Thoughts on addressing climate change

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Abstract. The climate change is the global issue widely concerned by the international society, which is related to the overall situation of China's economic and social development. This paper illustrates the international mechanism of adapting to climate change, discriminates the connotation of response planning, including the connotation of mitigation planning, and the connotation of adaptation planning. This paper also establishes the planning research framework regarding the response to climate change, including the planning research framework regarding the climate change mitigation, and the adapting to climate change. In addition, this paper also introduces the actions and measures of major countries to address the climate change, defines China's strategy and target for addressing climate change, and points out how to combat the challenges of climate change in China. Besides, this paper further illustrates China’s key tasks of scientific and technical actions for addressing climate change, and provides the suggestions regarding China's response to climate change.

1. Introduction
The impact of climate change upon our human society becomes more and more obvious, and the heavy precipitation, extreme temperature, severe typhoon and other extreme weather events severely affect our production and living, while the frequency and strength of such impact have the increasing trend [1]. China is a country with a large population, worse per-capita resource endowment, complex climate conditions, and fragile ecological environment, and it is susceptible to the adverse effects of climate change. The climate change is related to the overall situation of China's economic and social development, which is of crucial importance to China's economic safety, energy safety, ecological safety, food safety and people's life and property safety. It is required to actively address climate change, and accelerate the green low carbon development, which is the intrinsic requirements of realizing the sustainable development and promoting the ecological civilization construction, the great opportunity of accelerating the transformation of economic development direction, adjusting the economic structure and promoting the new industrial revolution, and also the international obligation of China acting as the responsible great power [2].

In January 2017, President Xi Jinping delivered the keynote speech entitled as Work Together to Build a Community of Shared Future for Mankind at the United Nations Office at Geneva, clearly pointed out that our human beings were in an era of emerging challenges and increasing risks, and the non-traditional security threats such as the climate change continued to spread. At the conference of National Leading Group to Address Climate Change, Premier Li Keqiang also pointed out that the active response to climate change, was not only of crucial importance to China's economic safety, energy safety, ecological safety, food safety and people's life and property safety, and the promotion of sustainable development, but also the responsibility of participating in the global governance in an in-
depth manner, building a community of shared future for mankind, and promoting the common development.

As per the United Nations Framework Convention on Climate Change, the Contracting Parties were required to formulate and implement the climate change mitigation and adaption plan, carry out the cooperation, and jointly adapt to the effects of climate change. At present, through the conference negotiation of Contracting Parties of Convention over the years, the international mechanism of combating climate change is preliminarily established from the aspects of funds and technology transfer, national adaption planning and action plan, national information communication and inventory, international technical support, and etc.

Firstly, the funds and technology transfer mechanism, intends to support the adaption action of the developing countries and promote the technology development and transfer, including the Global Environment Facility (GEF, 1995), Special Climate Change Fund (SCCF, 2001), Adaptation Fund (AF, 2001), Least Developed Countries Fund (LDCF, 2001), Green Climate Fund (GCF, 2010), Technology Mechanism (2011), and etc.

Secondly, the preparation mechanism of national adaption planning and action plan, intends to establish the national guiding thought or principle of adapting to climate change, and solve and adapt to the major national climate change risks, including the National Adaptation Programme of Action (NAPA, 2001), National Adaptation Plan (NAP, 2010), and etc.

Thirdly, the national information communication and inventory, intends to provide the legal and regulatory framework of national climate change impact and vulnerability assessment, national adaption information, adaption target, and adaption action communication, adaption-related measures and action information, including the National Communications (NC), Intended Nationally Determined Contribution (INDC), Biennial Report, national adaption information communication that is currently under negotiation, and etc.

Fourthly, the international capacity building supporting mechanism, intends to increase the opportunities for developing countries to enhance the adaption action and understanding, evaluate the impact of climate change, vulnerability and adaption capacity, identify the opportunities to enhance the toughness, reduce the vulnerability, and help the government formulate the scientific adaption decision, and etc., including the Nairobi Work Programme (NWP, Decision 2/CP.11, 2005), Cancun Adaptation Framework (CAF, 2010), Adaptation Committee (2010), Warsaw International Mechanism for Loss and Damage (2012), Technical Examination Process on Adaptation (TEP-A, 2015), and etc.

2. Connotation of planning regarding the response to climate change

2.1. Connotation of mitigation planning

The mitigation planning intends to control and reduce the greenhouse gas emission generated by human beings, and stabilize or reduce the greenhouse gas in the atmosphere, especially the concentration of carbon dioxide, through the planning construction of energy, traffic, land, building, water, solid waste and other factors, so as to mitigate the further climate warming [3]. The connotation of mitigation planning is mainly demonstrated as follows: Firstly, what is mitigated? It intends to mitigate the climate warming through the practical action of reducing the emission of greenhouse gas. Secondly, who shall undertake the mitigation responsibility? It mainly includes the interest subject of urban development, namely, the government, urban economic organization and the public. It intends to realize the target of urban greenhouse gas emission reduction, through the policy objective formulated by the government, the emission reduction objective set by the enterprises, and the life style change objective of the residents. Thirdly, at what level it shall be implemented? At the regional planning level, it is required to restrain or guide the regional key industrial layout based on the spatial characteristics of resources and environment, and determine the regional low carbon spatial structure model, in combination with the regional infrastructure and public service facilities. At the overall planning level, it is required to determine the low carbon of urban space and facility system, through
implementing the sustainable energy structure, low carbon traffic system, sustainable water system, solid waste resources utilization, and other planning measures. At the community planning level, it is required to realize the community’s low carbon target, through implementing the green building, unconventional water source utilization, slow traffic system, renewable energy utilization and other planning measures.

2.2. Connotation of adaptation planning
The adaption planning is a sort of adjustment made to mitigate the impact of climate change, and the existing or possible impact of natural or social system upon climate change (such as the sea-level rise), so as to ensure that the vulnerability is reduced or the resilience is increased under the condition that the observed or predicted climate change and other extreme situations are encountered [4]. The connotation of adaption planning is mainly demonstrated as follows: Firstly, What is adapted to? It is required to adapt to the temperature change, sea level rise, rainfall change, tropical storm and other environment conditions resulted from the climate change. Secondly, what will adapt? The urban social economic system and natural ecological system will adapt to the environmental change. Thirdly, at which level does the adaption planning occur? Based on the vulnerability analysis and risk evaluation, it is required to consider the adaption strategy of planned withdrawal at the regional planning level, consider the adaption adjustment strategy at the overall planning level, and take the protection strategy into special consideration at the community planning level.

3. Planning research framework regarding the response to climate change

3.1. Planning research framework regarding the climate change mitigation
The low carbon planning research contents proposed in recent years, actually constitute the planning contents of climate change mitigation, but a comprehensive framework is not available. Therefore, the following considerations are proposed with regard to the planning framework of climate change mitigation:

1. It is required to disintegrate the climate change target formulated at the national level into the local objectives, and further disintegrate the local climate objectives into the objectives of each industry through the tracing analysis of carbon emission path, so as to form the carbon emission indicators of each industry;

2. It is required to translate the local climate target into the urban planning target at variable levels, and define the emission reduction strategy of planning at variable levels, namely, policy guideline-action guideline-implementation subject, while the legal planning document at variable levels will become the significant policy framework of implementing the urban "carbon emission reduction" target;

3. It is required to implement the carbon dioxide emission reduction of each mitigation strategy, incorporate the mitigation planning strategy into the traditional urban planning system, formulate and guide the relevant action plan;

4. It is required to calculate the cost benefits of mitigation strategy and optimize the mitigation strategy;

5. It is required to implement the mitigation strategy, carry out the inspection after the implementation, and evaluate the efficiency.

3.2. Planning research framework regarding the adaption to climate change
The researches regarding the adaption to climate change have been increased day by day, and the adaption planning framework for addressing climate change and extreme climate has almost been formed in foreign countries:

1. It is required to study the climate change trend in the future, and predict the climate change in the planning target year;
(2) As per the prediction and probability of climate change, it is required to select the typical scenarios of several climate changes, analyze and determine its urban involved area on the GIS platform or by utilizing the professional software, and then conduct the vulnerability analysis and risk evaluation upon the involved area;

(3) It is required to determine the affected range, the population, and the affected degree of public facility, infrastructure and important institution, and obtain the vulnerable areas and key facilities;

(4) It is required to reconsider the design criteria of these key areas and facilities, and formulate the adaption strategy, so as to make the human society adapt to the impact of climate change in a better manner;

(5) It is required to calculate the cost benefits of adaption strategy and optimize the adaption strategy as per the economic analysis and other evaluation indicators of adaption strategy;

(6) It is required to implement the adaption strategy, carry out the inspection after the implementation, and evaluate the efficiency. Due to the uncertainty of climate change, this process needs to continuously adjust the adaption planning programme as per the climate change prediction and the trend, which is a circulation process.

4. Actions of major countries for addressing climate change

At present, the UK has already formed a set of relatively perfect national adaption strategies and legal and policy frameworks. The national strategy and the adaption policy framework on climate change at the national level were released in 2000 and 2005 separately, while a set of decisions and work guidelines based on the risk analysis and strategy evaluation was proposed. In 2008, the Climate Change Act was enacted, which specified the supervision, evaluation and reporting system of climate change adaption measures. In 2013, the first National Adaptation Plan, which arranged the specific targets, action programme, responsibility department and progress arrangement. In 2018, the Second National Adaptation Plan (2018–2023) was released, which determined the key adaption actions in the next 5 years in light of 6 priority adaption fields. In addition, the UK also issued a series of plans and policies that affected the monitoring, risk evaluation and implementation action. As per the Climate Change Act, the National Adaption Committee on Climate Change has annually released the adaption action progress report since 2010, and established the disaster prealarm and prevention system that consists of each department of the government, so as to timely and accurately provide the disaster prealarm and disaster prevention and mitigation services to the public and government. In addition, the UK’s relevant governmental departments also released the departmental “Climate Change Adaption Planning”, and the England issued the Adapting to Climate Change in England-A Framework for Action.

The Germany established the National Adaption Committee on Climate Change, so as to promote the national adaption strategy and action. In 2005, the Germany firstly proposed the climate change adaption problems in the Climate Protection Plan, and proposed to formulate the national strategy for adapting to climate change. Therefore, the Germany established the "Germany's National Adaption Committee on Climate Change" and "Interdepartmental Working Group on Climate Change Adaption", and released the German Strategy for Adaption to Climate Change (DAS) and Adaptation Programme of Action (APA) in 2008 and 2011 respectively. Meanwhile, in 2014, the DAS measures were evaluated, and the Climate Change Adaption Strategy Progress Report was issued in 2015. Although the Germany has not had the special climate change legislation at present, the climate change adaption contents are incorporated into the relevant legislation, so as to improve the response capability. For instance, it was specified to "protect the coast and inland environment, and ensure or restore the vegetation region, buffer zone and flood damaged area, so as to prevent the flooding" in the Spatial Planning Act. In addition, the "flood prevention and control" related contents were also specified in the Water Balance Management Law. In terms of financial support, Germany established the Forest Climate Fund in 2013, and annually invested about € 35 million to support the climate change adaption works.
The Switzerland carried out the adaption works by centering around "the possible impact of mountains and glaciers upon the mountainous residents and tourism". The Switzerland carried out the "Climate Change Risk and Opportunities Evaluation" project, which divided the Switzerland into six major regions. Each region might select a typical administrative region to carry out the detailed evaluation and then expanded the results to the corresponding region. On this basis, the National Adaptation Strategy - Switzerland, including three key elements, namely, overall target and principle of adaption, departmental strategy and cross-departmental challenge, were enacted in 2012. In such Strategy, 9 key adaption departments in Switzerland were required to formulate the "Departmental Adaption Sub-strategies", and formulate the corresponding adaption target and feasible path based on the identification of departmental key adaption action. Thereafter, the Switzerland started two supporting actions of National Adaption Strategy. Among them, one was to face the policy-maker and management organization at the national and regional levels and carry out the federation of adaption action, work network, expert's "adaption information network platform", which intended to promote the information sharing and exchange. The other was the "adaption climate change pilot programme" led by Swiss Federal Office for the Environment, which intended to implement the innovative cross-departmental adaption project and enhance the adaption capacity of pilot area.

The Japan's climate change adaption works are coordinated and organized under the leadership of Ministry of the Environment. In 1993, the Basic Environment Law was released, which intended to incorporate the global warming countermeasures into the environment law system. In October 1998, the Basic Act on Global Warming Countermeasures was released, which determined the basic national policy for addressing climate change on the macro level. However, the special measures of adaption to climate change were not involved. Japan established the Adaption Committee on Climate Change which regularly released the tracking report for Adaption Committee on Climate Change, carried out the collaboration between government agencies, constructed the climate change statistical information platform, and established exchange mechanism between experts and decision-makers. In 2015, Japan introduced the Climate Change Adaptation Plan and formulated the basic policy for adaption to climate change in the following 10 years. This plan was formulated by the Ministry of the Environment, and would be updated for every five years. In addition, the Japan's Ministry of the Environment, Ministry of Agriculture, Forestry and Fisheries, Ministry of Land, Infrastructure, Transport and Tourism, Ministry of Education, Culture, Sports, Science and Technology and other relevant departments, also released the relevant research report, strategy, plan, guideline and etc., for addressing the climate change.

The Australia attached great significance to the climate change adaption issues in light of the system and mechanism, and etc. In May 2006, Australian government issued the Climate Change Scenario Applied to Initial Risk Assessment of Risk Management Guideline and Climate Change Impact and Risk Management: Enterprise and Government Guideline, so as to guide the climate change risk management of governmental agencies and enterprises. In 2007, 2010 and 2015, the Australian government also issued the National Climate Change Adaptation Framework, Australian Adapting to Climate Change: Governmental Position and National Climate Resilience and Adaption Strategy respectively. With regard to the system and mechanism, the "Australian Climate Change Adaption Center" was established in 2007, and the "Ministry of Climate Change" was founded on December 3rd, 2007 (the "Department of Climate Change and Energy Efficiency" was founded during the period of government institutional reform in 2010), while the Special Committee on Climate Change was founded in 2011, so as to support the effective implementation of climate change policy at the national level, and provide the platform to strengthen the communication between the federal government and state, regional and local governments during the policy implementation process. In light of the high vulnerability to climate change of coastline, Australia focused on carrying out the coastal vulnerability assessment, and released the Climate Change Risks to Australia's Coasts and Climate Change Risks to Coastal Buildings and Infrastructure in 2009 and 2011 separately [5].
5. China's strategy and target for addressing climate change

China's guiding ideology for addressing climate change is as follows: it is required to adhere to the basic state policy of resources conservation and environmental protection, adopt the controlled greenhouse gas emission and enhanced sustainable development capacity as the target, and take the guarantee of economic development as the core. In addition, it is also required to accelerate the transformation of economic development pattern, take the energy saving, optimization of energy structure and strengthened ecological protection and construction as the priority, and adopt the scientific and technological progress as the support, so as to enhance the international cooperation, continuously improve the capacity of addressing climate change and make new contribution to the protection of global climate.

China's response to the climate change shall adhere to the following principles:

(1) It is required to address the climate change under the framework of sustainable development. The climate change occurs during the development process, and must also be solved during the development process. It is required to promote the sustainable development during the process of addressing climate change, so as to realize the win-win of economic development and response to climate change.

(2) The "Common but Differentiated Responsibilities" principle is the core principle of United Nations Framework Convention on Climate Change. Both the developed countries and developing countries have the responsibility to take the mitigation and adaption measures on climate change. However, due to the variable historical responsibility, development level, development stage, capacity size and contribution method of all countries, the developed countries shall undertake the responsibility upon the historical cumulative emissions and the current high per capita emissions, and take the lead in emission reduction. Meanwhile, the developed countries shall also provide the funds and transfer the technology to the developing countries. During the process of economic development and poverty elimination, the developing countries shall adopt the positive adaptation and mitigation measures, and minimize the emissions, so as to jointly contribute to address the climate change.

(3) The equal importance is attached to mitigation and adaption. The mitigation and adaption are two organic components of response to climate change. The mitigation is a relatively long-term and tough task, while adaption is relatively practical and urgent, and is more important for the developing countries. For the mitigation and adaption, we shall make overall arrangements, realize the coordination and balance, and attach the equal importance.

(4) The Convention and Protocol are the main channels for addressing climate change. The United Nations Framework Convention on Climate Change and Kyoto Protocol lay the legal foundation for international cooperation regarding the response to climate change, build the consensus of international community, and are the most authoritative, pervasive and comprehensive international framework for addressing climate change. We shall unswervingly maintain the position of United Nations Framework Convention on Climate Change and Kyoto Protocol that act as the core mechanism and main channel of climate change. All the other multi-lateral and bi-lateral cooperation mechanisms shall be the complementary and supplementary means of United Nations Framework Convention on Climate Change and Kyoto Protocol.

(5) The scientific and technological innovation and technical transfer shall be relied on. The response to climate change shall rely on the technology, and the scientific and technological innovation and technical transfer shall be the basis and support for addressing climate change. The developed countries shall be obliged to drive themselves to develop and apply the advanced technologies, promote the international technical cooperation and transfer, and earnestly fulfill their commitments of providing the cashes and transfer the technologies to the developing countries, so as to ensure that the developing countries may obtain the required cashes, utilize the climate-friendly technologies and enhance the capacity of mitigation and adaption on climate change.

(6) Social Participation and extensive international cooperation. For addressing climate change, it is required to transform the traditional production and consumption methods, and the extensive participation of the whole society. China is striving to build the resource-conserving, environment-
friendly society, create the social atmosphere of government-guidance, enterprise-participation and public voluntary action, and increase the enterprise's sense of social responsibility and the public's global environment awareness. The climate change is the common global challenge, which must be solved through the global extensive cooperation and joint efforts. China will always actively carry out and participate in any international cooperation that is in favor of addressing climate change.

6. China’s response to the challenges of climate change

China is highly sensitive to climate change, and is one of the most serious regions affected by the climate change. The Paris Agreement constructed the global adaption target, and required the Contracting Parties to carry out the adaption plan progress, adopt the adaption action, regularly submit and update the adaption information communication, and strengthen the regional cooperation in light of adaption as appropriate. The report on the 19th National Congress of the Communist Party of China clearly listed the climate change as the non-traditional security threat. General-Secretary Xi Jinping stressed at the National Ecological Environmental Protection Work Conference that it was necessary to accelerate the construction of ecological civilization system, including the ecological safety system that took the ecological system virtuous cycle and environmental risk effective prevention and control as the priority, which raised new requirements to China's climate change adaption work.

At present, China's policies and actions regarding the climate change adaption is still at the initial stage, and encounters the following challenges: Firstly, it is the absence of laws and regulations. The national basic position, principle, target, policy system, core system and others regarding the climate change adaption are still lack of the legal evidence. Therefore, it is hard to promote the relevant works. Secondly, partial requirements given in the National Climate Change Adaptation Strategy and China's National Climate Change Programme (2014~2020) still have not been landed. The absence of China's Adaption Action Plan, and the failure of converting partial working requirements into the policy system, will cause the adaption strategy and climate change planning to lack the policy gripper, and make it hard to comprehensively implement them. Thirdly, the monitoring and evaluation on the impact of climate change is inadequate. Due to the lack of subsequent monitoring and evaluation system establishment and scientific evaluation process, it is impossible to provide the accurate guidance and form the effective feedback regarding the adaption practice on climate change. Fourthly, the climate change adaption organization and coordination system among the countries, departments and regions, still have not been established. The climate change adaption work lacks the organization and system guarantee, while the National Climate Change Adaptation Strategy lacks the coordination of relevant departmental planning, and the consideration regarding the climate change adaption is also not available in the regional planning, which causes the entity responsibility of climate change adaption to become unclear.

7. Key tasks of china's scientific and technical action for addressing climate change

7.1. Development of technology for controlling the greenhouse gas emission and mitigating the climate change

The development of technology for controlling the greenhouse gas emission and mitigating the climate change, includes the following contents [6]:

1) Energy conservation and energy efficiency enhancement technology. It is required to focus on the research and development of energy conservation and energy efficiency enhancement technologies and equipment, within the electric power, metallurgy, petrochemical, building materials, transport, building and other main high energy consumption fields, energy conservation and energy efficiency enhancement technologies of M&E products, and commercial and civil energy conservation technologies and equipment, energy comprehensive cascade utilization technology, and etc.

2) Renewable and new energy technologies. It is required to mainly research the low-cost scale renewable energy development and utilization technology, and develop the large-scale wind power generation equipment, high cost-effective solar photovoltaic cell and utilization technology, solar
power generation technology, solar building integration technology, fuel cell technology, hydropower, biomass energy, hydrogen energy, geothermal energy, ocean energy, marsh gas and other development and utilization technologies.

(3) The clean and efficient coal development and utilization technology. It is required to mainly research the coal development and efficient exploitation technology and associated equipment, heavy-duty gas turbine, integrated gasification combined cycle, high-parameter (ultra) supercritical unit, supercritical large-scale circulating fluidized bed and other efficient power generation technologies and equipment, develop and apply the liquidation and poly-generation technology, and develop the coal liquidation, coal gasification, coal chemical industry and other conversion technologies, and the coal gasification-based poly-generation system technology, and etc.

(4) The hydrocarbon resources and CBM exploration, clean and efficient development and utilization technology. It is required to mainly develop the complex fault block and deep sea hydrocarbon reservoir exploration technology, deep formation hydrocarbon resources exploration technology, heavy oil reservoir and low-grade hydrocarbon resources EOR comprehensive technology, and hydrocarbon resources and CBM clean and efficient development and utilization technology.

In addition, it is also required to develop the advanced nuclear energy technology. It is required to research and grasp the fast breeder reactor design and core technology, and the relevant nuclear fuel and structural materials technology, break through the sodium cycle and other key technologies, and actively participate in the construction and research of international thermonuclear experimental reactor.

(5) Carbon dioxide capture, utilization and storage technology. It is required to develop and research the carbon dioxide capture, utilization and storage key technologies and measures, formulate the carbon dioxide capture, utilization and storage technical roadmap, and carry out the carbon dioxide capture, utilization and storage capacity building and engineering technology demonstration.

(6) The biological carbon fixation and carbon fixation engineering technology. It is required to research the forestry and other biological carbon fixation technologies, and variable carbon fixation engineering technologies.

(7) The greenhouse gas emission control technology that utilizes the agriculture and land utilization methods. It is required to research the technology of greenhouse gas emission reduction via the regulation of agricultural production method, and the modification of land utilization method.

7.2. Technologies and measures for adapting to climate change
The technologies and measures for adapting to climate change, include the following contents:

(1) Climate change impact evaluation model. Based on the existing climate change impact evaluation model, and as per the features and requirements of China's regional impact evaluation, it is required to develop the impact evaluation tool and comprehensive evaluation model with the independent intellectual property rights.

(2) The impact of climate change upon China's main vulnerability fields and adaption technologies and measures. It is required to research the impact of climate change upon China's agriculture and animal husbandry, water resources, coastal zone, forest, grassland, wetland, and other natural ecological system, and human health and public hygiene, special ecological system, endangered species and etc., develop the corresponding adaption technology and propose the countermeasures.

(3) The impact of extreme weather/ climate events and disasters, and adaption technologies and measures. It is required to research the impact of extreme weather/ climate events and disasters upon the human society and ecological system, technical measures of disaster reduction, and establish the corresponding prediction, pre-alarming and adaption technologies, countermeasures and response mechanisms.

(4) The sensitive and vulnerable areas affected by climate change, and establishment of risk management system. It is required to divide the sensitive area and vulnerable area of China's climate change through the impact evaluation, evaluate the risk level for impact of climate change upon
variable sensitive and vulnerable areas, and research the establishment of China's climate change impact risk management system.

(5) Impact of climate change upon key projects and countermeasures. It is required to evaluate the impact of climate change upon China's key engineering construction and operation, and the interaction, and propose the countermeasures.

(6) Interaction between climate change and other global environmental issues, and the countermeasures. It is required to research the interaction between climate change and biological diversity, desertification, environmental pollution and other global environmental issues, the response measures, and the adaption technologies and measures.

(7) Hazard level and adaption capacity of climate change impact. It is required to research the hazard level of climate change impact, and scientifically evaluate the capacity of adapting to climate change hazard level of variable departments and areas.

(8) Case study of adapting to climate change. It is required to select the typical departments/regions to carry out the case study of adapting to climate change, propose the operable adaption policies and measures, and analyze the cost effectiveness of adaption measures.

8. China's suggestions for addressing climate change

In order to further implement the National Climate Change Adaptation Strategy, preliminarily establish China's policy system of adapting to climate change, perfect the relevant policy formulation and mechanism design, actively establish the national long-term mechanism of adapting to climate change, and effectively promote China's climate change adaption works, the following policy suggestions are hereby proposed:

(1) It is required to accelerate the establishment and perfection of legal construction of adapting to climate change. It is required to accelerate the research and formulation of climate change adaption laws and regulations that are applied to China's reality, further define the principle, target, system, policy and duty of adapting to climate change in the legislation draft for addressing climate change, and explore the incorporation of relevant action for adapting to climate change under the existing legal framework, so as to realize the substantial support to adaption works. The local government is supported to research and formulate the relevant regulations of adapting to climate change, as per the risks of local climate change.

(2) It is required to accelerate the construction of national policy system and mechanism design for adapting to climate change. Firstly, it is required to accelerate the formulation of National Adaption Action Programme on Climate Change, define the implementation steps, responsibility institution and roadmap of adaption action, and focus on the adaption capacity of enhancing the infrastructure, agriculture, water resources, coastal zone and relevant sea area, forest and other ecological system, human health, tourism and other industries. Secondly, it is required to establish and perfect the national climate change adaption monitoring and evaluation mechanism, including the climate change monitoring prealarm system, the long-term systematic climate change and the risk monitoring and evaluation, and national and regional climate change adaption capacity evaluation, and adopt the evaluation results as the scientific evidence for guiding the adaption practice. Thirdly, it is required to establish and perfect the financial mechanism for adapting to climate change, adopt the adaption on climate change as the significant components of green investment and financing system construction, and set the adaption fund or climate change fund. Meanwhile, it is required to develop the innovative financial products related to the climate adaption, explore the innovative financing method of issuing the catastrophe bond through the market organization, establish and perfect the risk sharing mechanism, and support the pilot point and promotion works of insurance products within the key fields of climate change adaption. Fourthly, it is required to establish and perfect the coordination mechanism for adapting to climate change. It is required to strengthen the coordination of relevant departments at the policy and policy level, encourage each department to research and formulate the department's adaption action plan on climate change under the coordination of competent authority on climate change, construct the national climate change adaption project database, and regularly follow
the evaluation project progress. In addition, it is also required to strengthen the basic information integration of climate change adaption, develop and establish the network information sharing platform, and provide the information exchange and service platform for decision-makers within all fields.

3) It is required to promote the climate adaption city construction pilot point. With regard to the 28 climate adaption cities construction pilot points organized by China in 2017, it is required to practically enhance the capacity and level of pilot cities to adapt to the climate change, strengthen the communication and experience exchange between competent authority and pilot point, and between pilot points, and timely summarize and comb the working experiences and good practices of experience pilot points. In light of the problems and challenges occurring during the pilot experiment process, it is required to formulate the guiding comments, explore the working pattern for forming the climate change adaption of variable types of cities, and promote the national adaption works on climate change in the point-to-area manner.

4) It is required to perfect the technical standard system. It is required to improve the technical standard of climate change adaption and perfect the standard system. It is required to support the research of technical standard for addressing climate change. It is required to timely follow the latest research progress of climate change impact and the adaption issues existing in the economic and social operation, and try to ensure that the technical standard modification works for addressing climate change will be carried out in a timely, normal and advanced manner. It is required to incorporate the adaption into the environmental impact evaluation policy tool. In the Technical Guidelines for Plan Environmental Impact Assessment (On trial), the climate factors are incorporated into the environmental factors, but the definite evaluation index and evaluation method are not given. It is required to incorporate the climate change factors into the legal evaluation scope in the manner of laws and regulations, technical standards or guidelines, so as to ensure the climate change factors will be fully considered during the decision-making process [7, 8].

9. Conclusion
The global effort on addressing climate change is a mirror, which not only brings the precious enlightenment to think about and explore the global governance model in the future, and promote the building of a community of common destiny for all mankind, but also requires all parties to jointly promote the implementation of Paris Agreement, and promote the 2030 sustainable development agenda in a balanced manner. It is required to actively promote the global measures for addressing climate change, further actively participate in the global climate change negotiation, and promote the establishment of fair and reasonable, and win-win cooperation global climate governance system. It is required to further take actions for addressing climate change, and fully undertake its own obligations. In addition, it is also required to further adhere to the correct viewpoint of justice and benefits, and actively participate in the climate change south-south cooperation and other international cooperation, which is not only China's undertaking of building a community of common destiny for all mankind, but also China's contribution of maintaining human safety.

In the past 10 more years, China's measures for addressing climate change has gradually obtained the wide concern and support at the governmental and social level, established the climate change adaption laws, systems and mechanisms that are suitable for China's economic and social development conditions, and enacted a great number of relevant adaption polices at the central and local governments level, so as to guide China to address the climate change and take the actual actions. From the perspective of continuous improvement of adaption system and policy environment, it is required to further strengthen the force with regard to the adaption policy mainstreaming, the provision of resources support, strengthened regulation, strengthened risk prevention and sharing mechanism and the establishment of adaption technical standard system, and etc. In addition, it is also required to promote China's adaption system and policy on climate change for supporting the adaption action in a much stronger manner, and reducing the climate change risk encountered by China.
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