



Feature Column

Greenhouse Gas Reduction Management

Preface

One of the most pressing issues facing the international community presently is global warming and climate change. This problem is the responsibility of every nation. As an island nation, Taiwan is directly threatened by climate change. In order to help reduce the effects of greenhouse gases, there needs to be more of an overall public awareness of the problem that coordinates with the efforts of the industry, business, transport and environmental protection sectors. There needs to be more concerted effort to go from material lifestyles that exhaust our resources to simpler lifestyles that take the environment into concern. With this end in view, starting from 2008, Taiwan's Environmental Protection Administration implemented the policy of "Energy Conservation and Carbon Reduction to Cool the Earth" and aims to speed Taiwan's inclusion into the "Carbon community."

Latest International Tendencies

In consideration of the threat global warming places on the survival of mankind, the United Nations Intergovernmental Panel on Climate Change is urging efforts to help keep global temperatures from rising beyond 2°C and carbon dioxide emission densities below 450ppm before the end of the century. Additionally, the G8 Summit in 2008 issued a joint declaration expressing the hope that global greenhouse gas emissions be reduced by 50% from today's levels by the year 2050.

At the end of 2007, the United Nations Framework Convention on Climate Change held the COP 13 in Bali, Indonesia. Although the conference did not produce any post Kyoto Protocol standards, views exchanged through the adoption of the Bali Roadmap helped to outline responsibility guidelines for developed countries greenhouse gas emissions in the

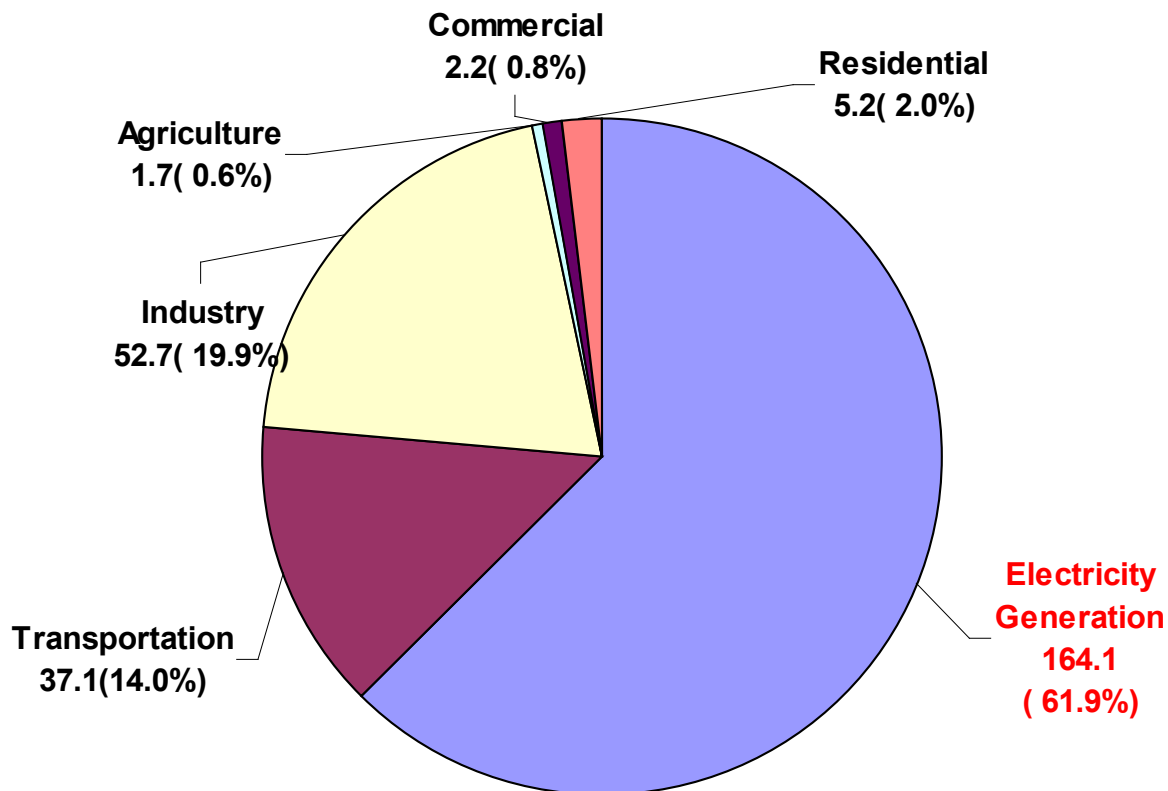
post Kyoto Protocol era. It also requested that developing nations proceed with verifiable, voluntary emission reductions.

In December, 2008, UNFCCC COP 14 and Kyoto Protocol CMP4 were held in Poznan, Poland. The convention secretary general and nation representatives agreed that the global financial crisis should not be used as a pretext to stop the decrease of carbon emission efforts, but rather should be seen as an opportunity to slow climate change. Additionally, the European Union announced the passing of a mid-range 20-20-20 reduction plan. This plan would implement a 20% reduction of 1990 greenhouse gas emission levels, a 20%

increase in energy efficiency and a 20% increase in renewable energy ratios (10% for biofuels) by the year 2020. This plan is in line with concrete efforts of developed countries to keep post Kyoto Protocol pledges.

Taiwan's Carbon Dioxide Emissions

A nation's energy resource supply structure and energy resource demand capacity largely make up its overall carbon dioxide emission totals. Taiwan is a nation that lacks its own energy sources and must rely on imports for 98.24% of our energy needs. The largest import, crude



▶ Figure 1: Various Sectors' Contributions of CO₂ Emission

oil, accounts for an annual 6.2% growth in overall energy resource imports and is the main reason for the continued growth of greenhouse gas emissions here.

Due to continued measures though, these growth figures have decreased from 8.8% in 1991 to 6.9% in 1998 to 3.1% as of 2006. According to International Energy Agency statistics issued in 2008, however, Taiwan's 2006 CO₂ emissions from energy resource use totaled 2.733 million tons, one percent of the global total for a ranking of 22nd in the world. The average per person CO₂ emission was 11.87 tons, ranking Taiwan 16th in the world in this category.

Looking at the contributions of CO₂ emissions in Taiwan (see figure 1), in 2006, numbers without electricity consumption taken into account, energy/energy conversion industry stood at 61.9%, heavy industry stood at 19.9%, the transportation sector at 14%, commercial sector at 0.8% and private residences at 2%. The amount of CO₂ emissions in 2006 when electric consumption was taken account were 61.9% for energy plant, 52.5% for heavy industry, 14.3% for transportation sector, 6.3% for commercial businesses, and 12.1% for residences. From 1990 to 2006, the commercial sector and residences saw the highest growth in CO₂ emissions, followed by heavy industry, energy industry and the transportation sector.

EPA Greenhouse Gas Management Policy

In an effort to lower greenhouse gas emissions and help slow global climate change, Taiwan has promoted policies, laws, systems and implementation measures toward these ends.

I. Policies:

Announcing Taiwan Carbon Dioxide Reduction Objectives

While international discussions continue over the responsibility of reducing post-Kyoto-era carbon dioxide emissions, the situation has yet to improve. Taiwan's presidential office and cabinet worked together to pass the Sustainable Energy Resource Policy Guidelines initiative on June 5, 2008 that made public our national greenhouse gas emission reduction targets and timetable. These include bringing emission levels back to 2008 levels in the years 2016 to 2020 and bringing emission levels to the 2000 level by 2025. The long term goal is to bring emission levels to half of what they were in 2000 by the year 2050.

The above targets and timetable were set after deliberations on Taiwan's capability to lower and adjust emission levels in the

face of common yet divergent national responsibilities. These guidelines not only adhere to the basic principles of international conventions and clearly outline Taiwan's efforts to reduce carbon emissions, but they are also unprecedented in developing and burgeoning-industrial nations, showing Taiwan's resolve and commitment in reducing greenhouse gases.

II. Legal Framework: Establishing a Pertinent Greenhouse Gas Reduction Legal Framework

The EPA has promoted the Greenhouse Gas Reduction Act to help slow climate change, lower greenhouse gas emissions, protect the environment and ensure sustainable national development. The Act is in accordance with international conventions and has set precedents for developing countries. The points of the legislation include setting up carbon reduction mechanisms, working with industry to remain competitive while using less energy resources and working on public energy conservation. These initiatives tie in with the legislation of both Energy Tax Bill and Renewable Energy Development Bill as well as the revision of Energy Management

Law that aim to use economic incentives to promote greenhouse gas emission reduction.

The Legislative Yuan Health and Labor Committee reviewed all thirty clauses of the Greenhouse Gas Reduction Act on December 31, 2008, passing fifteen clauses and leaving fifteen for further evaluation. Legislation points include:

1. Combining the latest international greenhouse gas reduction policies with Taiwan's unique demands and abilities, a four-stage reduction strategy has been planned. These stages include "voluntary emission registration," "mandatory emission registration and voluntary reductions," "efficiency standards and carbon trading" and "total emission control and carbon trading," as well as pertinent complementary measures.
2. In coordination with the Executive Yuan's promotion of labor division for all levels of government, the Central Competent Authorities have drawn up the National Greenhouse Gas Reduction Impetus Program, and the Central Authorities in Charge of the Relevant Industries set up the Departmental Greenhouse Gas Emission Control Action Plan.

3. Strengthening total emission control as well as emission trading mechanism design: In an effort to get Taiwan on track with international trends, we have referenced the European Union Emission Trading Scheme and the Regional Greenhouse Gas Initiative, implemented in the northeastern states in the US, that will help in replacing fixed ratio emission rights with an auction or placement system, which is a fairer system than total gratis allotment. This will allow newly established factories easily obtain emission rights.
4. Affirming early efforts by industry to reduce emissions: Allowing industries that implemented emission reduction measures before total emission control are carried out to use efforts from previous programs in emission trading.
5. Establishing a greenhouse gas reduction fund in coordination with new measures such as total emission control and emission trading, auctioning or placement for greenhouse gas reduction programs and climate change initiatives. This fund would be used similar to the special funds of Kyoto Protocol that comply with the “polluters pay” principle that in turn lower the need for government funding.
6. Authorizing the Central Authorities in Charge of the Relevant Industries to implement reward or subsidy measures for industries adopting voluntary reduction measures, while also encouraging industries to take part in domestic or international cooperative implementation offsetting cases. Domestic offsetting cases take precedent to help achieve national needs for emission reduction. Offsetting or emission trade cases from overseas should not exceed 35%.
7. Strengthening compliance management system: Implementing an unequivocal fine system for noncompliance with pollution control laws and pacts; help industry owners comply with pertinent laws and regulations as well as estimate implementation costs.

III. Systems:

Implementing a sound greenhouse gas

emission reduction management system and strategy measures

1. Establishing A Specialized Greenhouse

Gas Management Unit: On January 10, 2008, the EPA established the Greenhouse Gas Reduction Management Office, Taiwan's first specialized department handling the management of greenhouse gas reduction efforts.

In an attempt to further strengthen the office's organizational capabilities, further adjustments were made to its organizational structure and delegation of duties on August 8, 2008. Aside from expanding personnel, the business of the office was divided into the "Reduction Planning Division," "Trade Examination Division," and the "Adaption Advocacy Division." A "Greenhouse Gas Reduction Guidance Commission" was also established that appointed 23 commission members that were non-paying positions. Commission members will offer advice and assistance in greenhouse gas reduction management.

2. Implementing Sustainable Energy

Resource Policy Guidelines: On June 5th, 2008, the cabinet passed the "Sustainable Energy Resource Policy Guidelines," outlining three main measures for raising energy efficiency, developing clean energy resources and ensuring the stable supply of energy resources. The focus of these guidelines is to promote an energy resource consumption state and energy resource supply system of "two highs and two lows," namely high efficiency, high value, low emissions and low reliance. Initiatives emanating from the guidelines will vie for clean sources on the energy resource supply front and expenditure reduction on the energy resource demand front. It is hoped they will help Taiwan's manufacturing industry go the way of high value and low carbon emission production development.

3. Establishing Greenhouse Gas Registry

Platform and Archive: From 2004 to 2006, the EPA concluded comprehensive examination checks on six types of greenhouse gases in thirty demonstrating factories in different industries, including electricity, petrochemical, steel, paper, cement and photonic semiconductor factories and plants. Additionally, in July of

- 2007 a National Greenhouse Gas Registry Platform was initiated providing industries a medium to upload data. As of the end of December 2008, 136 factories or plants voluntarily provided inspection data. A total of 140 million metric tons of carbon dioxide emissions was reported, making it 67.6% of the total amount of industry and energy department greenhouse gases emitted.
4. Planning and implementation the Greenhouse Gas Early Stage Reduction Promotion Framework (Draft): In order to win public confidence for greenhouse gas reduction management measures and procedural validation mechanisms, the EPA encouraged industries to implement greenhouse gas reduction initiatives before the Greenhouse Gas Reduction Act and total emission control took effect. In order to ensure the results of industry efforts to reduce these gases was recognized before control measures went into effect, the EPA completed the Greenhouse Gas Early Stage Reduction Promotion Framework (Draft). For EPA's publicly announced emission sources, industries with greenhouse gas reduction results better than the mandatory intensity levels (benchmark emission amount) will be eligible to apply for validity of early-stage reduction project results after being verified by evaluating authorities. Amount resulted from early-stage reduction projects would also have priority in domestic offsetting purposes.
5. Establishing a Verification and Inspection Mechanism Management System in Taiwan: In coordination with the Greenhouse Gas Reduction Act (Draft), the EPA is striving toward establishing pertinent measures to help get on track with international efforts by drawing up verification and inspection mechanism management systems and other pertinent measures like greenhouse gas inspection guidelines for industries.
6. Planning for Future Total Emission Control and Emission Trading Mechanisms: The EPA has collected materials from international programs already in place (EU-Emission Trade Scheme) and in the planning stages (US Regional Greenhouse Gas Initiative, Western Climate Initiative, and New Zealand, Australia and Japan) on the experiences and design of emission trade mechanisms. Discussions and systematic analysis within Taiwan's legal,

financial, economic and environmental protection governmental departments as well as with academic experts and important industry representatives have been undertaken to come up with a suitable Emissions Trading System Design Draft for Taiwan. It is hoped this system can effectively link with global carbon trading markets in an open and fluid manner so as to offer Taiwan and fair and aboveboard emission trading system for the future.

all aspects from food, clothing, dwelling, transport, education and entertainment. Leading simpler lifestyles could help promote the objectives of energy conservation and carbon reduction. There are ten points to the program that offer concrete suggestions for the public to save energy and reduce carbon emission levels. President Ma Ying-jeou and other government leaders signed a Carbon Reduction Manifesto pledging a 1% annual reduction in energy use by government offices is meant to serve as an example for the public.

IV. Implementation: Enhancing Cooperation between the Public, Industry and Local Governments to Implement Energy Conservation and Carbon Reduction Initiatives

A. Promoting Energy Conservation and Carbon Reduction Movement:

(1) On June 5, 2008, Energy Conservation and Carbon Reduction No Regrets Measures for the Citizenry was drawn up that advocates simpler lifestyles in

(2) Set up the Clean Neighborhoods Website of Energy Conservation and Carbon Reduction that allows the public a place to get online and sign the Carbon Reduction Manifesto as well as register their efforts toward the end. There is also a blog where contributors can share their energy-saving experiences. As of January 2009, over 370,000 people had signed the manifesto.

(3) An “Energy Conservation and Carbon Reduction Smart Memo” has been developed to help members of the public with efforts to reduce their carbon footprints as well as save energy. “Simple Carbon Dioxide Reducing Steps as well as Energy Conservation” and “Carbon

Reduction Promotion Teacher's Guide" are also drawn up to assist educators with teaching materials for students and help engage more public participation into carbon reduction and energy conservation program.

B. Implementing Sustainable Energy Resource Policy Guidelines—Energy Conservation and Carbon Reduction Action Plan

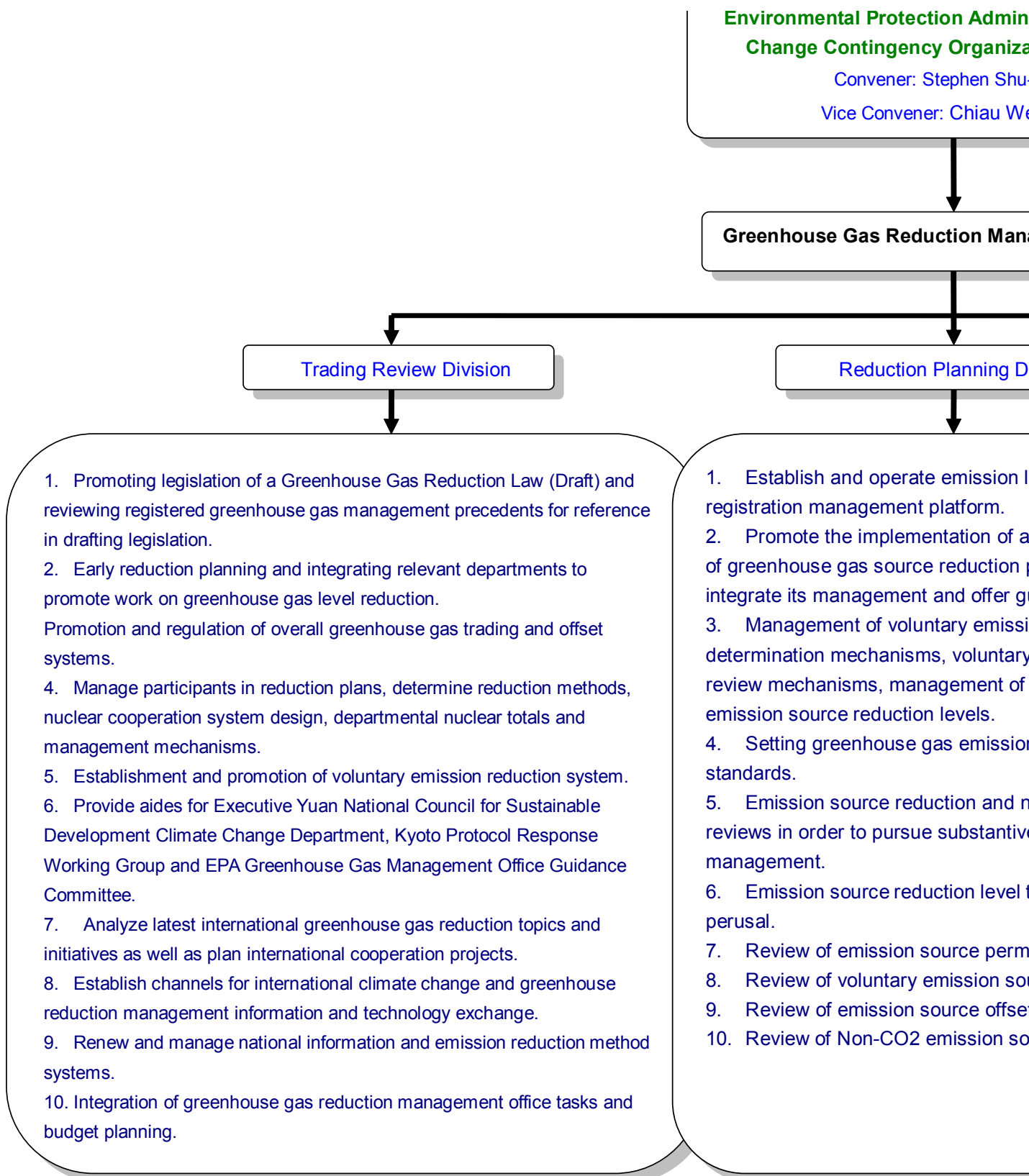
(1) In order to implement the Sustainable Energy Resource Policy Guidelines, the Council for Economic Planning and Affairs is joining efforts with the Ministry of Economic Affairs, the EPA, the Ministry of the Interior, the Ministry of Transportation and Communications and 15 other ministries and departments in designing clean energy sources and expenditure reduction initiatives as well as establishing a comprehensive legal basis and pertinent mechanisms toward these ends. The cooperative project has already yielded a mid-term 2009-2012 Energy Conservation and Carbon Reduction Action Plan that includes 167 concrete plans, measures, methods and work projects to be implemented in the next four years.

(2) The government needs to set an example by implementing the Comprehensive

Energy Conservation and Carbon Reduction Measures in government offices and schools. A goal has been set to achieve negative growth figures annually in electricity and gas use in government offices and schools. The overall objective is to save a total of 7% in energy use by the year 2015.

(3) Promotion of incentives and subsidies for energy conservation and carbon reduction results that include electricity rate discount programs, public subsidies for the purchase of household appliances with Energy-saving Marks, subsidies for the purchase or conversion to LPG vehicles, subsidies for the purchase of electric motor scooters and incentive subsidies for use of solar energy facilities.

C. Enhancing Inspection and Reduction Offsetting for Environmental Impact Assessments Heavy Industry Development Case: There will be more strengthened follow-up and supervisory mechanisms for environmental impact assessment development cases that have already been passed, and the developed industries taking part are also being encouraged to adopt carbon right operation plans that offset any increased carbon emissions.



D. Establishing a Green Traffic Network:

Promote the use of LPG, hybrid and electric and other low-polluting vehicles while also encouraging the use of clean-burning biofuels, such as ethanol and LNG. There are also plans to promote a bicycle rental system throughout cities that provides low-rent or even free bicycles for the public to use as short-distance transport vehicles. Additionally, coordinated efforts among the Ministry of Transportation and Communications, the Sports Affairs Council, Construction and Planning Agency, the EPA and local governments have resulted in the completion of 1,785 kilometers of bicycle paths throughout Taiwan.

5. Establishing Regional Biofuel Centers: In an effort to coordinate energy conservation and carbon reduction initiatives, forest and agriculture scraps are being used to promote the development of biofuels. This will help raise the efficiency of electric power generation and thermal utilization. The plans include transforming incinerators into biofuel energy centers.

6. Enhancing International Cooperation and

Exchange: Efforts are being made to take active roles in international climate change conventions, conferences and activities to help advocate Taiwan's resolve in taking part in carbon reduction initiatives. We are also promoting bilateral environmental protection exchange with the US, Japan and European Union. Moreover, efforts have been made to enhance cooperation and exchange with voluntary carbon right offsetting and trading organizations such as the International Carbon Action Partnership, the International Emissions Trading Association and the Voluntary Carbon Standard Association. Cooperation with these organizations have helped Taiwan develop carbon reduction inspection mechanisms as well as links for validating efforts to get on track with international carbon reduction efforts.

Future Policy Focus

1. In accordance with completed legislation of the Greenhouse Gas Reduction Act, the EPA will assist in drawing up a Greenhouse Gas Reduction Promotion Plan that includes a pertinent set of laws based on national greenhouse reduction policies.
2. The EPA will focus on promoting early-stage greenhouse gas reduction and drawing up effective standards for an offsetting and trading system for use in a reduction policy before implementing total emission control.

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