



CTPECC ISSUE PAPER



The Evolving Sustainable Development and Sustainable Growth

**From "Sustainable Development/Growth" to
"Climate Resilient/Net Zero Resilient Development"**

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Introduction

In 2015, the United Nations published the “2030 Agenda for Sustainable Development”, which includes 17 Sustainable Development Goals (SDGs). Moreover, this year, the Conference of the Parties of the UNFCCC (COP27) has reached a historical agreement to establish liability and compensation, called climate reparations, for the loss and damage, caused by anthropogenic climate change. The harm of climate change could be a sudden-onset event, such as cyclone; or a slow-onset process, like sea level rise.

As we see it, climate change has been global issue and responsibility, which means no country should afford the consequences on its own, and no country could ignore the path to sustainable growth and development. Mr. Lee is going to share his opinion on responses to climate change, greenhouse gas emissions and Carbon Footprint Verification (CFV). In this issue, the author provides his suggestion for the central government to bolster the current policies.



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Foreword

According to the definition of the "Basic Environment Act", "Sustainable Development" means satisfying contemporary needs without sacrificing the ability of future generations to satisfy theirs. This concept originated from the report, "Our Common Future", issued by the United Nations in 1987. Pursuing sustainable development subsequently became an important issue in the discussion aiming at searching for a corresponding development model in the 1990s. The "Millennium Development Goals" proposed by the UN in the late 20th century were replaced by 17 "Sustainable Development Goals" (or SDGs) in 2015. Since the 17 SDGs are highly relevant to the development vision before 2030, it is also referred to as "Agenda 2030". Besides considering the economy, society, and environment-related sustainable development issues, human society is also vigorously searching for ways to cope with climate change due to the worsening of global warming in recent years. Although COVID-19 ravaged the world after 2020, developed countries are actively looking for solutions to climate change in a bid to achieve net zero emissions by 2050, meaning that carbon sinks can offset Greenhouse Gas (GHG) emissions. Consequently, the article focuses on the response to climate change. Utilizing the current state of sustainable development and incorporating climate change mitigation and adaptation, the article will attempt to explore the future development model of our society, as well as discuss the development vision of "Climate Resilient Development" and "Net-Zero Resilient Development" based on the policies and regulations of the Taiwanese public sector.



Climate change mitigation and adaptation

Responses to climate change can be broadly divided into “mitigation” and “adaptation”. According to the definition in our “Climate Change Adaptation Act” (Draft), the adaptation to climate change refers to the adjustment and adaptation process of the human society in response to the impact of actual or expected climate change to reduce climate change-related damages, including the natural system's adjustment and adaptation process in response to the impact of actual climate change. If necessary, adequate human intervention is applied to adjust and adapt to the impact of expected climate change. In addition, climate change mitigation refers to manually lowering GHG emissions from the emission source or increasing GHG capturing and storage.

The "Climate Change Adaptation Act" (Draft) is an amendment to the existing "Greenhouse Gas Reduction and Management Act". The Environmental Protection Administration of the Executive Yuan, Taiwan, pointed out: "The current provisions focus on GHG reduction management to meet international standards and accommodate the needs of sustainable development, as well as adapt to the impact of global climate change and create a resilient system. Taiwan should bolster its measures adopted, minimize the impact of climate change, introduce international carbon pricing, and levy carbon fees. We should also develop low-carbon technologies, industries, and economic incentives in a bid to facilitate the achievement of the country's net-zero transition." In other words, future responses to climate change rely on "proactive efforts in mitigation, adaptation, technology, capital, capacity building, transparency, etc., and the proposition to achieve net-zero emissions by 2050."

The idea of future climate change mitigation has evolved from setting targets for relative reduction of GHG emissions in the past to an aggressive absolute zero emissions goal. Decreasing GHG emissions from emission sources and increasing GHG capturing and storage are concrete mitigation measures designed to offset carbon emissions with carbon sequestration to achieve net zero emissions.



The efforts of climate change adaptation must be based on "capacity building". Relevant measures include: first, Scientifically evaluate climate change risks to reinforce risk management and climate change adaptation capabilities; second, fortify the life support systems and infrastructure; third introduce economic incentives, create a green financial mechanism, encourage the R&D of climate change adaptation technologies, promote climate change adaptation derivatives and business opportunities, etc. The aim of these measures is to enhance the ability of various groups (especially vulnerable groups) to respond to the impact of climate change.

"Climate Resilient Development" and "Net Zero Resilient Development"

The Sixth Assessment Report (AR6 WGII), launched by the Working Group II of the UN Intergovernmental Panel on Climate Change (IPCC), was released on February 28, 2022. The report focuses on "Impacts, Adaptation, and Vulnerability" and highlights the importance of "climate-resilient development". According to the definition of the report, "climate resilient development (CRD) is a process of implementing greenhouse gas mitigation and adaptation options to support sustainable development for all." The Five pillars (5Ps: People, Planet, Prosperity, Peace, and Partnership) of SDGs were also considered to develop a climate-resilient development approach.

Climate resilient development is based on the conceptions of "system transition" and "system transformation". A transition is a change from a specific state or condition to another over time, while a transformation is a fundamental change that may involve changes in goals and values. The climate change-related systems, which were defined in the AR6 WGII report, include energy systems, urban and infrastructure systems, marine and terrestrial ecosystems, agricultural systems, and social systems. System transformation involves strategies or measures implemented to facilitate mitigation, adaptation, and sustainable development. Taking the energy system as an example, fuel switching is a form of system switching that considers mitigation.



If the action or strategy of a system transition involves changes in management goals or values, it can be defined as a system transformation. For instance, Taiwan's energy transformation involves building a nuclear-free homeland, adjusting the power structure to emphasize on renewable energy, and the complete electrification of transportation. Hence, it is regarded as a system transformation.

To promote system transition or system transformation, the AR6 WGII report further explores the "Shared Socioeconomic Pathway (SSP)" that can support climate-resilient development. Under the assumptions of various social, technological, and economic dimensions, "SSP1" should be able to support the realization of SDG02 (agriculture, food and forestry), SDG06 (clean water and sanitation), and SDG10 (reducing inequality). If future global temperature rise is taken into consideration, AR6 combines the "Representative Concentration Pathway (RCP)" from the previous version to propose 5 scenarios of "SSPx-y". Then, according to the simulation results of scientific models, only the "SSP1-1.9" path can prevent a global temperature rise of over 1.5 °C by late 21st century. If consolidated with the hypothetical scenario simulations of other agencies (for example, the International Energy Agency), it appears that the target of keeping global temperature rise under 1.5 °C can only be attained through the goal of net zero GHG emissions by 2050. In other words, the paper calls for equal emphasis on "climate-resilient development" and "net zero resilient development".

Existing climate change mitigation and adaptation policies of our central and local governments

As mentioned earlier, the current provisions of Taiwan's Greenhouse Gas Reduction and Management Act concentrate on the management of GHG reduction, while the enforcement of climate change mitigation strategies is relatively limited. The current mitigation policies and regulations of central government include the Management Measures for GHG Offset Projects and the Principles for Offsetting Incremental GHG emissions in the Review of Development Activities by the Environmental Protection Administration of the Executive Yuan.



According to the Greenhouse Gas Reduction and Management Act, the GHG emissions quota exchange project (exchange project) refers as "to obtain emissions quota for exchange purposes, a project proposal must be submitted in accordance with the reduction method approved by the central competent authority, and the plan must be approved by the central competent authority and confirmed by the inspection agency. Furthermore, all equipment, materials, items, and measures must be directly linked to emissions reduction or carbon sink increase-related projects." Those who implement the exchange projects may apply to the central competent authority to obtain emission credits after their achievements of GHG reduction (including carbon sinks) are verified by the inspection agency. In other words, existing sources of GHG emissions can be used to voluntarily implement offset projects to obtain GHG reduction "emission credits" for subsequent use. For future developments (projects under planning) that may elevate GHG emissions, the central government has stipulated the environmental impact assessment and review principle for offsetting the incremental GHG emissions generated by development efforts. For projects of industrial park development or , the construction of factories and non-gas-fired thermal power plants which are larger than 50 hectares in size, it is mandatory to submit an offset plan to address the increase of GHG emissions during the environmental impact assessment process. The intention is to "mitigate" a large amount of GHG emissions that will be emitted in the future by development projects under planning.

Local governments can be more active in responding to climate change. Some municipalities have progressed to a state where they can legislate local self-governing ordinances on net zero emissions and adaptation. According to the Article 1 of the "Taipei City Self-Governing Ordinance on Net Zero Emissions Management", "in response to climate change, mitigation of the greenhouse effect, fulfillment of carbon reduction obligations of the international community, establishment of urban climate adaptation capabilities and resilience, promotion of urban livability transformation, and materialization of net-zero emission targets, Taipei City has formulated the self-governing ordinance."



The "Self-Governing Ordinance on Net Zero City Management of Kaohsiung City" (Draft) also states: "This self-governing ordinance is stipulated to foster net zero emissions in the city and establish Kaohsiung as a sustainable and livable city." The provisions of the self-governing ordinance regulate the climate change mitigation and adaptation actions of local governments. In addition to stipulating the 2050 net zero emissions target, making Kaohsiung a sustainable and livable city is also part of its transformation vision. In terms of the design of economic incentives, Taipei City regulates that "to facilitate the city's climate transition, the city government should establish the Taipei City Climate Transition Fund to reduce costs and create employment opportunities for citizens, businesses, and workers impacted by the transition process, to ensure the implementation of a just transition." The purposes of the Climate Transition Fund include: first, counseling, subsidies, and rewards for engaging in GHG reduction and climate change adaptation; second, assist industries, workers, and underprivileged groups in green transformation, just transition work, and rewards; third, carbon sinks research, investigation, protection, rehabilitation, and offset measures. As far as Kaohsiung City is concerned, the draft states that "to promote the city's net-zero transformation and improve climate change adaptation and resilience, the government should form a Kaohsiung City Net-Zero Emissions Management Fund"; it should also authorize the Environmental Protection Bureau to devise the income and expenditure management and application regulations for the fund.

Conclusion

Climate change is a pressing issue that our society needs to embrace and respond to proactively. The focus of response measures has shifted from mitigation and adjustment to integration with the UNSDGs, striving towards net-zero GHG emissions in the long run. This article attempts to organize the evolution of the sustainable development concepts, as well as discuss the content of "climate-resilient development" and "net zero resilient development", and ultimately summarize the current climate change mitigation and adaptation policies of our central and local governments. The author hopes to provide information on "sustainable development/sustainable growth" and "climate resilient development/net zero resilient development", thereby facilitating the transition from exploring the causes of climate risks to fostering proposals for climate-resilient development.



Conclusion

This article discusses the issue of climate resilient development and net zero resilient development in a view of legislation and carbon reduction target setting. To begin with, the author defines the content of climate mitigation and adaptation, and the discrepancy of climate resilient development and net zero resilient development; then he compares the different regulations and plans of sustainable growth and development in local governments with those in central government. It shows the fact that the progress of sustainable growth is behind the goal to achieve net-zero emissions by 2050.

Based on the author's opinion, there is still a room for the government to improve the relevant plans and enhance the publicity. Thailand, the host of this year's APEC meetings, promoted the Bio-Circular-Green (BCG) Economy Model, a framework for business and commerce which aims to ensure sustainability in the future. It is foreseeable that the relevant issues will be discussed in next year's APEC meetings. Hence, CTPECC is looking forward to build a platform for those who concern our environments, and to introduce the issue from a different aspect.