Systematic Approach to Frame Climate Change Policy in Taiwan

Chien Te Fan
Professor and Director of Institute of Law for Science & Technology, National Tsing-Hua University, Taiwan

OUTLINE

- Introduction
  - Potential Climate Impacts in the Taiwan
- Theoretical Review:
  - Systematic Approach to Frame Climate Change Policy
- The Development of Mitigation Laws and Policies in Taiwan
  - Development of Relevant Laws
  - Legal Framework of Mitigation
  - GHG Reduction and Management Act 2015
  - Government Commitments and Policies toward Mitigation
- The Development of Adaptation Policies in Taiwan
  - Taiwan's Climate Adaptation Initiatives
  - Principles of the Legal Framework for Adaptation
  - Incorporating "Principled Flexibility" into Laws
- The Case of Adaptation: Extreme Climate Events and Disasters

Introduction

Introduction

- Observed Changes and theirs Causes (IPCC, 2015: 2-8)
  - Human influence on the climate system is clear, and recent anthropogenic emissions are the highest in history.
  - Climate changes have had widespread impacts on human and natural systems.

- Future Climate Changes, Risks mad Impacts (IPCC, 2015: 8-16)
  - Continued emission will cause further warming, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems.
  - Limiting climate change would require substantial and sustained emissions reductions which, together with adaptation, can limit climate change risks.

Introduction: Potential Climate Impacts in Taiwan Ⅰ

Type	Potential Impacts
Disasters	(1) The increased intensity of rainfall will cause higher risk of flood and tremendous compound soil and water disasters. (2) Increasing extreme climate events, such as typhoon, will impact the capacities of disaster prevention system.
Infrastructure	Due to the influence of torrential rain and rising water level, critical infrastructure will suffer from various level of damage based on their position.
Water Resources	(1) Changes in rainfall patterns and hydrological systems will expand the discharge gap among different seasons, and increase compound disasters. (2) Changes in rainfall will affect irrigational, municipal, and industrial water demands, creating extra difficulties for water resources management. (3) Increasing extremes of river flow will decrease the quality of rivers.
Land Use	Climate change will increase the sensitivity and vulnerability of the environment, showing the importance of land resource use safety

Data Source: CEPD (2012: 19)

Introduction: Potential Climate Impacts in Taiwan Ⅱ

Type	Potential Impacts
Coastal Zones	Sea level rising will harm the coastal protection systems and relative natural resources. Otherwise, the erosion of coastal areas may also cause loss of national territory.
Energy Supply and Industry	(1) When energy demand increases, current production may not be able to meet the future peak demand. (2) The supply and industries' energy cost may be impacted. (3) Business enterprises may be harmed by the damage of infrastructure resulting from climate change, and suffer from investment loss and increasing equipment cost.
Agric. Production & Biodiversity	(1) Extreme climate events will interrupt the growing cycle of crops, causing uncertainty in agricultural production and quality, and endangering food safety. (2) Changes in the environment will affect the original habitats in ecosystem and lead to a drastic loss in biodiversity.
Health	Warming will threaten the risk for infectious diseases to spread out and will raise the mortality caused by respiratory and cardiovascular diseases, thus increasing the burden of maintaining public health and the health care system.

Data Source: CEPD (2012: 19)

Theoretical Review
Systematic Approach to Climate Change Policy

Theoretical Review: Systematic Approach to Climate Change Policy I

- Systematic Approach to Frame Effective Climate Change Policy (IPCC, 2015: 76)
  - Although a board rang of adaptation and mitigation options can help address climate change, no single option is sufficient by itself.
  - Adaptation and mitigation are complementary approaches for reducing climate risks. They interact with one another and reduce risks over different timescales

- Common Enabling Factors of Mitigation and Adaption (IPCC, 2015: 94)
  - Improving institutional capacity: effective adaptation and mitigation options necessitate adequate institutional arrangements to enhance climate governance.
  - Other factors: innovation and investments in climate-related infrastructure and technologies, sustainable livelihoods and behavioral and lifestyle choices.

Theoretical Review: Systematic Approach to Climate Change Policy Ⅱ

- Policy Options for Mitigation (IPCC, 2015: 95-98)
  - Many sectoral mitigation options is available.
  - Well-designed systematic and cross-sectoral mitigation policies are more effective in reducing emissions, e.g. combing measures to reduce energy use and carbon intensity of end-use sectors, decarbonize energy supply, and so on.

- Policy Options for Adaptation (IPCC, 2015: 95-102)
  - Adaptation can take a variety of approaches depending on its context, such as vulnerability reduction, disaster risk management, and proactive adaptation planning.

※ Adaptation approaches: (1) institutional change- law and regulations; (2) social, ecological asset and infrastructure; (3) integrated natural resources management; (4) tech. process optimization; (5) financial services; (6) information systems

  - Co-benefits and synergies exist between adaptation and mitigation and among different adaptation responses.

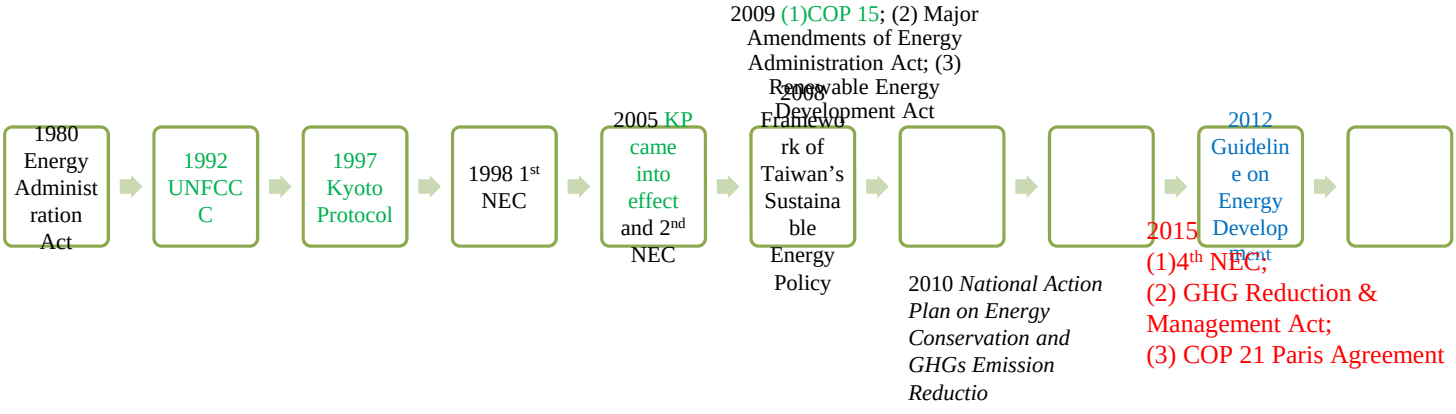
Theoretical Review: Systematic Approach to Climate Change Policy Ⅲ

- Effective policies will depend on integration across multiple scales
  - Multiple scales: international, regional, national and local.
  - Policies across all scales supporting tech. transfer and financial support for responses, which can complement and enhance the effectiveness of climate change policies.

- Integration on mitigation, adaptation and other societal objectives
  - Effective climate change policies will link mitigation, adaptation and the pursuit of other societal objectives, such as sustainable development and equity.

The Development of Mitigation Laws and Policies in Taiwan

Timeline of Climate Laws and Policies (Mitigation) in Taiwan



The Development of Relevant Laws Ⅰ

- 1980 Energy Administration Act (能源管理法)
- 1992 UN Framework Convention on Climate Change
- 1997 Kyoto Protocol endorsed at COP3
- 1998 The 1st National Energy Conference (hereafter NEC)
  - Promoting the formulation of the *Oil Management Act* (石油管理法) and revisions made to the *Electricity Industry Law* (電業法)
  - Accelerating the privatization of the petroleum & power industry
  - Making energy saving measures in the sectors of electricity, industry, transportation and housing (energy savings of 16% by 2010)
  - Setting energy efficiency targets (1997- 2010 annually improve by 1.2%)
  - Re-planning industrial structure
  - Stipulating carbon reduction targets (Liou, 2010)

The Development of Relevant Laws Ⅱ

- 2002 *Basic Environmental Act* (環境基本法)
  - Article 23. Nuclear-free Country (非核家園)
- 2005 Kyoto Protocol come into effect
- 2005 The 2nd National Energy Conference
  - Improving energy efficiency (annual increase of 2%)
  - Revising the *Energy Administration Act* planned norms
  - Emphasizing renewable energy should account for 4%- 6% of all energy by 2020, and 5% - 7% by 2025
  - Advancing the legislative process for the *Renewable Energy Development Act*
  - Planning the National Energy Sci. and Tech. Program, increasing R&D financing and integrating energy technological R&D (Liou, 2010)

The Development of Relevant Laws Ⅲ

- 2008 Framework of Taiwan's Sustainable Energy Policy (台灣永續能源政策綱領, hereafter FTSEP)
  - Goal: Reducing nationwide carbon emissions:
  - ※ Returning to 2008 level between 2016- 2020
  - ※ Returning to 2000 level in 2025
  - Goal: Improving energy efficiency by more than 2% per annum
  - Goal: Decreasing energy intensity 20% by 2015, 30% by 2025 (compared with the level 2005) (Liou, 2010)

The Development of Relevant Laws Ⅳ

- 2009 COP15 Copenhagen
- 2009 The 3rd National Energy Conference
  - Acknowledging emission reduction targets set in 2008 FTSEP
  - Discussing the legal structure of the energy laws, *Greenhouse Gas Reduction Act* (Predecessor of *GHG Reduction and Management Act*) and *Sustainable Energy Basic Law*
  - Improving national energy intensity
  - ※Target: decrease by more than 50% in 2025 compared with 2005
  - Improving energy efficiency (annual increase of 2%).
- 2009 Major Amendments of *Energy Administration Act*
- 2009 Renewable Energy Development Act (再生能源發展條例)

The Development of Relevant Laws V

- 2010 *National Action Plan on Energy Conservation and GHGs Emission Reduction* (國家節能減碳總計畫) was implemented by Executive Yuan
  - Goal: reducing GHGs emission to the 2000 level in 2025
  - Goal: improving energy efficiency by more than 2% per annum
- 2012 *Guideline on Energy Development* was implemented (能源發展綱領)
- [Adaptation] 2012 *Adaptation Strategy to Climate Change in Taiwan* (氣候變遷調適政策綱領)
- [Adaptation] 2014 *National Climate Change Adaptation Action Plan* (氣候變遷調適行動計畫)

The Development of Relevant Laws VI

- 2015 The 4th National Energy Conference
  - Urge Legislative Yuan to pass *GHG Reduction and Management Act*
  - Set renewable energy development goal as at least 6,500-10,000 kW.
  - Formulate voluntary submission of Intended Nationally Determined Contribution (INDC)
- 2015 *GHG Reduction and Management Act* (溫室氣體減量與管理法)
- 2015 COP 21, Paris Agreement within the framework of UNFCCC
  - Holding the increase in the global temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels,
  - Increasing the ability to adaptation and foster climate resilience and low GHG emissions development
  - Making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development.

The Framework of Mitigation Law in Taiwan

Energy Administration Act
(1) Efficiency standards
(2) Consumption management
(3) Subsidize on technological innovation and R&D

GHG Reduction and Management Act
(1) Integrating mitigation & adaption
(2) National reduction action plan and reduction target
(3) Emissions management
(4) Cap and trade
(5) Green procurement and education

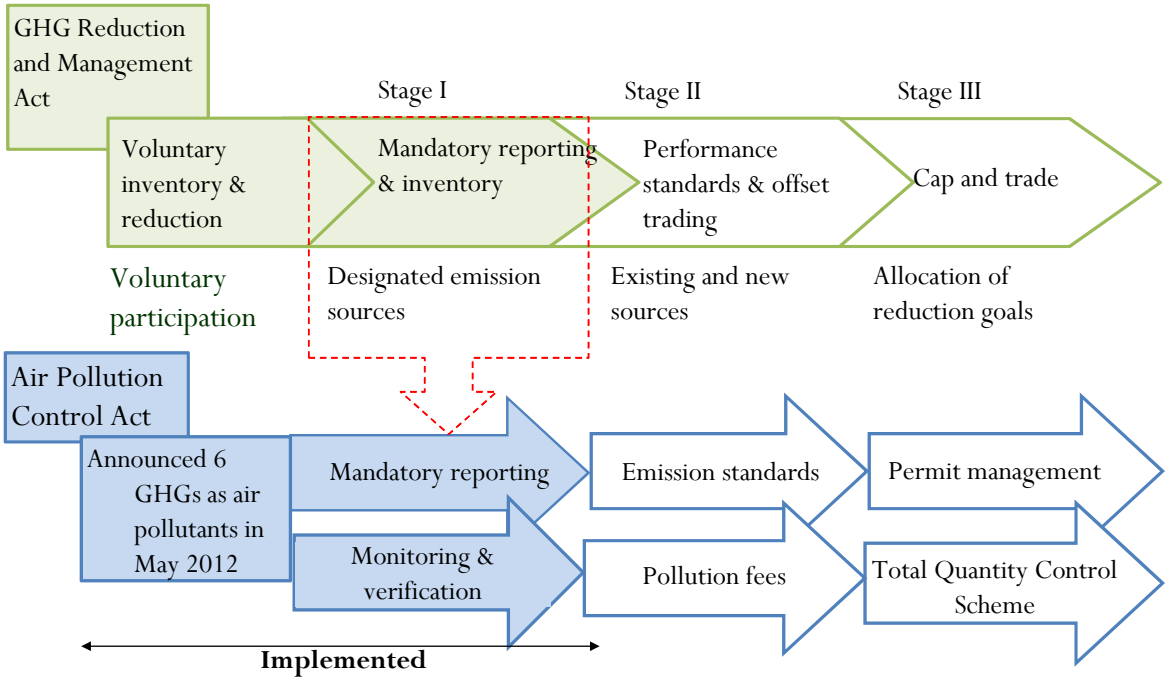
Climate Change

Renewable Energy Development Act
(1) Subsidize renewable energy
(2) Promoting a low-carbon energy consumption system

Energy Tax Bill (in drafting)
(1) Tax on suppliers
(2) Behavioral change

Air Pollution Control Act
(1) Announced 6 GHGs as air pollutants
(2) Mandatory reporting

Early Steps-Preparation of ETS via Air Pollution Control Act



Reference: Taiwan Environmental Protection Administration _ GHG Reduction Management Office，Taiwan Initiates Nationally Appropriate Mitigation Actions _20140606 rev2

GHG Reduction and Management Act Ⅰ

- Content
  - Ch. 1 General Principles;
  - Ch. 2 Authority and Responsibility of Government Agencies;
  - Ch. 3 Emission Reduction Measures;
  - Ch. 4 Education and Grants;
  - Ch. 5 Penalty Provisions;
  - Ch. 6 Supplementary Provisions
- Integrating mitigation and adaptation (Article 1 & Article 5)
  - Article 5: The government shall ensure the sustainable utilization of the nation's resources, maintain balanced energy supply and demand, seek to mitigate and respond to the impacts of climate change, and place balanced emphasis on environmental protection, economic development, and social justice in accordance with the principles of mutual emphasis on mitigation and adaptation

GHG Reduction and Management Act Ⅱ

General Principles 1-7

- Objectives(1)
- Authorities(2)
- Glossary(3)
- Mitigation Goals(4)
- The basic principles of climate policy(5)
- The basic principle of GHG management-related programs(6)
- Power of attorney regarding training and certification (7)

Authority and Responsibility of Government Agencies 8-14

- Responsibilities for relevant central authorities(8)
- National reduction program(9)
- Sectoral action plans (10)
- "5-year phase control" objectives(11)
- Annual report(12-13)
- Incentives for registry and abroad/domestic reduction (14)
- County implementation plan(15)

Emission Reduction Measures 16-23

- Permits/ Reporting for designated sources(16)
- Qualification of verifier(16)
- GHG performance standards(17)
- Cap and trade scheme(18)
- GHG Management Fund(19)
- Allocation(20)
- Allowance tracking , Registry, trading(21)
- Offset and early action project(22)
- On-site checking (23)

Education and Grants 24-27

- Education and public participation (24)
- Green procurement(25)
- Energy supplier responsibility(26)
- Awards and grants(27)

Penalty Provisions 28-34

- Penalties for emissions over account credits(28)
- Penalties for illegal inventory or registration(29)
- Evasion, obstruction, or refusal(30)
- Verification body illegal management(31)
- Non-compliance for ETS(32)
- Implementation (33,34)

GHG Reduction and Management Act II

- Building control targets and regular review mechanism (Article 4)
  - Article 4: The long-term national GHGs emission reduction goal shall be to reduce emissions to no more than 50% of the 2005 emission by 2050.
- Implementing emission reduction measures (Article 16-23)
  - Mandatory reporting & inventory (Article 16)
  - Performance standards (Article 17)
  - Cap-and Trade (Article 18)
  - Greenhouse Gas Administration Fund (Article 19)
- Promoting education and grants (Article 24-27)
  - Article 24-27 can be implemented by *Environmental Education Act*

Government Commitments and Mitigation Policy

Top Down

Short-term：CO_2 emissions return to 2005 level in 2020.
Mid-term： CO_2 emissions return to 2000 level in 2025.
Long-term：CO_2 emissions return to 50% of 2000 level in 2050.

Golden Decade: Low-carbon, Green-energy Island 2012-2020

Green Energy Carbon Reduction | Eco Homeland | Disaster Prevention and Rescue

2015 4th National Energy Conference's Decisions

Building Climate Legal Framework | Proposing Taiwan's INDCs | Regular examination of Precautions against Climate Risk

Bottom Up

Energy Policy Framework

- 2012 *Guideline on Energy Development*,
  - *Energy Administration Act* § 1-2 "In order to ensure the stable and safe supply of energy, as well as taking into consideration environmental impact and economic development, the central Competent authority shall draft the Energy Development Guidelines…"
- Principles: Safety, Efficiency, Cleanness
- Aspects and Policy Guidelines
  - Demand Side: (1) Total quality management; (2) Energy efficiency improvement
  - Supply side: (1) Energy supply diversification; (2) Energy supply structure improvement
  - System Side: (1) Balanced Supply and Demand Planning; (2) System Efficiency Improvement
- Supporting Measures
  - Emergency Response and Risk Management
  - Low Carbon Governance and Supporting Measures

The Development of Adaptation Policies in Taiwan

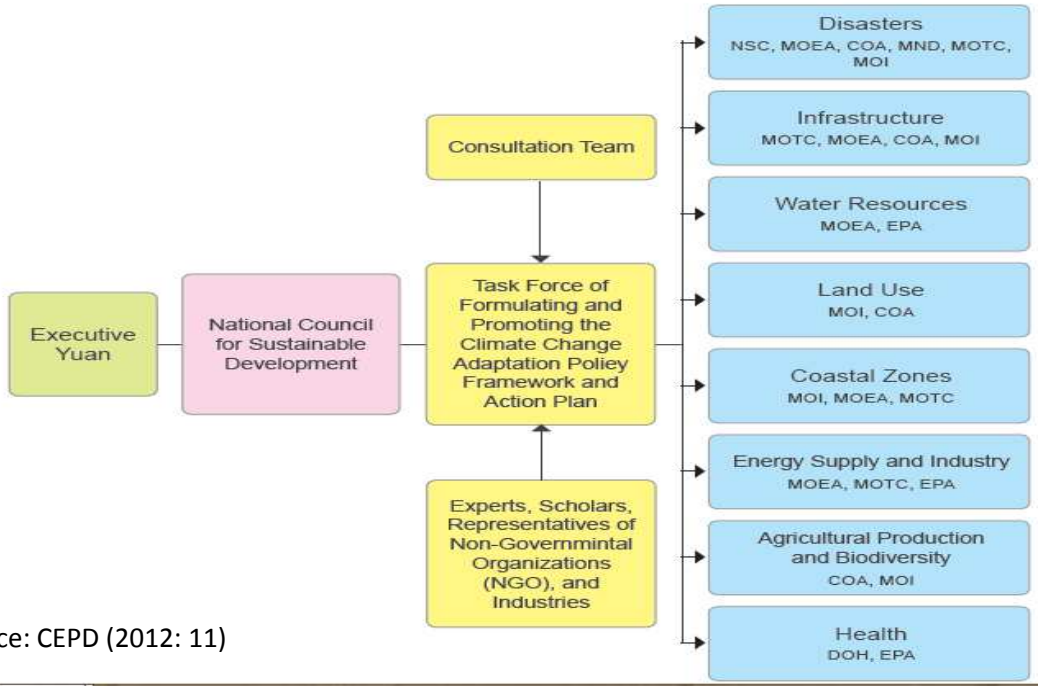
Climate Adaptation Initiatives in Taiwan Ⅰ

- 1997 National Council for Sustainable Development (NCSD)
- 2009 The Energy Conservation, Carbon Reduction and Climate Change Working Group, NCSD, the Executive Yuan was created as a platform for promoting policies
  - Jointly led by the Environmental Protection Agency (EPA) and former Council for Economic Planning and Development(CEPD)
- 2010 The Adaptation Task Force, CEPD
  - CEPD established a Task Force for promoting adaptation policy framework and action plan, and this Task Force is composed of high-level officials of related agencies, experts, scholars, representatives of NGOs and industries
  - CEPD has defined 8 sectors under the Task Force, including: Disasters, Infrastructure, Water Resources, Land Use, Coastal Zones, Energy Supply and Industry, Agricultural Production and Biodiversity, Health

Climate Adaptation Initiatives in Taiwan Ⅱ

- 2012 *Adaptation Strategy to Climate Change in Taiwan, CEPD*
- 2014 *National Climate Change Adaptation Action Plan 2013-2017, NDC*
- 2015 *Coastal Zone Management Act* (海岸管理法)
- *2015 Wetland Conservation Act* (濕地保育法)
- 2015 *GHG Gas Reduction and Management Act*
  - Article 5: “The government shall ensure the sustainable utilization of the nation's resources, maintain balanced energy supply and demand, seek to mitigate and respond to the impacts of climate change, and place balanced emphasis on environmental protection, economic development, and social justice *in accordance with the principles of mutual emphasis on mitigation and adaptation*.”

The Organization of Adaptation Policy Framework



Data Source: CEPD (2012: 11)

The Challenge of Adaptation

- Scientific Uncertainty
  - From a scientific perspective, existing models are difficult in predicting the precise extent of impacts that are indispensable for adaptation
  - Climate change will undermine the reliability of historical data in predicting future trend.
- Institutional Fragmentation
  - The fragmentation of government will be lack of a holistic approach to formulate comprehensive adaptation policie
- Political Will and Public Support
  - Successful adaptation needs strong advocacy efforts by civil society, which should occur simultaneously with the increased use of legal tools

Principles of the Legal Framework for Adaptation Ⅰ

- Acknowledge Uncertainty (Glicksman, et al. 2011: 16, Farber, 2009)
  - Acknowledging uncertainty is to collect data and information proactively and to assess vulnerability.
  - Uncertainty should not be an excuse for inaction.

- Adopt Proactive and Precautious Strategies
  - Despite of information-limited, decision-makers can assess baseline capacities, fill gaps, and plan for major impacts before they occur.

- Consider longer-term temporal scales for adaptation planning (Farber, 2009)
  - The climate impacts are likely to occur at least several decades, so adaptation strategies should extend over a longer timeframe.

Principles of the Legal Framework for Adaptation Ⅱ

- Strengthen Resilience of Natural and Human Systems.
  - Natural Systems: removing the possible stressors and pollutions.
  - Human Society: improving socio-economic conditions prior to impacts of climate change

- Ensure fairness to response vulnerabilities (Glicksman, et al. 2011: 17)
  - Adaptation strategies should protect public health, safety, and environment in ways that ensure fairness and equality among people.

- Select adaptation strategies that provide multiple benefits for other sectors and for mitigation (Glicksman, et al. 2011: 18)
  - Adaptation approaches should be expected to reduce impacts and to provide additional ecological, social, or economic benefits.

Principles of the Legal Framework for Adaptation Ⅲ

- Maximize the use of existing legislation and legal tools(Glicksman, et al. 2011: 17-18)
  - The current political and economic situation may not be amenable to passing new legislation or financing new programs easily,
  - The use of existing legislation and legal tools to achieve adaptation goals where possible.

Building Considerations for the Legal Framework

- Uncertainty and Flexibility (Glicksman, et al. 2011: 21)
  - In the face of climate change, many existing laws premised on a stable environment will crumble and will need to become more adaptive.
- Principled Flexibility (Glicksman, et al. 2011: 21)
  - flexibility should not equal to open-ended discretion to do nothing or to deviate from the overarching regulatory and management goals.
  - *flexibility needs to be accompanied by measures to hold policymakers accountable for acting*.

Incorporating "Principled Flexibility" into Laws Ⅰ

- Planning for Available Options (Glicksman, et al. 2011: 21-22)
  - Planning before a disaster or emergency situation occurs will reduce the chaos of recovery, when the rush to provide assistance may ignore crucial needs or prevent public participation.
- Scenario Planning: Scientific Considerations + Policy-making Process
  - Adopting quantitative and qualitative methods, scenario planning will provide decision-makers visualized outcomes based on different decisions, policies and laws.
- Triggering Mechanisms to Promote Accountability
  - Establishing benchmarks that trigger a certain course of action. Triggers promote accountability by forcing agency action at specific times or occurrences. These benchmarks could also trigger a different decision-making process detailed in advance.

Incorporating "Principled Flexibility" into Laws Ⅱ

- **Periodic Review and Revision of strategies**
  - Flexibility in the adaptation context must require the ability to review and adjust strategies as climate impacts occur. Requiring periodic review and revision of decisions to incorporate new information or data will unshackle environmental laws from this front-loaded process, allowing management adjustments to tailor decision-making to changing conditions.
- **Redundancy**
  - Climate strategies should include some redundancy or back-up options in case primary strategies are ultimately ineffective or overwhelmed by the scope of the impact

The Case of Adaptation in Taiwan
Extreme Climate Events and Disasters

Extreme Climate Events and Disasters in Taiwan

- **Increased extreme climate events is one of the most disruptive climate impacts in Taiwan**
- **Primary Impacts –Floods (CEPD, 2012: 20-22)**
  - (1) Higher extreme rainfall intensity will increase the risk of flooding and impact disaster emergency response and the capacity of the systems to recover;
  - (2) Rising sea levels will cause draining difficulties in low-lying regions;
  - (3) Increasing occurrence of storm surge will increase possibility and duration of inundation, and aggravate coastal erosion.

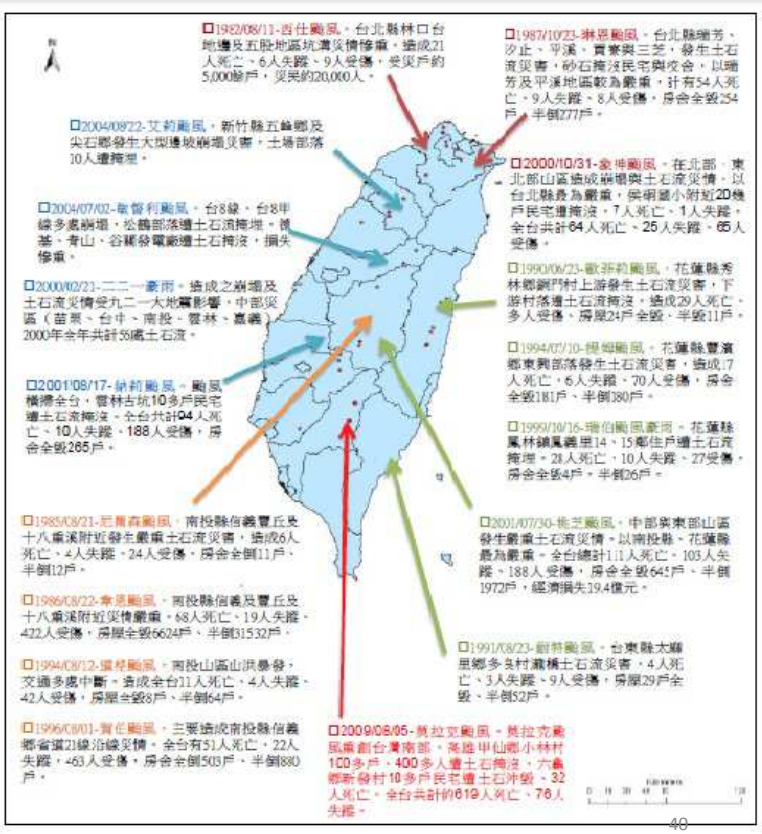
Extreme Climate Events and Disasters in Taiwan

- Primary Impacts –Slope Land Disasters
  - Increasing rainfall intensity will lead to serious compound disasters;
  - The rising frequency of typhoons will increase the risk of cascading disasters and the difficulties of recovery;
  - Large-scale landslides will be the focus of slope land disaster prevention
- Primary Impacts –Drought
  - The changing precipitation pattern in dry and wet periods has increased the difficulties for water resource allocation and management;
  - Siltation affects the operation of reservoirs;
  - Industrial and agricultural sectors lead to rapid growth in water demand, increasing the risk of drought

Some of Extreme Climate Events in Taiwan

Example: Typhoon Soudelor in 2015

During the Typhoon Soudelor, Nanshi River (南勢溪) suffered a extreme overflow and its turbidity reached historical record in several hours, catching Taipei's Water Dept. off-guard. The excess water overwhelmed Taipei's purification system. As a result, the water supply to about 5 million households was seriously polluted for the next several days.



Example: Typhoon Soudelor and the Hsiaolin accident in 2009

- In 2009, Typhoon Morakot hit the village of Hsiaolin (小林村) in Kaohsiung, causing a catastrophic landslide that has never been seen before. The village was overwhelmed in a 250-hectare-wide collapse, and the deepest end of the debris pile measured 84 meters. The cause of the calamity stemmed from the large quantities of rain that Typhoon Morakot dispersed; landslide damage across the island was estimated to amount up to 20 million cubic meters. The Hsiaolin accident can be regarded as a large-scale slope land disasters triggered by climate change.

Data Source: CEPD(2012: 21)

Extreme Climate Events and Disasters in Taiwan

- Who and/ or What are the primary sectors affected
  - Human health and life, particular vulnerable populations
  - low-lying areas, coastal areas, slope land, water reservoir
  - Industrial and agricultural sectors
- Who are the Primary Actors?
  - Public Sectors: Ministry of Science and Technology (MOST), Ministry of Economic Affairs(MoEA), Council of Agriculture(COA), Ministry of National Defense(MND), Ministry of Transportation and Communications(MOTC), Ministry of the Interior(MOI)
  - Private Sectors: NGOs

Disasters and Adaptation Strategies in Taiwan Ⅰ

- Acknowledge Uncertainty and Evaluate climate-related disasters and risks
  - Estimating the vulnerability and scales of extreme disasters
  - Identifying potential high-risk or vulnerable areas due to climate impacts

- Building the integration between environmental monitoring and disaster warning systems (CEPD, 2012: 39-40)
  - Promoting the integration of disaster warning technology and early warning systems as tools for precaution, warning, and land management strategies.

Disasters and Adaptation Strategies in Taiwan Ⅱ

- Reinforcing disaster prevention and protection plans through evaluating prevention capacities of public construction facilities
  - Evaluating the vulnerability and prevention capacities of public constructions and infrastructure.
  - Reinforcing monitoring and disaster prevention and protection plans for public construction with high disaster vulnerabilities.

- Major construction and development plans should pay more attention to the impact of climate change. (CEPD, 2012: 39-40)
  - Major construction and development plans should be carried out with vulnerability assessment and disaster prevention
  - Major construction and development plans should adhere to National Land Planning requirements

Disasters and Adaptation Strategies in Taiwan Ⅲ

- Implementing comprehensive river basin management (CEPD, 2012: 39-40)
  - Using evaluation methods and processes of river basin management to ensure the capacity of river basin protection, the standards of evaluation, the area designated as having high potential risk, and the adaptive capacity of the area.
  - Integrating the conservation and recovery of each river basin's water, land, forests and other natural resources
  - Accruing data on mountain collapses, sediment, mudslides and coastal erosion and promoting sedimentary management and recycling

Disasters and Adaptation Strategies in Taiwan Ⅳ

- Other legal tools and considerations
  - Establishing adaptation strategies and risk diversification, organizing a disaster prevention and protection system
  - Strengthening climate change and disaster-prevention education, keeping a high accessibility for disaster-related information, and encouraging public participation and communication.
  - Developing research about how the insurance system can be helpful for disaster prevention and rescue.
  - Upgrading the disaster-preventing resources, building the professional capacity of the emergency operating centers of different levels, standardizing evacuation procedures.

References

CEPD. 2012. *Adaptation Strategy to Climate Change in Taiwan*. Taiwan: Council for Economic Planning and Development.

IPCC. 2015. *Climate Change 2014: Synthesis Report*. Cambridge: Cambridge Univ. Press.

Liou, Hwa Meei. 2010. “Policies and Legislation Driving Taiwan's Development of Renewable Energy.” *Renewable and Sustainable Energy Reviews, 14*(1): 1763-1781.

Farber, Daniel A. (2009). *A Legal Framework for Climate Adaptation Assessment*. Washington D.C.: Resources for The Future.

Glicksman, Robert L., and O'Neill, Catherine. (2011). *Climate Change and the Puget Sound Building the Legal Framework for Adaptation*. Washington D.C: Center for Progressive Reform.