

Regulations, Agreements and Recommendations for Building a Livable Planet in Countries around the World

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Abstract: *Caring for the earth is the common mission and responsibility of all mankind. Since the industrial revolution, mankind has been over-exploiting natural resources, and since the 1950s, a serious global ecological crisis has developed. International organizations and countries around the world have introduced regulations and agreements to provide institutional safeguards for building a livable planet. This paper adopts a combination of documentary and categorical research methods to collect various regulations and agreements signed by international organizations and countries around the world since the 1950s, and sort them out by categories according to the manifestations of ecological crises, and outline the core contents of regulations and agreements, based on which corresponding countermeasures and suggestions are put forward.*

Keywords: *building a livable planet, regulations and agreements, recommendations*

1. Introduction

The Earth is the common home of all human beings and even all living species on Earth, the only known planet where life exists, and it is the common mission and duty of all human beings to care for the Earth. China, as the second largest economic entity in the whole century, has made its due contribution in building a livable planet. At held recently, General Secretary Xi proposed that Chinese-style modernization is a modernization in which human beings and nature live in harmony, pointing out the direction for China's modern development. As President Wang Yanxin said at the 70th anniversary of the founding of the university, "the community of life in harmony with nature" and "the community of human destiny" are the core missions of China University of Geosciences. The "Beautiful China and Livable Earth" is the intersection of the mission to build the "two communities", and we should profoundly grasp the "community of life in harmony with nature" and the "community of human destiny". We should deeply grasp the scientific connotation, contemporary value and sentiment of "the community of life in harmony with nature" and "the community of human destiny", and strengthen our mission to serve the two "communities"^[1].

It is the responsibility of every inhabitant of the Earth to strive for a livable Earth, and for this reason, countries and international organizations around the world have formulated relevant regulations and agreements. This thesis adopts a combination of literature research and categorical research to organize the collected domestic and international regulations and agreements on building a livable Earth by category, and summarize the core contents of the regulations and agreements, and on this basis, summarize the problems of the current regulations and agreements on building a livable Earth in each country and try to make corresponding suggestions. In the process of literature review, numerous research result, provide the theoretical basis for the writing of this thesis^[2].

2. Background of regulations and agreements for building a livable planet in each country

2.1. Global ecological crisis comes to the fore

The ecological crisis is fundamentally a crisis caused by the tension between human beings and nature. Since the beginning of mankind, we have experienced gathering and hunting, agriculture, industry and the current information technology society. Before the industrial society, human activities caused disturbance to nature, but within the capacity of the ecosystem to repair itself, so there was no

serious ecological crisis. After human beings entered industrial society, with the continuous improvement of science and technology^[3], the ability of human beings to deal with nature has been strengthened, and the conflict between human beings and nature has not been eliminated, but intensified, resulting in a global ecological crisis. The so-called ecological crisis refers to the situation in which human unreasonable activities have caused harm to the ecosystem beyond its ability to repair itself, bringing it to the brink of collapse or disintegration^[4], and thus threatening human survival and development. 6 Ecological crises contain many elements, which can be summarized into the following categories from a global perspective.

2.1.1. Greenhouse effect

Increase in atmospheric concentrations of greenhouse gases such as carbon dioxide, nitrous oxide, Freon and water vapor. This is the so-called "greenhouse effect", which leads to global warming. With the rapid increase in population and industrial development, more and more greenhouse gases, mainly carbon dioxide, are being emitted into the atmosphere, thus making the greenhouse effect stronger and stronger^[5].

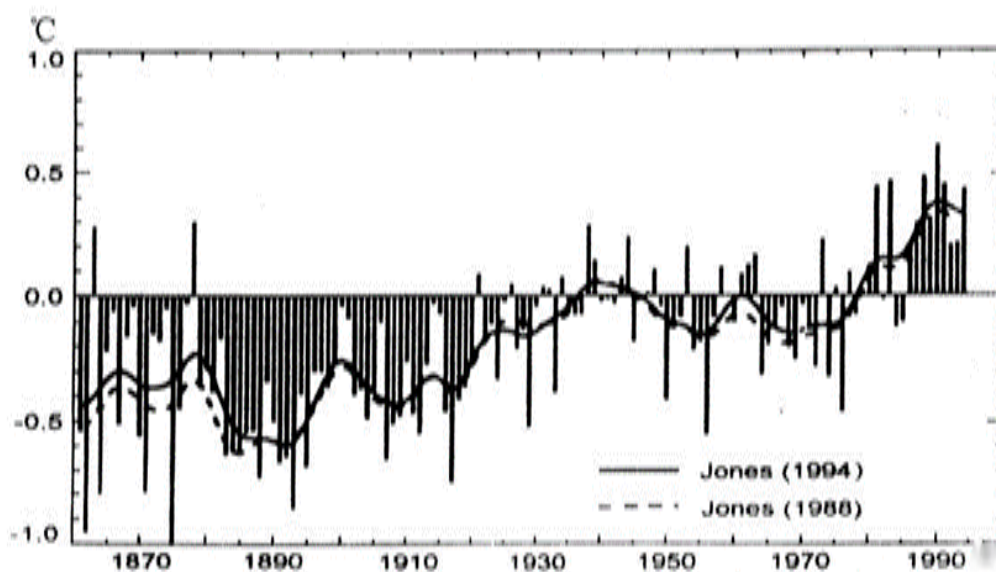


Figure 1: Year-by-year change in global land surface temperature and synthetic average of ocean surface temperature from 1861 to 1993.

The histogram in Figure 1 shows the year-by-year global average temperature, and the curve is the result after fluctuating averaging. The solid and dashed lines are taken from Jones' statistics in 1994 and 1988, respectively, and their trends show that the temperature is gradually increasing during the fluctuation. Statistics show that the temperature has only increased by 10°C in the past 10,000 years, equivalent to an increase of 0.1°C per century; while the average temperature of the entire Northern Hemisphere has increased by $0.3\text{--}0.6^{\circ}\text{C}$ per century since 1880.7 Scientists expect that the global average temperature will increase by $1.5^{\circ}\text{C}\text{--}4.5^{\circ}\text{C}$ by the middle of this century. The consequences will lead to a massive melting of glaciers at the poles, a 30-50 cm rise in sea level as a result^[6], and a serious threat to coastal and estuarine areas. At the same time, as the Earth's temperature continues to rise, it will also lead to the destruction of ecosystems and the frequent appearance of anomalous climate^[7].

2.1.2. The ozone layer is facing destruction. Stinky

The ozone layer exists in the stratosphere, about 22 km above the ground, and its main role is to block 99% of the ultraviolet rays from the sun, and its presence sustains various biological phenomena on Earth. However, there are many chemicals that can react with ozone, thus rendering it useless as other substances, the most threatening to ozone being Freon. When Freon is transported to the stratosphere, it decomposes under the action of ultraviolet light to produce chlorine atoms. Since the chlorine atom can take away an oxygen atom from the ozone, the ozone becomes pure oxygen and its ability to block UV light is lost. Repeated research studies in recent decades have shown that the ozone layer over the Earth as a whole has a tendency to thin, and holes in the ozone layer have appeared over areas such as the Antarctic. (Figure 2, 3)

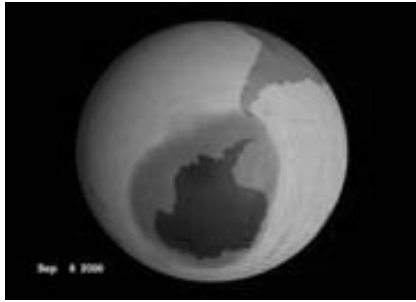


Figure 2: Earth's ozone layer distribution map.

The hole in the ozone layer over Antarctica resembles giant blue droplets in an image provided by NASA. NASA announced on September 8, 2000 that the ozone layer hole over Antarctica on September 3, 2000 reached an area of 28.3 million square kilometers. This is equivalent to

Figure 3: Nasa's coverage of the ozone layer.

2.1.3. Acid rain

When the sulfur oxides and nitrogen oxides produced by the consumption of energy are discharged into the air, and the water vapor in the air is combined to produce rainfall containing excessive acidic substances is acid rain. After the modern industrial revolution, due to the dramatic increase in the amount of coal burning, harmful gases in coal were discharged into the air in large quantities during the combustion process, making low-altitude atmospheric pollution more and more serious^[8]. Once encountered low pressure hazy weather, harmful gases in the low altitude depression does not disperse, people will get a variety of diseases after inhalation. In order to eliminate atmospheric pollution, some countries put up super high chimneys to discharge harmful gases into the high altitude, thus sending a constant stream of acid rain to the neighboring countries.

2.1.4. Desertification and reduction of tropical rainforest

The rate of land desertification is accelerating due to excessive grazing, farming and harvesting of fuel wood, coupled with the frequent occurrence of abnormal weather. As a direct result of land desertification, the ability of soil to grow crops will be reduced, which will eventually expose human beings to a global food crisis. More seriously, it will lead to the reduction of forest cover and the siltation of rivers and lakes, thus causing the deterioration of the global ecological environment. Tropical rainforests play an irreplaceable role in regulating the earth's climate and protecting and improving the ecological environment. However, tropical rainforests are mainly located in relatively poor and backward countries and regions, on the one hand, due to the developed countries' concern for tropical rainforest resources of widespread imports, on the other hand, also due to predatory logging by local people, the area of tropical rainforest is decreasing. The reduction of tropical rainforests, in turn, will lead to the emergence of abnormal climate, the reduction of biological species and the increase of CO₂ concentration.

2.1.5. Decrease in biodiversity

The existence of biodiversity has a very important role in the life support system of the biosphere, and it also has an extremely rich resource value and even aesthetic value for humans. However, along with the continuous growth and development of human beings, biological species on Earth have begun their journey of extinction. In the early stages of human development, the rate of species extinction was slow, but as human activities interfere more and more violently with nature, the rate of species extinction on Earth is becoming faster and faster. Scientists have predicted species extinctions for the 21st century. 9 Biological extinctions in the 21st century are higher than in the 20th century and far exceed the average of the fossil record.

2.1.6. Transboundary movement of hazardous waste

Hazardous waste is an environmental problem common to all countries, and its transboundary movement is mainly caused by the unbalanced economic development of different countries, so the direction of transfer is mostly from developed to developing countries. As the receiving region of hazardous waste will pay a heavy price in terms of economy, ecological environment and health of residents, its transboundary movement often leads to political events in international exchanges.

2.1.7. Marine pollution

In recent decades, major incidents of marine pollution have often appeared in the press. Common marine pollution mainly includes crude oil pollution, floating matter pollution and organic compound pollution, etc. They can cause red tide and black tide under the repeated action of marine factors, which is a fatal threat to marine fishery resources, as illustrated by the drastic reduction of marine life in offshore waters due to overfishing, and also affect the ecological environment of coastal areas.

2.2. The rise of the green movement

In the 1960s and 1970s, the major capitalist countries in the West entered a high speed time of economic development, but at the same time, due to the high degree of industrial development, excessive exploitation and use of resources, resulting in serious environmental pollution, ecological balance was seriously damaged, a series of negative problems also arose, such as population explosion, resource depletion, environmental pollution and energy crisis, etc.. Some scientists and environmentalists began to be able to carry out research on the crisis, and a series of reports were shown to the public, such as "Silent Spring" by American female biologist Rachel Carson, "Limits to Growth" by the Club of Rome, "Our Common Future" by the United Nations Commission on World and Development, etc. The popularity of these scientific achievements awakened the public's ecological consciousness, and coupled with the fact that environmental issues are closely related to everyone's life. After the 1970s, new social movements emerged in Western societies, among which the Green Movement captured the focus of public attention in Western societies, making ecological issues the most politically significant social movement and directly related to the fate of mankind. People took to the streets and demanded the government to take strong measures to control and manage environmental pollution; scholars published articles condemning the acts of plundering nature and destroying the ecological environment; scientists kept exposing the public hazards of polluting the environment, etc. The above "green movement", which emerged in the West in the 1970s, directly contributed to the enactment of regulations and agreements by various countries to protect the ecological environment of the earth.

3. Global regulations and agreements for building a livable planet

Faced with the increasingly serious environmental pollution problem, international organizations and countries around the world have introduced regulations and agreements to protect the only home where human beings live.

3.1. Regulations and agreements addressing the greenhouse effect

The first agreement to address the greenhouse effect was the World Meteorological Organization (WMO) Convention, which was promulgated by the WMO on March 23, 1950. In 1992, the United Nations established the Framework Convention on Climate Change, a legally binding convention consisting of a preamble and 26 articles, with the ultimate goal of maintaining atmospheric greenhouse gas concentrations at a stable level at which dangerous anthropogenic interference with the climate system will not occur. The ultimate goal is to maintain atmospheric greenhouse gas concentrations at a stable level where dangerous interference with the climate system from human activities does not occur. The Kyoto Protocol, signed on December 10, 1997, is a supplement to the Framework Convention on Climate Change. In December 2009, in order to discuss the follow-up plan after the expiration of the first phase of the Kyoto Protocol commitments, countries signed a new agreement on future global actions to combat climate change - the Copenhagen Accord, which focuses on the reduction of carbon dioxide emissions in accordance with the size of each country's GDP, was signed in December 2009.

In order to cope with the greenhouse effect, China has actively fulfilled the conventions and agreements formulated by the international community, and promulgated the Law of the People's Republic of China on Prevention and Control of Air Pollution on September 5, 1987, which has since been amended twice in 1995 and 2018, and revised twice in 2000 and 2015, in addition to issuing the National Carbon Emission Trading Market Construction Plan (Power Generation Industry), the Carbon Trading Management Measures (for Trial Implementation)", as a due contribution to the global carbon reduction cause.

3.2. Regulations and agreements for ozone layer destruction

To protect the ozone layer from destruction, the Parties signed the Vienna Convention for the Protection of the Ozone Layer on March 22, 1985, which aims to protect human health and the environment from the adverse effects caused by changes in the ozone layer and sets out the obligations of the Parties. To implement the Convention, the Montreal Protocol on Substances that Deplete the Ozone Layer was adopted in Montreal, Canada, on September 16, 1987, with the aim of defining long- and short-term strategies for controlling the global production and use of ozone-depleting substances.

On January 23, 1995, the United Nations General Assembly decided to designate September 16 of each year as the International Day for the Preservation of the Ozone Layer. In order to strengthen the management of ozone-depleting substances, China has actively fulfilled the above two obligations and promulgated the Regulations on the Management of Ozone Depleting Substances in 2018.

3.3. Regulations and agreements for acid rain

Since acid rain is formed as a result of excess acid containing substances produced by the combination of sulfur oxides and nitrogen oxides entering the air and water vapor, countries have introduced regulations to govern the use of hazardous chemicals. The Stockholm Convention on Persistent Organic Pollutants, adopted in Stockholm on May 22, 2001, recognizes and regulates the transport of persistent organic pollutants across international boundaries, often through air, water and migratory species. In 1998, the Chinese Environmental Protection Administration, in accordance with the provisions of the Law of the People's Republic of China on the Prevention and Control of Air Pollution, formulated the Acid Rain Control Zone and Sulfur Dioxide Pollution Control Zone Delineation Program.

3.4. Regulations and agreements for desertification, tropical rainforest decline and wetland conservation

On June 7, 1994, the United Nations signed the United Nations Convention to Combat Desertification (UNCCD), affirming that national strategies to combat desertification and mitigate the effects of drought can be most effective only if they are based on sound and reliable systematic observations and rigorous and accurate scientific knowledge and are continuously re-evaluated, and that there is an urgent need for more effective international cooperation and better coordination. The International Tropical Timber Agreement (ITTA) was signed by the United Nations Conference on Environment and Development in Geneva on November 18, 1983. In 1994, the organization renewed the International Tropical Timber Agreement, which recognizes the need for appropriate and effective conservation and development of tropical timber forests in order to ensure their optimum utilization while maintaining the ecological balance of the region and the biosphere. 5 Reiterate the importance of timber to the economies of countries with timber-producing forests, and further recognize the need to promote and apply comparable and appropriate approaches and criteria for the management, conservation and sustainable development of all types of timber-producing forests.

The Convention on Wetlands of International Importance especially as Waterfowl Habitat was signed by representatives from 18 countries in Ramsar, Iran, on February 2, 1971, affirming the fundamental ecological functions of wetlands and their great economic, cultural, scientific and recreational value, hoping that effective measures would be taken to stop the gradual erosion and loss of wetlands; convinced that a combination of far-sighted domestic policies and concerted international action would ensure the conservation of wetlands and their flora and fauna. On November 5, 2022, the 14th Conference of the Parties (COP 14) of the International Convention on Wetlands was held in Wuhan, the first time since China joined the Convention in 1992 that China hosted the COP as its President.

3.5. Regulations and agreements for biodiversity conservation

The International Plant Protection Convention, signed by the International Plant Health Association in 1952, was the first convention on biodiversity conservation, which aimed to protect cultivated and wild plants by preventing the introduction and spread of pests. On March 3, 1973, the World Conservation Union signed the Convention on International Trade in Endangered Species of Wild Fauna and Flora, whose member countries recognized that: from the aesthetic, scientific In April 1983, the organization promulgated the amendment to Article 21 of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. 23 October 1978, the International Union for the Protection of New Varieties of Plants signed the International Convention for the Protection of New Varieties of Plants, which stipulates that On June 5, 1992, the United Nations Environment Programme signed the Convention on Biological Diversity, which recognizes the intrinsic value of biodiversity and the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biodiversity and its components, and also recognizes the importance of biodiversity to the importance of biodiversity for the evolution and conservation of the life support systems of the biosphere, recognizing that the conservation of biodiversity is a common concern of all humankind.

To protect marine fish, the International Convention for the Regulation of Whaling (ICRW) was signed by 88 countries on December 3, 1946, to establish an international whaling control regime to ensure the proper conservation and development of cetacean stocks. On May 14, 1966, in order to maintain the Atlantic tuna population and other tuna-related fish stocks at maximum sustainable levels of fishing, the countries concerned concluded the Conservation of Atlantic On 8 January 1988, eight countries, including China, concluded the Asia-Pacific Network of Aquaculture Centers Agreement, which recognized that the establishment and maintenance of a network of aquaculture centers in the region could make a considerable contribution to the development of aquaculture and that the success of such a network would depend to a large extent on close regional cooperation. On December 8, 1995, China, Japan, Korea, Poland, Russia and the United States signed the Convention on the Conservation and Management of Pollock Resources in the Central Bering Strait, which calls for, among other things, the establishment of an international mechanism for the conservation, management and rational utilization of pollock resources in the Convention area. The general principles for the conservation and management of straddling fish stocks and highly migratory fish stocks, mechanisms for international cooperation, obligations of flag States, compliance and enforcement, the needs of developing States, dispute settlement procedures, etc. were set out.

3.6. Regulations and agreements for the transboundary movement of hazardous waste

The London Guidelines for the Exchange of Information on International Trade in Chemicals were adopted by the Governing Council of the United Nations Environment Programme at its 14th session in London on June 17, 1987, and the rules established in this document have been the internationally accepted guidelines for the exchange of information in international trade in chemicals and have laid the foundation of international practice for subsequent relevant international environmental legislation. On March 22, 1989, the organization signed the Basel Convention on the Control of Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was signed again on September 22, 1995, mainly prohibiting developed countries from exporting hazardous wastes to developing countries for the purpose of final disposal, and requiring developed countries to stop exporting hazardous wastes for recycling to developing countries by the end of 1997. On September 11, 1998, the United Nations Environment Programme and the Food and Agriculture Organization of the United Nations signed the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, which aims to protect human health and the environment, including the health of consumers and workers, from the potentially harmful effects of certain hazardous chemicals and pesticides in international trade.

3.7. Regulations and agreements for marine pollution

The four conventions formulated at the First United Nations Conference on the Law of the Sea held in Geneva from February 24 to April 27, 1958, including the Convention on the Territorial Sea and Contiguous Zone, the Convention on the High Seas, the Convention on Fishing and Conservation of Living Resources on the High Seas, and the Convention on the Continental Shelf, regulated the high seas and the territorial sea and marine resources of each country. On November 29, 1969, the International Maritime Organization signed the International Convention on Civil Liability for Oil Pollution Damage, which mainly regulated the scope of application and liability for dealing with international oil pollution incidents. 1976, the organization met again in London and adopted the Protocol of 1976 to the 1969 International Convention on Civil Liability for Oil Pollution Injuries, which changed the penalty to SDR as the unit of calculation instead of gold francs. 2 November 1973, signed the International Convention for the Prevention of On November 2, 1973, the International Convention for the Prevention of Pollution from Ships and the subsequent Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973, were signed in London, amending again the provisions on marine pollution caused by ships. On November 2, 1973, the International Maritime Organization signed the Protocol for Intervention in Pollution by Non-oil Substances on the High Seas, extending the penalties from marine pollution from oil pollution to non-oil pollutants. On April 1984 On 30 April 1984, the International Conference on Liability and Compensation for Certain Marine Material Injuries was held again, and the 1984 Protocol amending the Convention was adopted, extending the original definition of ships to include empty oil tankers and dual-use ships with oil remaining on board after carrying oil, and further clarifying the definition of oil pollution injuries. On 30 November 1990, the organization again signed the International Convention

on Oil Pollution Preparedness, Response and Cooperation. It aims to promote countries to strengthen oil pollution prevention and control, and cooperate regionally or internationally in case of major oil pollution incidents, and seek rapid and effective action to mitigate the damage caused by oil pollution in order to protect the marine environment convention.

In addition, countries and international organizations have also strengthened the protection of the marine environment. 1972, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, signed by the International Maritime Organization, proposed that marine pollution has many sources, such as dumping and discharge through the atmosphere, rivers, estuaries, outlets and pipelines, and it is necessary for countries to adopt the most practical ways to prevent such pollution. The United Nations Convention on the Law of the Sea was signed in Montego Bay, Jamaica on December 10, 1982, which defines important concepts such as internal waters, territorial sea, adjacent sea, continental shelf, exclusive economic zone, high seas, etc., and has an important role in guiding and ruling on current disputes over sovereignty over territorial sea, management of natural resources at sea, and pollution treatment in various parts of the world. On November 12, 1993, representatives of 37 London member states signed the Resolution on the Phasing Out of the Disposal of Industrial Waste at Sea, which defines and prohibits the dumping of industrial waste. The resolution defines and prohibits the dumping of industrial waste and gives stricter control on the dumping of beryllium, chromium, nickel, vanadium and their compounds. In the same year, the Resolution on Incineration at Sea was signed, which strengthened the control of waste incineration at sea, and on November 12, 1993, the Resolution on the Disposal of Radioactive Waste at Sea was signed, which prohibited the dumping of radioactive waste or other radioactive substances at sea.

China's legislation on marine ecology and environment mainly includes the Marine Environmental Protection Law and the signing of the Joint Declaration of the People's Republic of China and the French Republic on Jointly Safeguarding Multilateralism and Improving Global Governance with France in March 2019, which reached a total of 37 agreements, three of which concern the oceans, specifically including the conservation of marine biodiversity and the prevention and control of marine plastic waste pollution.

4. Recommendations for effective implementation of regulations and agreements for building a livable planet

As we can see above, international organizations and countries around the world have promulgated regulations, conventions, agreements, etc. to build a livable planet, but due to different national conditions, the degree of policy implementation varies, and some countries have achieved unsatisfactory results. Drawing on the practices of various countries around the world, we would like to make the following recommendations in order to make the regulations and agreements come into effect.

4.1. International organizations should increase the strength of international legislation

Building a livable planet is a common task for all mankind, and it cannot be accomplished by the efforts of a certain country or a certain person alone. Therefore, from the legal level, global legislation should be strengthened, and the main body of this responsibility should be assumed by international organizations. On the one hand, international organizations have taken the lead in the development of regulations and agreements related to building a livable planet, and on the other hand, they have mainly signed conventions, agreements and resolutions, and adopted the principle of voluntary accession by the parties. ⁷ Thus, whether in terms of the strength of legislation, or the scope of enforcement, global legislation has not yet been formed, and in the future, this will require international organizations to increase their legislative efforts to form a common global compliance regulations and agreements.

4.2. International organizations should adhere to the principle of "common but differentiated" when formulating legislation

It is the common good wish of all mankind to build a fair and reasonable system of regulations and agreements for a livable planet with win-win cooperation. In the face of the ecological crisis, no country can do it alone, and all countries in the world must work together and establish a fair and reasonable system of win-win cooperation. Based on scientific and historical responsibilities and different development stages, national conditions and capabilities, developed and developing countries

have different responsibilities and obligations in dealing with the global ecological crisis, therefore, the principle of "common but differentiated" should be followed in formulating regulations and agreements. Developed countries should take the main responsibility and obligation to reduce emissions and make contributions, and should not treat them the same as developing countries.

4.3. Countries should be based on international regulations and agreements, the development of regulatory agreements suitable for national conditions

Countries around the world have different cultural traditions and levels of economic development, so when formulating regulations and agreements on building a livable planet, they should not copy the legislation of international organizations, but should take into account their specific national conditions and formulate regulations and agreements that not only protect the global ecosystem, but also promote their economic development and better safeguard their sovereignty, security and development interests.

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