Caibei: Online Education Platform	Cooperative development (courses)	Provide course resources	cooperative enterprise
Zhihuigong: Culture and Education Industrial Group	Cooperative development (translation & courses)	- Help develop the Arabic version of IIOE platform -Video production of course resources	cooperative enterprise

Concluded from the materials Mr. Tang has provided, there are four reciprocal ways ICHEI has been cooperating with enterprises:

- Fund raising

The enterprises can donate funds directly to UNESCO-ICHEI, and then ICHEI will take use of the funds to set up a special project, which will be named after the donor company. And the contributions of the donors will be fully reflected in the international conferences it participates in. At the same time, ICHEI provides funding budget reports and funding execution reports for the donated funds every year, and carry out related business procurements for the project.

- Channel sharing

UNESCO-ICHEI provides its huge cooperation network in the international field to share with enterprises. Since ICHEI has established in-depth cooperation with the intended university, thereby facilitating the implementation of the company's flagship model project in the local area and establishing in-depth cooperation with the university. For example, through the construction of smart classrooms, the enterprises could win a good reputation and therefore open the market in the countries.

- Content construction

For the development and updating of IIOE, it calls for relevant institutes to provide relevant course resources, or platform construction, course translation, lecturer training and other knowledge production capabilities, improve IIOE related content, and enhance the ICT capabilities of college teachers in developing countries in Asia and Africa.

- Plan to provide

Companies can provide systematic solutions and supporting products, and track project implementation, training, etc.

Through the cooperation with ICHEI, the companies will obtain: a strong international network; cooperation cases of top local universities; a group of trusted partner universities; rapid development of international business; cooperation opportunities with UNESCO; corporate reputation and brand promotion, while ICHEI builds up a reliable partnership for IIOE and receives technical and platform support, and the targeted clients could thus enjoy the benefits of cooperation.

6. Discussion

Since the introduction of the SDGs in 2015, Chinese enterprises are witnessed to have experienced upsurges in both their capacity and awareness in taking on CSR. As more Chinese companies become competitive participants in the global market, large companies have devoted more resources to philanthropic causes, as illustrated by the rising donation amount of the Top 500 companies.

It is evidenced that Chinese enterprises' donating behaviors are deeply influenced by government agenda, since donations are skewed to the SDGs related to economic and social development, especially areas in poverty reduction, education development and health promotion, which all fall within the government's priorities. As China transforms into an development approach with more focus on economic quality rather than speed, and a greener and more responsible energy producer and consumer, the SDGs on environmental preservation have begun to attract more donations, as demonstrated by the increased donations received by SDG 7, Clean Energy.

The alignment between the government and the private sector reflects that the government still plays an indispensable part in the realization of SDGs. The Chinese government has shown strong political determination in achieving the 2030 Agenda. In 2016, it released a national plan, incorporating the 169 targets of the SDGs into its 13th Five-Year Plan with clear indicators and action plans (Ministry of Foreign Affairs, 2016). Progress reports have been published as follow-ups to monitor and evaluate the performance in each field (Ministry of Foreign Affairs, 2017) (Ministry of Foreign Affairs, 2021).

Section 4.2 elucidates that SOEs in the power sector are assigned with poverty reduction tasks, therefore, their donations congregate in SDG 1 to fulfill the national goal to eradicate extreme poverty by 2020. For the POEs, the government still have an effect on their donating decisions via preferential policies with incentives such as subsidies, tax exemptions and reductions.

In addition to responding to the government's appeal, enterprises are exploring ways to shoulder more CSR, which is beneficial to their corporate image and could attract investors for the listed companies. There are several ways that enterprises shoulder CSR and they can choose their role according to their development focuses and capabilities when participating in charitable projects. For example, as a medium-sized enterprise, Jala tend to join the charitable projects launched by governments or third-party organizations by donating discretionary grants and resources, rather than building up its own foundation or acting as a manager of the project, in order to save the management cost but shoulder CSR at the same time.

It is worth noting that the role of pure donor sometimes also goes for large companies who do not want to shoulder the responsibility of operating and managing in certain projects. For example, CYPC is a state-owned energy enterprise with large capability and personnel resources, but the project of rural revitalization calls for comprehensive arrangement design and coordination of many departments, thus beyond the reach of enterprises and relies on the strong leadership of local government.

Other than international organizations and local government, NGO also plays an important role in connecting relative corporates and targeted SDGs by projects, plans, competitions and forums with its administrative flexibility and extensive network among institutes and public sector. For example, China Environmental Protection Foundation is focused on SDG 7 clean energy and SDG 13 Climate action while FAW-Volkswagen is exploring new energy innovations in the automotive technology field to better fit national carbon neutral strategy, and thus they co-initiated the "Automotive Environmental Innovation Leading Plan", by which can bring new inspiring products for corporates and also benefit sustainable development in the long run.

Within a certain charitable project, there are often multiple enterprises involved as different actors rather than the only one, therefore it is important to have a closer look at how mixed pattern has been taken in a cooperative project. The roles of enterprises in the same project are diversified according to their extent of contribution and way of participation. In the case of building up IIOE, UNESCO-ICHEI serves as the central director managing tiered partnerships with a couple of enterprises. Tencent foundation offers directed donations to the project as supervisor; Huawei as ICHEI's global strategic partner, focuses on sharing cooperation channels and expand influence not only for IIOE; several technological companies based in Shenzhen as well as partner institutes are co-initiators, provides online courses and hardware supports. In this process, many other enterprises also participate as cooperative partners in a specific item, such as translation technology or software outsourcing. Acting as a cooperative partner is different from as a donor, not only in that the enterprises are supposed to take specific responsibilities of construction, but also in that they usually take this advantage to make commercial benefits in following steps apart from earning reputation.

Tencent established its own charity foundation earlier than its counterparts in the industry, and holds more discretion in deciding where the donations go, which also makes it difficult for our analysis since it is hard to distinguish the non-for-profit projects and those that are for-profit. Tencent has been exploring ways to combine its businesses with CSR, making the most of its technological advantages and contributing to multiple goals of SDGs, including poverty reduction, education development and health promotion. This is a more sustainable way to achieve SDGs than providing financial support only.

In our classification, we attribute the SDG subfield to the main cause it serves, which might overlook some other goals that are promoted in the meantime. For example, the case of IIOE initiated by UNESCO-ICHEI is conducive to SDG 17 as it promotes partnership building as well, although it diverges a bit from what SDG 17 appeals to—forging partnerships between developed and developing countries.

7. Conclusion

Corporate participation in SDG implementation is on the ascent. It is gaining considerable attention and importance across the spectrum ranging from various stakeholders. From a specific perspective of corporate philanthropy, this research provides a comprehensive evaluation on the contribution of Chinese enterprises to SDG through public donations at the individual enterprise level in four different scenarios, namely leading company analysis, annual analysis, industry-specific analysis, and event analysis, and investigates the focusing domains and inner motivations of enterprises in each scenario. Corresponding recommendations are proposed to relevant enterprises or regulatory departments to address some essential problems such as the imbalance of contributing to each subgoal. Meanwhile, to explore the behavioral strategy of the stakeholders engaged in the process and contributing mechanism of charitable funds to SDG, studies on three main types of cases on Chinese corporates' donations to SDG are conducted and demonstrate the different patterns of corporate involvement in this process. Based on both quantitative and qualitative research, a panorama of Chinese corporate donations to SDGs is illustrated eventually to help the academia and practitioners to better understand the corporate participation in SDGs through public donation.

Based on the Chinese corporate donation database constructed by ourselves, we quantitively illustrate the status quo of Chinese corporate donations to SDG from four perspectives. First, because of the influence and importance of leading companies in the national economy and the domain of corporate philanthropy, we look at the donation of top 500 Chinese enterprises to SDG and find that SDG 1 and SDG 4 received more donations from these top market participators than other fields and the absolute amounts of funds flowed to these two domains grew steadily from 2015 to 2019. With a close look into the leading companies' donations to SDGs, we further find that corporates donation behaviors are molded by government policies and corporate strategies of development jointly. Second, considering the specialty of year 2015, which is the initial year when the 2030 SDG agenda was adopted by member states of the UN and the China's State Council launched a persistent battle against poverty, we conducted an annual analysis of all Chinese corporate donation to SDGs in 2015 and find that Chinese enterprises directed nearly 80% of their donations to economic and social development in that year, with more than 40% donated to SDG 1 and 36% donated to SDG 4. Especially for poverty alleviation, the government has been mobilizing both SOEs and POEs simultaneously to play important roles in the concerted efforts to eradicate poverty. Third, since the donation behaviors and emphases might vary greatly among different industry, we also conduct an industry-specific analysis and select all power enterprises to study for their importance in the nation's economy as well as their affinity to energy transition and climate change. We find that Chinese power enterprises' donations to SDG 1 rank highest among all donations, followed by donations to SDG 3 and SDG 7, while the donations to Climate Action (SDG13) appears to be less generous. Furthermore, the willingness of donation and awareness of different SDG subgoal vary greatly among different enterprises, which are impacted by financial performance and nature of business. Fourth, in view of the outstanding performance and vibrant participation of Chinese enterprises in the fighting against COVID-19, we add an event analysis of the Chinese corporates' donations in COVID-19 to quantify the contribution of enterprises under this unprecedented public health crisis. We find that Chinese corporates turn out to be strong and positive actors by joining efforts to contain the pandemic, while the redirection of funds to health-related areas appear to have crowded out donations to other SDG areas.

To better understand how the corporates play their roles in the charitable projects, we have chosen five cases covering different types of enterprises -- medium-sized POEs (Jala Group), large-sized POEs (Tencent), SOEs (GYPC), who are cooperating with local government (Ganyuan), overseas institutes (IIOE), international groups (UNDP) and local NGOs (CFEP). Besides, we switched our perspectives from certain enterprises, the cooperative project, and targeted clients to have a broad picture of the multi-actor cooperation. Overlooking the cases, it is not difficult to see that during the past decades' development, the corporate philanthropy pattern in China has gradually developed from "donation of money or resources without further participation" to "strategic project cooperation and participation", and additionally the partnership among enterprises, NGOs and governments has been strengthened through charitable projects, such as serving as strategic partner sharing channels and benefits.

Overall, the advantages of China's system and the establishment of a new type of relationship between government and business have effectively contributed to the realization of the global Sustainable Development Goals in China. Both state-owned and private enterprises have been active in charitable fundraising, which reflects the government's efforts to optimize the business environment, improve the efficiency of business operations, and empower and motivate the willingness of enterprises, especially private enterprises, to contribute. On the one hand, Chinese enterprises have a high degree of recognition of SDGs and actively link their corporate social responsibility with SDGs. On the other hand, the contribution of Chinese enterprises to the 17 SDG goals is unevenly distributed, and the progress of achieving some SDG goals has been slowed by the epidemic.

This research contributes to both the existing literature on SDG agenda, CSR, corporate philanthropy, and corporate management, and the practical implementation of SDG in China for different stakeholders. From the perspective of academia, this research supplements to the literature of private sectors' participation and contribution towards SDG as a typical sub-regional country research. With concrete quantitative analyses of donation data and evaluations of social outcomes, this research also broadens the vision of empirical research on CSR or corporate philanthropy and associates the theory of CSR/ corporate citizenship with SDG. Furthermore, exploring the contribution route and the mechanism of corporate collaboration with other organizations, this research illustrates the true patterns of corporate donations management in China and partially adds to the literature on corporate management with sustainable development. From the perspective of practice, this research has significant implications to the UN, government departments, enterprises, and social organizations. It could improve the understanding of the private sectors' contribution to SDG for the UN, improve the ability for government departments to evaluate the coordinated development of enterprises, prompt social organizations to source funds for public welfare products, and motivate enterprises to grasp the opportunity for transformation and upgrade.

As a preliminary research, there are some weaknesses in our study, which might be avoided in future studies. First, the data availability could be improved. Considering the difficulty of data scratch and workloads, the current research emphasizes more on leading companies or listed companies. Thus, some enterprises donating large charitable funds but lacking annual report disclosure maybe be ignored partially such as Huawei. Second, the accuracy of categorization of charitable projects with 17 SDGs could be promoted. Especially for some underfunded domains such as biodiversity and climate change, with the expanding donation and concentration, the available information for categorizing check could increase and corresponding accuracy could be higher. With the above two problems fixed, more multifaceted quantitative analyses could be presented such as the analysis of enterprises' attributes for those who donate large fund into underfunded areas. Third, the comparison of patterns of corporate donation management could go deeper after incorporating more cases. Our current attention is mainly paid on head companies in several fields, which might lead us to ignore some innovative actions of small and micro enterprises. Thus, the strategy of case selection could be more diversified.

8. Implications

Based on all the analyses, discussions, and findings mentioned above, we propose preliminary suggestions for different stakeholders of China's philanthropy to boost a better combination of SDG agenda and corporates' philanthropy.

For UN

As the developer of international initiatives, the UN should further advocate the actions of relevant parties of the charitable industry in various countries, call upon these parties to strengthen the linkage between philanthropy and implementation of SDGs, and propel the evaluation work each year. Meanwhile, as the platform for international communication, the UN should also promote the communications of practitioners and researchers of different countries to facilitate the experience exchange and practice learning between the partners. For example, the practice of Chinese corporates' participation in SDG through charitable donations would enlighten the counterparts in other countries if the UN could propagandize and popularize Chinese experience on their platforms, while Chinese enterprises and charitable foundations would also learn from oversea charitable practices if the UN could provide relevant information of the Europe or America.

For Chinese government

As mentioned above, the UN SDG agenda could not be implemented solely by governments. Thus, it is imperative for governments to mobile and utilize the social resources especially the charitable funds and force from enterprises. To better allocate and guide the relevant resources, the government should firstly support the evaluation work of charitable funds and SDG, which enables all stakeholders to have fundamental knowledge of the current distribution of Chinese corporates' charitable funds in 17 SDG subareas. Second, recognizing the uneven distributed awareness in some underfunded areas, the government should enact some policies or initiatives to correct the market failure and guide the investment in these areas especially the environmental dimension. Third, to collaborate with enterprises in a sustainable way and consider the enthusiasm of investors and corporate shareholders, the government is supposed to continue improving the business environment to empower and motivate enterprises to contribute.

For social organizations

During our analysis of charitable funds, a core problem which confused us is that nearly one third of the donation events lacked effective information about use and purpose. On the one hand, it reflects that strengthening the information disclosure and data transparency is imperative for an explicit quantitative evaluation. On the other hand, it also indicates that some enterprises just donated into kinds of foundations without clear charitable purpose or deep participation in the projects. Thus, social organizations involved in philanthropy should continue to promote their transparency not only for better trustiness but also for the development of overall Chinese philanthropy. Meanwhile, they are supposed to utilize information technology and big data to better match the supply side and demand side of charitable funds, which could prompt more active involvement of donors into charitable projects and facilitate a sustainable way of development of some information-lack projects.

For enterprises

With the rapid development of sustainable finance and impact investing, the significance of corporate social responsibility becomes more salient in the overall strategy of corporate development. Thus, the primary transition of enterprises is to integrate SDGs into long-term corporate strategies and promote the awareness of SDGs of both senior executives and ordinary employees. Second, from a more practical perspective, enterprises should seek for new combinations of the company's main business and SDG goals, which is the only sustainable and appliable way for enterprises and the whole society to realize a win-win outcome. Third, as mentioned above, the management pattern of corporates' charitable projects should also be transformed and upgraded. A deeper participation of enterprises in charitable projects and collaborative operations of charitable funds with other social organizations could multiply the benefits enterprises could obtain and maximize the total utilities generated by the same amount of charitable funds.

Attribution Sheet

Hao Zha

- ✓ Participated in the construction of database as research assistant of TUSDG from April 2019;
- ✓ Data cleaning, analysis, and visualization;
- ✓ Manuscript writing of Section 1-3 and 7-8.

Jinghuan Ma

- ✓ Contributed to the construction of keyword dictionaries for matching;
- ✓ Manuscript writing of Section 4-6.

Haiming Wu

- ✓ Internship at UNESCO-ICHEI for case study and information collecting;
- ✓ Manuscript writing of Section 2-3 and 5-6.

Abbreviations

ACFIC – All-China Federation of Industry and Commerce

CDTC - China Datang Corporation

CEEG - China Energy Engineering Group

CEPF - China Environmental Protection Foundation

CGDC - China Guodian Corporation

CGNP - China General Nuclear Power Corporation

CHDC - China Huadian Corporation

CHNG - China Huaneng Group

CICC – China International Capital Corporation

Co., Ltd – Company Limited

COVID-19 - coronavirus disease 2019

CPC – The Communist Party of China

CPIC - China Power Investment Corporation

CR Power - China Resources Power

CSR – Corporate social responsibility

CTGC - China Three Gorges Corporation

CYPC - China Yangtze Power Company

ETS – Emissions trading system

GHG – Greenhouse gas

GRI – Global Reporting Initiative

ICHEI - International Center for Higher Education Innovation

IIOE - International Institute of Online Education

IPRCC – International Poverty Reduction Center in China

kWh - kilowatt-hours

MDGs – The Millennium Development Goals (MDGs)

NDRC - National Development and Reform Commission

NEA - National Energy Administration

POE – Private owned enterprise

SDGs – The Sustainable Development Goals

SEAC - State Ethnic Affairs Commission

SHGC - Shenhua Group Corporation

SOE – State owned enterprise

SPIC - State Power Investment Corporation

TUSDG – The Institute for Sustainable Development Goals, Tsinghua University

UN - The United Nations

UNDP - The United Nations Development Programme

UNESCO - The United Nations Educational, Scientific and Cultural Organization

Appendix - For more information on involved enterprises in Case Study

1. Jala Group

Founded in Shanghai in 2001, Jala Group is the largest domestic cosmetic company in China, primarily focused on research and development, production, and sale of beauty products, holding 73 patented technologies in design and product formulation. Jala Group plays an active role in the corporate social responsibility sector and as the first private company to cooperate with UNDP China.

2. Mosuo Ethnic Minority Group

In Mosuo society, weaving is an important traditional skill that can strengthen women's ability to provide for the family. Mothers weave to clothe their children – and at the same time, to reinforce the notion that they are heads of the households. Many women spend most of their waking hours weaving, hard work and dedication crystallized in every thread of their craft.

The last-remaining matriarchal society in China, the Mosuo are a culturally-rich people who live by their own alternative social institutions and unconventional gender roles. The Mosuo community brims with unique traditions, among them the practice of tracing family lineage through the female side; an embrace of "walking marriages," which holds love above all else; and persisting in the use of time-honoured techniques to weave their scarves and other handicrafts.

However, their geographic isolation acts as a major hurdle to development and the pursuit of prosperity. Younger generations, who often saw no economic benefits or employment opportunities in this cultural inheritance, reluctant to stay in the back countryside away from the convenient city life, resulting in large-scale migration of young people away to the bigger cities. With every villager that left, Mosuo culture took one step closer to extinction.

3. UNESCO -ICHEI

The International Centre for Higher Education Innovation under the auspices of UNESCO (hereafter UNESCO-ICHEI) was founded in 2016. On November 13, 2015, the 38th General Conference of UNESCO approved the founding of UNESCO-ICHEI in Shenzhen, China, which is the tenth education Category II centre in the world, and the first Category II centre focusing on higher education in China.

UNESCO-ICHEI's work is closely tied to SDG 4 (Education) in every respect. Relying on Shenzhen's advantages in information and communications technology (ICT), UNESCO-ICHEI focuses on the needs of the developing countries in Asia and Africa to extend higher education to the less educated areas. The organization carries the mission of expanding quality and equitable education opportunities through collaborations with flagship universities in various countries to strengthen their capacity in online and blended teaching and learning (OBTL), as a way of promoting digital transformation in higher education institutions.

UNESCO-ICHEI exerts its four main functions in knowledge production, capacity building, technical support, and information sharing by developing international higher education cooperation programmes with developing countries in Asia and Africa, in an effort to construct a global network based on the principle of “consultation, contribution and shared benefits”.

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