

Review and Prospects of Taiwan's Response to Climate Change and Post-Disaster Recovery

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Strategy adjustment of Taiwan's response
to the conclusions of IPCC 2007



Different scientific hypotheses
affect our view of the
environmental damage caused
by climate change.

Two different views on climate change:



- (1) Greenhouse gases constitute a variety of gases, not all of which are environmental pollutants.
- (2) The global climate change being discussed at present is simply a small fluctuation in the long-term evolution of Earth, and there is nothing surprising about it.



Taiwan is at a relative disadvantage in facing global warming.

Therefore, we need to deal with the issues caused by sea-level rises and relevant land-use problems as a priority.

IPCC 2007 made two major predictions:



- (1) In the 20th century, the average temperature increase was 0.6°C, but the potential average temperature increase by the end of the 21st century is 2-4.5°C, the best estimate being 3°C, but not less than 1.5°C.



(2) The mean rise in sea level was 17 cm (1.7 mm/year) in the 20th century, but increased to 3.4 mm/year during 1993-2003; therefore, the estimated sea-level rise is 18-59 cm by the end of the 21st century.



Most EU countries consider that a temperature increase of 2°C over that of the pre-industrial revolution period is the tolerable limit.

However, based on business-as-usual scenarios, the global temperature increase will easily reach this limit by 2100.



More aggressive international action will need to be taken.

These actions will directly affect the cost of electricity and the amount of power generated in Taiwan.



- The 1997 Kyoto Protocol

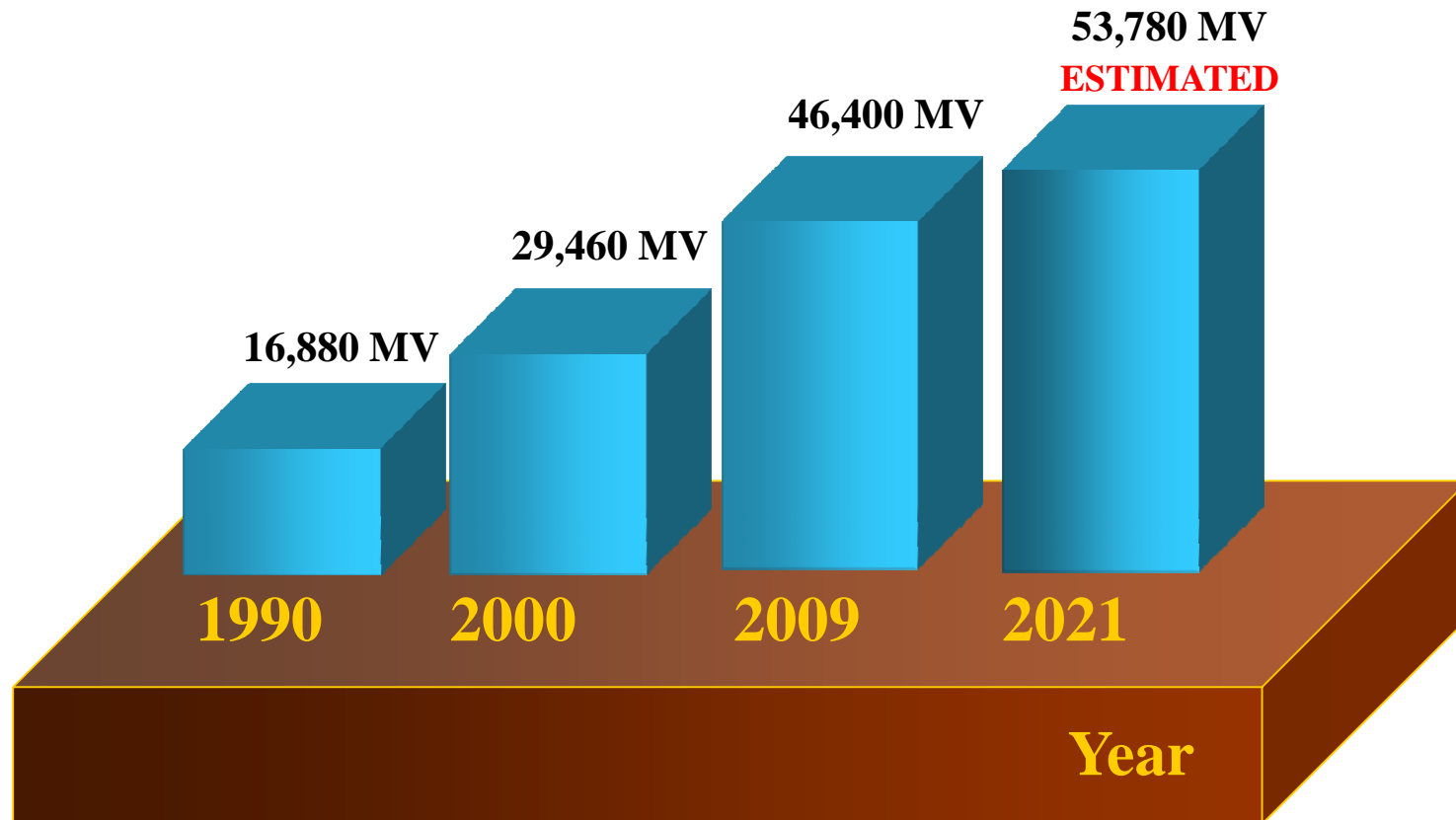
By 2012, industrialized nations will have cut their greenhouse-gas emissions by 5% initially on average to below the level of 1990.

- Taiwan aims to reduce its CO₂ emission level to the level of 2000 by 2025, although this goal is an almost impossible one as the demand for electricity is still rapidly increasing.

The Power Installation Capacity of Taiwan



Source: Taiwan Power Company





- As Taiwan cannot currently reduce the power supply, it will not be possible to reach the goal set for CO₂ reduction, and a forced reduction would have a direct impact upon industry. Therefore, a completely different approach to making the adjustments needed to the economic and industrial structure should be taken, although no effective adjustments are being made at present.



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- The example of the Netherlands
 - A one-meter increase was anticipated in the 21st century as a precautionary measure and practical preventive measures have been employed to combat this rise.



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- However, the issue involves environmental control, disaster prevention, responsibility transfer, and the division and integration of the responsibilities of different government authorities.

Disaster management of the issues of global climate change in Taiwan



- ❑ Taiwan is a hazard-prone island country, and often needs to mobilize all the available manpower and resources in response to natural disasters.
- ❑ However, land-use planning and land development have been proven ineffective. Therefore, in response to a short-term bursting regional natural disaster, Taiwan implements a comprehensive mechanism to cope with the disaster successfully.



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- In response to the "slow" formation of a large-scale regional disaster, such as global climate change, Taiwan lacks a national mechanism by which to provide disaster relief. This is especially true in dealing with the issue of sea-level rise.

Q 1:



- ❑ The land subsidence in Yun-lin County, which threatens the safety of the high-speed rail network. This problem will be highlighted when the sea level rises by 50-100 cm, which will have a great impact on the western coast of Taiwan.
- ❑ Taiwanese government must therefore invest a large amount of funding for coastal management and must implement a long-term strategy and yearly operational plans.
- ❑ The Dutch experience may be a good model to use as a reference, but Taiwan still needs its own practical and financial plans in order to complete the complex tasks required.

Q2:



- ❑ In the past, Taiwan has not been particularly successful in the construction of microzones to combat flooding and debris flows, and thus has faced many difficulties in this regard. However, using the experience accumulated over the past few decades, this situation has increasingly been improved.



The problem at present is not that of being unaware of the range and intensity of the impact, but rather how to manage it.



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- In addition to a strategy of effective coastal management, the relocation of people is another option. However, it has never been possible to relocate people successfully post-disaster in Taiwan in the past.
 - Q1: the 921 Chi-Chi Earthquake in 1999
 - Q2: Typhoon Morakot in 2009

Conclusions:



- ❑ Evacuation and relocation involve issues of land transfer and property ownership, as well as employment problems. Resistance to relocation may arise due to people having developed strong feelings towards the land or to other issues of socio-cultural barriers. A national mechanism therefore needs to be formulated and a common understanding of the population reached; otherwise, the results of the simulation will only lead to anxiety, with no concrete prevention strategies.
- ❑ With regards to the relocation of factories and industry, the important issues are associated with national economic and industrial policy, and the impact is no less than that of residential relocation.



- The global climate change really is a threat to Taiwan. Structural issues such as power supply, coastal management, and relocation and resettlement post-disaster are complex, and long-term, comprehensive and practical planning is required.



- Although there are still a few decades before the worst of the problems arise, if we do not formulate and implement an effective response now, it may be too late.