Forum:	The United Nations Development Program
Issue:	Promoting climate resilience in response to adverse climate change
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Overview

According to the latest scientific research report, the global land and ocean surface's average temperature increased by 0.85 °C between 1880 and 2012. Climate change caused frequent extreme weather events, melting of glaciers and snow, and imbalance of water resources. The ecosystem is under threat. Climate change makes sea level rise, natural disasters such as floods and storms. Some islands and coastal low-lying areas are even at risk of being flooded, which will influenced local economic activities including agriculture, forestry, animal husbandry, and fisheries. According to the report of the Government Climate Change Committee, when the temperature rises 2.5 °C above the average, various regions in the world may be adversely affected; when the temperature rises 4 °C above the average, it may cause irreversible damage to the global ecosystem, leading major losses to the global economy. The losses suffered by developing countries will be even more serious. Climate change will have an adverse impact on urban operations, exacerbate the spread of disease and threaten socio-economic development and people's health.

Globally, energy production increased by 50% from 1975 to 1995. Furthermore, emissions of carbon dioxide increased accordingly. To date, developed countries have consumed most of the fossil fuels produced worldwide, and their cumulative carbon dioxide emissions have reached alarming levels. By the early 1990s, the cumulative emissions in the United States reached nearly 170 billion tons, and the EU reached nearly 120 billion tons. Even worse, the former Soviet Union's carbon dioxide emissions reached 110 billion tons. Developed countries are responsible for the major emissions of greenhouse gases; the total emissions of some developing countries, such as China, are also growing rapidly, ranking second in the world.The hottest weather has occurred in various countries; the frequent El Niño phenomenon causes huge economic losses towards countries. Not only developing countries lack strong resilience, but also those developed countries are also greatly affected by climate

change. In 1995, the heat wave in Chicago caused more than 500 deaths. In 1993, a hurricane caused the government a loss of 40 billion US dollars. In the 1980s, the insurance industry's climate-related claims were $14 billion, and between 1990 and 1995 it was almost $50 billion. These conditions show that humans' ability to adapt to climate change is weak. According to this trend, scientists predict that future climate change will bring more impact and harm if the country doesn't build on resilience towards climate change. If climate change is based on current trends, global temperatures are expected to rise by 1.5 degrees Celsius from 2030 to 2052 compared to the Industrial Revolution. In the Paris Agreement signed in December 2015, at the end of the century, the global average temperature should be controlled within 2 degrees Celsius from the pre-industrial level. The committee's new report emphasizes that if the temperature rise can be controlled to within 1.5 degrees Celsius, the rate of sea level rise will slow, the number of people living in the world will be reduced by half, the number of animals and plants that have lost their habitat will be reduced by half, and the incidence of forest fires will be reduced.

Global climate change is a huge challenge facing humanity. To cope with climate change, countries must not only reduce greenhouse gas emissions but also take proactive adaptation actions. Nowadays, an increasing number of nations begin to consider climate resilience as one of the major goals of the development. In order to minimize the vulnerability, the society has to embody efforts from economic, technical and political phases. Countries need to establish a comprehensive climate change monitoring and forecasting system so that countries can guarantee the normal operation of agriculture, water resources, coastal zones, ecosystems, and infrastructure. By strengthening management and using enabling factors, countries can mitigate the adverse effects of climate change on natural and socio-economic systems.

Key Terms

Greenhouse Effect

Since the industrial revolution, the concentration of greenhouse gases in the atmosphere has risen sharply due to the release of large amounts of greenhouse gases by human activities. In the past three decades, the burning of fossil fuels (coal, oil and natural

gas) has released up to 5 billion tons of carbon dioxide each year, resulting in greenhouse effect in the atmosphere. This is a concern for environmental scientists around the world: as the atmospheric greenhouse effect continues to increase, the global average temperature will also rise year by year, eventually leading to global warming and other global climate problems.

The El Niño phenomenon

The El Niño phenomenon is a term used by Peru's fishermen to refer an abnormal climate phenomenon. It mainly refers to the abnormal warming of the sea temperature in the tropical oceans in the central Pacific Ocean. The El Niño phenomenon actually influences the global climate model: it causes drought in some areas and excessive rainfall in other areas instead. Because of this fluctuant precipitation, countries like Indonesia and northeastern South America suffer from aridity. Drought and high temperature caused by the El Niño phenomenon are widespread, further affecting other areas including India, Australia, Southern Africa, and Southeast Asia.

Climate Resilience

Climate resilience refers to the need for countries to enhance their own capabilities to adapt climate change, in order to reduce the loss and impacts on life, property, and health. In 1992, the United Nations Framework for Climate Change decided to introduce two different strategies to address climate change: mitigation and adaptation. Mitigation means slowing and preventing climate change by reducing greenhouse gas emissions from human activities.Climate Resilience is the management of risk. It consists of three phases: the first phase is to reduce vulnerability and exposure to climate change by improving health, living environment, socio-economic welfare and environmental quality. The second phase is to plan and implement the plan. Implementation plans need to consider the interests, environment, and social context of each country. The third stage is to achieve a climate resilience path and transformation, in order to ensure the sustainable development of society.

Extreme Weather

Extreme weather includes drought, floods, heat waves, cold damage and so on. As pollution becomes more serious, global warming has led to frequent weather events. The high-temperature weather in India caused more than 500 deaths. The SST on the east coast of Australia is unusually high, resulting in large-scale catastrophic bleaching of the Great Barrier Reef. The water temperature in the Arctic Alaska coast is also unusually high, with rare red tides.

Important Events/Timelines

Date	Event
2001	In 2001, the United States announced its withdrawal from the Kyoto Protocol, which targets reductions of greenhouse gas emission. Instead, the United States advocated mitigating climate change only if it would not hinder the economic development.
2005	In 2005, the Finnish Ministry of Agriculture and Forestry released the National Strategy for Climate Change Adaptation in Finland, which aims to reduce the adverse effects of climate change and use various conditions to improve the ability of society to adapt to future climate change.
2005	In 2005, France released the French Climate Change Adaptation Strategy, which combines scientific assessments of climate change risks with action plans. The four overall goals of the French Climate Change Adaptation Strategy: prioritize public safety and health, consider all aspects of society, reduce costs and maximize benefits, and protect the natural environment.
2007	On April 13, 2007, the Australian Government Council issued the National Climate Change Adaptation Framework, which clarified Australia's position to adapt to the effects of climate change. In five to seven years, Australia will strengthen its capacity to deal with the effects of climate change and reduce vulnerability.

2008	In July 2008, the British government issued a framework for action to adapt to climate change in the UK. The UK government has combined the work already done with the broader public sector adaptation actions to promote future government adaptation efforts.
2009	On April 1, 2009, the European Commission issued the White Paper on Adaptation to Climate Change: A Framework for Action for Europe to improve the EU's ability to respond to the effects of climate change.

Major Nations/Organizations

Intergovernmental Panel on Climate Change (IPCC)

Intergovernmental Panel on Climate Change is an intergovernmental body which was joined by the World Meteorological Organization and the United Nations Environment Program in 1988. The IPCC examines published papers and publishes assessment reports about climate change every five years. For example, in 1990, 1995, 2001, 2007 and 2013, the IPCC completed five assessment reports, which have become the main scientific basis for the international community to understand and understand climate change issues.The Fifth Assessment Report stated that human impact on the climate system is clear and that this impact is growing. The potential for climate change to have serious, widespread and irreversible effects on humans and ecosystems. To adapt to climate change, countries need to implement rigorous mitigation activities to ensure that the effects of climate change remain manageable.

The World Resources Institute

The World Resources Institute is to work with governments, businesses and civil society on a global scale to protect the planet and improve people's livelihood by providing innovative solutions towards climate change.WRI protects the global climate system and helps people adapt to the inevitable climate change, thereby preventing the global climate system from being further threatened by greenhouse gas emissions.

The Climate Group (GEF)

The climate group is an global non-profit organization that dedicated to promoting adjustment to the climate change.

International Labour Organization(WMO)

The WMO is a specialized agency of the United Nations. It promotes the standardization of meteorological observations and ensures the uniform release of observations and statistics; The WMO mainly conducts meteorological, hydrological and other geophysical observations and establishes various centers for observing meteorology.

Possible Solutions

1. Adjust land use, pest control, and farming methods.
2. Improve animal husbandry and breeding industry.
3. Improve the management and maintenance of the water supply system.
4. Set up climatic warning systems. For areas that are vulnerable to extreme natural disasters, the government should establish related disaster reduction management, contingency planning, and restoration work, especially for floods, hurricanes, storm surges, etc.

Useful Links for further research

1. U.S. Climate Resilience Toolkit, “A Climate for Resilience” 2018 (https://toolkit.climate.gov/case-studies/climate-resilience)
2. Australian Government, “National Climate Resilience and Adaptation Strategy” 2015 (http://www.environment.gov.au/climate-change/adaptation/strategy)
3. GFDRR, “Resilience to climate change” 2017 (https://www.gfdrr.org/en/rcc)
4. European Bank, “Sustainable Energy Initiative (SEI)” 2016 (https://www.ebrd.com/cs/Satellite?c=Content&cid=1395237684422&d=Mobile&pagename=EBRD%2FContent%2FHublet)

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8. Rosenzweig C, Parry M L. Potential impact of climate change on world food supply[J]. Nature, 1994