

2015

Annual Report on National Sustainable Development



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Preface

Taiwan is an island-nation with high population density, limited natural resources, numerous natural disasters, and a special international position. Under this circumstance, the necessity and urgency of pursuing sustainable development would be more important compared with other countries. In response to the global trend of sustainable development, the Executive Yuan has established the National Council for Sustainable Development (hereinafter referred to as NCSD) in August 1997. In December 2002, the President promulgated the Basic Environment Act, in which the Article 29 authorizes NCSD's official position.

The 2015 Annual Report compiles the main achievements by both NCSD and civil sectors through their efforts on promotion activities of sustainable development in 2015.

This Annual Report includes Chapter 1: The 2015 Annual Work Progress of Committee of the NCSD, Chapter 2: 2014 Key Performance and Achievements of Working Groups of the NCSD, Chapter 3: The 2015 International Forum on Sustainable Development, Chapter 4: The 2015 National Sustainable Development Award Winners, Chapter 5 : interviews with the Non-Government Members of the NCSD, etc. For the NCSD's Organizational Structure and member-list, please refer to the appendix.

Sustainable development depends on corporate participation. Through the "2015 Annual Report on National Sustainable Development", we expect the people in Taiwan and the international community to gain a better understanding of the processes and outcomes of sustainable development in Taiwan. We hope to thereby enhance the public's understanding of sustainable development, and participate in national sustainable development work.

Chapter 1 The 2015 Annual Work Progress of Committee of the NCSD

I. Convening Meetings

This year, 2015, the Committee of National Council for Sustainable Development (hereinafter referred to as the Committee) convened 2 council meetings and 2 working conferences to discuss topics related to sustainable development. The summary and proposals are as follows:

1. The 27th Council Meeting

The meeting was held on June 9th, 2015, in the 1st Conference Room, on the second floor of Executive Yuan and presided by Premier and Chairman of the Committee Zhi-Guo Mao. The agenda of the meeting included three draft reports, namely:

- (1) Effectively promote the recycling and reuse of the drained water from public wastewater treatment plant
- (2) Promote green economy
- (3) Review and draft our sustainable development objectives



▲ The 27th Committee Council Meeting

2. The 28th Council Meeting

The meeting was held on December 18th, 2015, in the 1st Conference Room on the second floor of Executive Yuan and presided by Premier and Chairman of the Committee Zhi-Guo Mao. The agenda of the meeting included four draft reports, namely:

- (1) Instructions for “Greenhouse Gas Emission Reduction and Management Act” and “National Expected Contribution”
- (3) “Executive Yuan National Land Conservation Project Group Performance by Stage Report”
- (3) Sustainable Development Objectives of the committee (draft)
- (4) Partial correction on the Sustainable Development Policy Guidelines of the Committee



▲ The 28th Committee Council Meeting

3. The 39th Working conference

The conference was held on April 24th, 2015 in the VIP Room of Executive Yuan. Presided by Xin-Cheng Ye, CEO of the Committee, the agenda of the meeting covered one draft report and four discussions:

- (1) Promote National Health Programs
- (2) Execution and review of matters resolved at the 26th of the committee council meeting
- (3) Selection of committee logo
- (4) Promote Green Economy Policy Guidelines (draft)
- (5) How to effectively promote the recycling and reuse of the drained water from public wastewater treatment plant



▲ The 39th Committee Council Meeting

4. The 40th Working Conference

The conference was held on December 3rd, 2015 in the VIP Room of Executive Yuan. Presided by Xin-Cheng Ye, CEO of the Committee, the agenda of the meeting covered one draft report and two discussions:

- (1) Execution of Executive Yuan National Land Conservation Project Group
- (2) Sustainable Development Objectives of the committee (draft)
- (3) Partial correction on the Sustainable Development Policy Guidelines of the committee



▲ The 40th Committee Council Meeting

II. Sustainable Development Policy Promotion – Electronic Newsletter

To educate people on sustainable development, the Committee encourages everyone to participate in related actions. In November 2013, the 37th working conference decided on the Sustainable Development Policy Promotion Program. Electronic newsletter is one of the key work items. The content mostly introduces global sustainable development trends, Taiwan's current promotion, the Committee's current promotion affairs, domestic sustainable development information, and local situations.

The publication began in July 2014, and is published bi-monthly. Issues 6~10 were published in 2015. Issue 10 covers the drafting of UN 2030 sustainable development agenda: initiative of global action, promotion of Taoyuan City Green City Operation, recent works of the committee, key work performance of the committee sub-groups, climate change and energy conservation and carbon reduction groups, the committee premier Beng-Ji Jiang and Shan-Lian Luo, and recent news related to domestic and international sustainability development.



▲ Issue 10 of the Committee's Electronic Newsletter

III. The Evaluation of Sustainable Development Indicator System in 2014

In order to effectively evaluate and review the outcome of the promotion of global sustainable development, the UN announced their first edition of the sustainable development indicator system (SDIs) in 1996, and encouraged nations to use the framework of the system as a reference to construct their own indicator systems in accordance with the specific conditions of each nation. After reviewing the suitability of the first edition of the indicator system, UN announced their second and the third versions of SDIs in 2002 and 2007, respectively. Each system framework drastically differs to the next.

The National Council for Sustainable Development (NCSD) of Taiwan used UN's sustainable development indicator system (1st edition) and its framework as a reference and started to draft NCSD's own indicator system in 2002. The first edition was announced in 2003. Every year subsequently, NCSD published the results of the indicator system evaluation of the previous year. Furthermore, in order to work collaboratively with the global trend, in December 2009, NCSD developed its second edition, based on UN's third edition of sustainable development indicator system and NCSD's own first edition. Both the framework of NCSD's second edition and UN's third edition consist of three levels: "themes," "subthemes," and "indicators."

Work relating to the evaluation of sustainable development indicator system in 2014

- (1) The Secretariat of the NCSD held the "2014 Sustainable Development Indicators Data Reporting Session" on August 3, 2015. Civic Sustainable Development Committee members and the government agencies in charge of the indicator information were invited to discuss and to determine each indicator's name,

- definition, calculation and quantity for the year 2014; the authorities in charge of each indicator were also asked to fill in the annual data on the “Individual Indicator Information System for Sustainable Development in Taiwan” website. Additionally, the Secretariat made a written request in mid-October the same year to ask each indicator authority or agency to compose the report on the evaluation of sustainable development indicators in 2014.
- (2) The Secretariat of the NCSD invited Civic Sustainable Development Committee members and the agencies responsible for each indicator on December 4 and organized the “2014 Sustainable Development Indicators Data Reporting Session” so as to confirm the annual data of each indicator and the report content of the Evaluation for the year 2014.
- (3) The Secretariat of the NCSD published “the Evaluation Results of Sustainable Development Indicators in 2014” on the NCSD’s official website (<http://nsdn.epa.gov.tw/>) to make all sectors of society informed.



▲ The 2015 International Forum on Sustainable Development

IV. Hosting the 2015 International Forum on Sustainable Development

To understand global trends and UN’s actions after the Summit on Sustainable Development in 2015, the Committee hosted a one-day 2015 International Forum on Sustainable Development in September 2015 to promote this concept to the people of Taiwan. Renowned academics and experts were invited to join in discussion and share with the Committee members, Taiwan’s government officials, academics, and experts.

The topics of this forum include the prospects and responses of UN’s World Summit on Sustainable Development, green economy promotion around the globe after Rio+20, and the promotion of sustainable resilient cities. Committee CEO Shin-Cheng Yeh highlights the value of public participation. In order to show partnership between central and local governments to implement Taiwan’s sustainable development, we have selected sustainable cities as a discussion point.

Please see Chapter 3 for the details of the forum.

V. Selection and Recognition of the National Sustainable Development Award

Taiwan places great importance on sustainable development and created the Committee of National Council for Sustainable Development in 1997. To follow the global trends and encourage our society to act on sustainable development, the Committee created the National Sustainable Development Award in 2004 to recognize institutions with remarkable promotion results. Through sharing their experience, we hope the spirit of sustainable development can take root and become a part of everyday life.

This year’s National Sustainable Development Award is the 12th, including four categories: Educational Sustainable Development Award, Enterprise Sustainable Development Award, NGO Sustainable Development Award, and the Best Sustainable Development Action Plan Award to recognize schools, companies, NGOs, and government agencies with extraordinary achievements in this field. Between May~July of each year, documents are first reviewed, and the preliminary list is submitted to the Committee’s secretariat which then invites civilian Committee members. Between August~October, on-site assessment is conducted to select finalists at the end of October. The final winners are announced in late November, and a total of 10 winners are then recognized by the Executive Yuan at the end of the year. Please see Chapter 4 for the introduction of the award winners.

Chapter 2 2014 Key Performance and Achievements of Working Groups of the NCSD

The work units of the NCSD have been reorganized several times to adapt its practices since its establishment. There are 9 working groups in the NCSD since November 2008 and the key functions and achievements are as follows:

I. Working Group on Climate Change, Energy Conservation and Carbon Reduction

This working group is convened by the Environmental Protection Administration (EPA), responsible for the coordination and promotion of energy conservation, greenhouse gas reduction, climate change influence assessment, adaptation programming and issues related to international cooperation on climate change. Its achievements in 2014 were:

1. Setting up the greenhouse gas administration mechanism

- (1) The Greenhouse Gas Reduction and Management Act was passed by the Legislative Yuan on June 15th 2015 and promulgated on July 1st.
- (2) The EPA proclaimed the “2014 Republic of China (Taiwan) Greenhouse Gas Inventory Report” on January 15th 2015. to indicate the calculation scope, profile, overall emission trends in the mentioned report and disclose contents such as calculating methods, statistics, data on the different greenhouse gas emission origins and collection in various sectors and their emission trends.
- (3) The EPA proclaimed the Inspection Standards for the Greenhouse Gas Authentication and Verification Organization on April 22nd 2015, to be effective immediately.
- (4) On September 17th, 2015, the EPA reported the draft “Intended Nationally Determined Contributions (INDCs Taiwan)” in the Executive Yuan’s 3466th Assembly.



▲ Picture description: 2014 Republic of China (Taiwan) Greenhouse Gas Inventory Report

2. Actions, taker by the various different sectors departments to adapt to climate change

- (1) On April 20th, The National Development Council approved subsidization to the six local Governments, including Taoyuan City, Yunlin County, Chiayi Jiayi County, Chiayi (City), Tainan City and Kaohsiung City to implement the “Second Stage for the Local Climate Change Impacts and Adaption Plan “.
- (2) The Architecture and Building Research Institute of the Ministry of the Interior planned to conduct the research to study and amend the chapter of green building standards in the Building Act and Regulations in 2016 and the Construction Planning Agency of the Ministry of the Interior would do the follow- up amendment in accordance with its research outcome.
- (3) The Bureau of Energy of the Ministry of Economic Affairs proclaimed energy consumption standards and inspection methods, and also the energy efficiency effectiveness labelling system for electric appliances on January 1st and September 21st respectively. The appliances should be labelled with energy efficiency indications on goods demonstrated or to be sold starting January 1st 2015.

3. Dispatched Delegations to participate in UNFCCC activities

- (1) The EPA organized a delegation to the UNFCCC COP21/CMP11 held in Paris, France from November 31st to December 11th 2015
- (2) The EPA organized internationally the “2015 Pan Pacific Partnership on Climate Change Adaptation Conference” in Hanoi, Vietnam between October 18th and 20th 2015. The main topics were countries’ INDCs, public consciousness of climate change, among others.

4. Expansion of public involvement

The EPA held a hearing meeting on the Greenhouse Gas Reduction and Management Act on September 25th 2015, and invited representatives from various sectors to contribute their valuable opinions and comments for the public to recognize the whole framework of the said Act and for the integration between existing and new mechanisms.

5. Guidance on low carbon and greening of industry

The Industrial Development Bureau of the Ministry of Economic Affairs (IDB) has been promoting industrial energy conservation and carbon reduction. In 2015, the steel, petro-chemical, pulp & paper, cement, synthetic fiber, cotton dyeing, silk dyeing and polymer materials a total of 11 industries, signed agreements with the IDB on Industrial GHG Voluntary Reductions. There were 1,040 reduction measurements taken which reduced 817 thousand tons of CO². The economic benefit derived from this programmed was about NT\$3.2 billion (US\$100 million).

6. Promotion of green LOHAS and low carbon transportation

- (1) The Tourism Bureau of the Ministry of Transportation and Communications promoted green building engineering in national parks. Tourist Center Buildings such as Luoshang of the Hualien- Taitung Valley, Nangan of Mazu, Nanzhuang of Shutosan and the Administration Center in Fanlu of Alisan Mountain, were certified with the green building badge by the Ministry of the Interior.
- (2) The Kinmen County Council passed its “Low Carbon Island self-government ordinance “ on July 27th to further implement the low carbon and sustainable development.

II. National Land and Resources Working Group

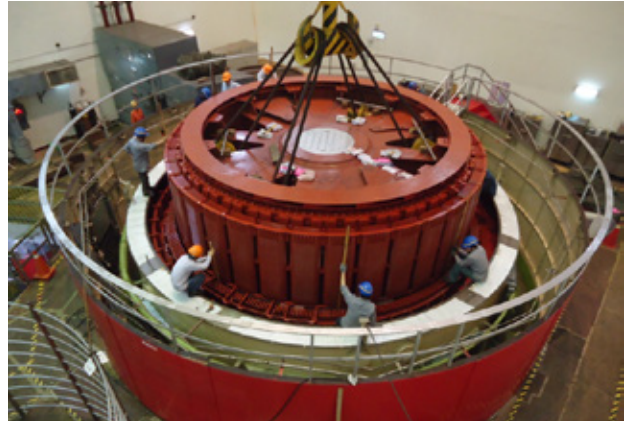
This working group is convened by the Construction and Planning Agency of the Ministry of the Interior. Its main mission is to assure national land security, to plan national land conservation, application and management, and to legalize the related mechanisms for implementing sustainable development of national land resources. Its achievements in 2014 are as follows.

1. Exploration, use, administration and conservation of water resources (Taipei Feitsui Reservoir Administration, Irrigation Association and Water Resources Agency)

- (1) The Sustainable Water Environment and Green Reservoir Action Plan of the Feitsui Reservoir is to conduct low carbon, green and eco-management and operations. To assure long-run performance and safe operations of the Feitsui Hydro Power Plant, a shutdown for periodic overhaul maintenance was executed on March 2nd 2015 and it restarted on May 3rd 2015. A total of approximately 160 million kwh of green electricity was sold in the first 3Qs of 2015, reducing an equivalent 80,682 tons of CO².

Moreover, the Feitsui Reservoir is heavily responsible for the water supply of the Taipei Metropolitan Area, so well-implemented conservation of water resources guarantees the sustainability of the reservoir. The actions taken, like forest planting, are on the way. In 2015, forest planting covered about 3.2 thousand hectares with 5 thousand kinds of Taiwan’s endemic trees.

- (2) The Feitsui Reservoir offers water with sufficient quantity and excellent quality. The reservoir supplied raw water to the Taipei Water Department totaling about 206.5 million cubic meters and 113.6 million cubic meters to the Taiwan Water Corporation in the first 3Qs of 2015
- (3) To improve the dam's security monitoring system, instrumental monitoring, assessment and on-site inspection of the dam were carried out. There were 405 on-site inspections for the dam, 89,425 automated monitoring data points collected, and 17,911 field checks for the dam in the first 3Qs of 2015. By using these data, inspections, checks, and expert assessments, the dam had its construction structures approved as safe and stable.



▲ Overall machine maintenance in the Feitsui Electric Power Plant on April 22nd 2015(suspending rotar)



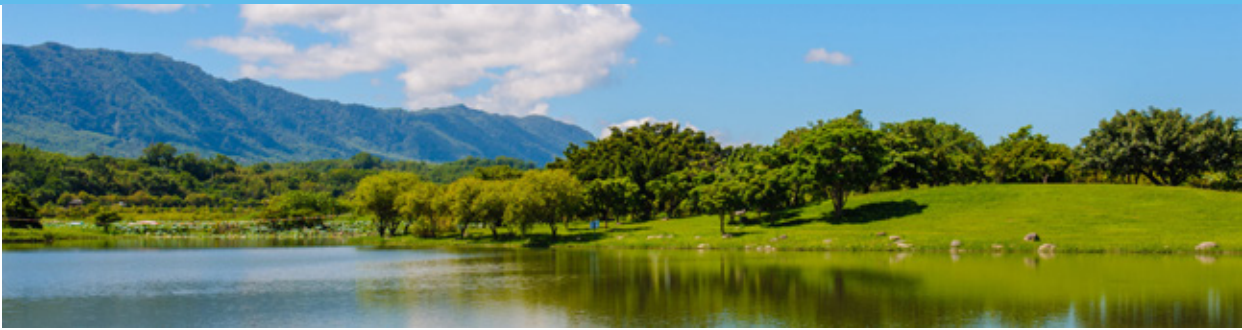
▲ Circulating Water Fish farming equipment

2. Conservation and management of underground water resources (Fisheries Agency of the Council of Agriculture)

There is a concrete solution and action plan for land subsidence in the central / southern coasts of Taiwan. The sea water supply coordinating system of the pisciculture production area in Xialuen, Yunlin County works normally with a water supply for 122 hectares, which was planned to save 2 million tons of water, but in fact the saved water totaled 2,806,000 tons from 2011 to the end of 2014. The sea water input system of the well pisciculture production area in Yunlin County with a water supply for 79.92 hectares, the supply and drainage system of the pisciculture production area of Xiahuko with a water supply for 280 hectares, and the sea water input and output waterways for the related pisciculture production areas or the fish farm concentration areas all work normally, which were planned to save 2 million tons of water but in fact the saved water totaling 3,029,000 tons from 2011 to the end of 2014.

3. Marine Resource Sustainable Operation (Construction and Planning Agency of the Ministry of the Interior)

- (1) The agency finalized non-urban land-use zoning and registration for the delimitation of marine areas for 17 local governments in accordance with Article 15 of the Regional Planning Act and the Executive Yuan's National Land Utilization Plan, which was proclaimed and effective on October 17th 2013.
- (2) The delimitation of coastal zoning was proclaimed on August 4th 2015 in accordance with the Coastal Zone Management Act, proclaimed and effective on February 4th 2015.



4. National land planning and management (Construction and Planning Agency of the Ministry of the Interior, Central Geological Survey of the Ministry of the Economic Affairs, Forest Bureau and Department of Planning of the Council of Agriculture)

(1) Implementation of the space plan and guidance of the proper land development policy- According to the Regional Plan Act, proclaimed to be effective on October 17th 2013, the construction principle of the required application for the facility- use location change was set in the mentioned act and it was required to assign the required application for the facility- use location change in the regional plan of the municipalities and counties (cities) in accordance with the industrial policy and its development requirement and under the principle of environmental carrying capacity. The procedure regulations for the verification and decision of non- urban land development was amended and proclaimed on August 17th 2015.

(2) Implementation of the national geological sensitive zone delimitation, verification, decision and proclamation.

The national geological sensitive zones were divided in 5 parts with their delimitation, verification, decision and proclamation to be finished by 2016. The 19 items of the first and second parts were proclaimed in 2014. The 3rd and 4th parts are under process in 2015. In these 23 items of 4 categories of the geological sensitive zones for delimitation and proclamation, at the moment, 7 items have been proclaimed.

(3) Programming and establishment of the natural protection (preservation) zone and reinforcement of the operation management.

Continuous on-going programming, establishment and operation management of natural protection zones: To set up a complete natural protection zone system, 22 natural preservation zones, 20 wild animal protection zones, 37 important habitats for wild animals and 6 natural protection

zones are programmed and set, whose area totals 412,906.15 hectares (the repeated part was excluded.) This occupies 11.40% of the land area of Taiwan, which connects the protection and preservation areas of the Central Mountains to protect and preserve the core ecological system of Taiwan.

(4) Promotion of farmland resource space programming and establishment of the reasonable use mechanism of farmland: The space installation ideas of the industry and its value chain development under the 15 municipalities or county governments are completed through intensified application to farmland resource space programming results. The classification, classified verification and ratification of the farmland resource space programming and its marking and drawing work continue to offer the agricultural administrative unit sufficient information about the farmland resource distribution so that it can include the offered farmland classification and grading in the national regional plan to facilitate the national territory programming and resource distribution.

5. National land protection and preservation (Soil and Water Conservation Bureau of the Council of Agriculture)

For the mountainsides, listed in the National Mountain Protection and Preservation Ordinance, the application of satellites to monitor topographical changes of mountainside (6 times a year) is effectively applies to mountainside management.

6. Promotion of the sustainability and carbon reduction concepts public construction (Public Construction Commission of the Executive Yuan)

An e-learning course is given to introduce the life cycle of public construction, which includes phases such as feasibility assessment, programming, design, construction, maintenance and management, to promote the policy and ideology of the sustainable operation environment and to reduce the environmental impact caused by public construction work.

III. Biodiversity Working Group

The working group is convened by the Fisheries Agency of the Council of Agriculture. Its job is to implement the Biodiversity Promotion Plan, approved by the Executive Yuan in 2001, integrate the governmental departments to promote the Biodiversity Sustainable Development Action Plan and to hold promotions or related activities for the public and private sectors to reach consensus and set up a partnership to work together and achieve the goals of the biodiversity protection, preservation and sustainable use. Its achievements in 2014 can be as follows:

1. Investigated and assured possible biodiversity hotspots on land and in the sea

The Endemic Species Research Institute of the Council of Agriculture of the Executive Yuan is cooperating with the Cornell Lab of Ornithology in the United States to set up the e-bird Taiwan website (<http://ebird.org/content/tw/>) to collect data for distribution mapping of birds in Taiwan, with a list of 378 hot spots.

2. To strengthen taxonomical abilities and to gradually finish the compilation and revision of taxonomic knowledge of the fauna, flora and microorganisms in Taiwan

The Endemic Species Research Institute of the Council of Agriculture and the Chinese Wild Bird Federation have worked cooperatively and finished the revision of the Checklist of Birds of Taiwan and published the “2015 report of the ornithological record commission”. In October, the Institute also published the “Taiwan New Year Bird Count 2015 Annual Report”. The Taiwan Forest Research Institute selected introduced species which have caused serious damage in recent years from 5 international destructive insect databases to set up a non-native species pest directory for forests.

3. Introduced risk assessment of major forest pest diseases and damage, and established and maintained an information platform

For 20 common introduced pest species which have recently brought disease and caused damage to forests around the world, the Taiwan Forest Research Institute assessed risks and set up a database after collecting the information and

inviting national experts to help complete the written report on risk assessment.

The Taiwan Forest Research Institute finished an investigation of biocontrolled plants in northern Taiwan (Yilan County, Taipei City, New Taipei City, Keelung City, Taoyuan City and Hsinchu County), set up a distribution mapping database and published the Atlas of biocontrolled plants in northern Taiwan for the public's reference and for research use.



▲ Activity name: Investigated environment sample photo
Dasyueshan Forest Recreation Areas
Picture Taken by Mr. Liao, Shi-re

4. Draft of the restoration priority of the deteriorated environment and of the prior restoration method

The recovery works of land pollution were executed by the local environmental protection agencies, under the supervision of the Environmental Protection Administration. Until the end of September 2015, 5,299 polluted plots of farmland with an area of 897 hectares were proclaimed and listed for control. 2,723 plots of farmland with an area of 545 hectares completed the restoration and 2,576 plots of farmland with an area of 352 hectares were recovering.

Currently the local environmental protection agencies are responsible for the programming of the polluted farmland recovery and carrying out the investigation of the polluted soil on the farmland.

5. Proclamation and implementation of the related policies

(1) The Kinmen County Government proclaimed the Horseshoe Crab, Aquatic Plant and

Animal Breeding, Protection and Preservation Area in Gunningtou, Kinmen County on March 19.

- (2) The Agriculture and Food Agency of the Council of Agriculture (COA) set up the Cyclamen Species Experiment and Verification Measurement on January 7 and commissioned the Taiwan Seed Improvement and Propagation Station of the Council of Agriculture to be the verification organization to verify and trace the Cyclamen species phenotypic trait, which became valid upon the proclaimed date.
- (3) The Agriculture and Food Agency of the Council of Agriculture set up the “Paphiopedilum and black mushroom as the suitable plant species for the plant and seed” plan on April 1, which became valid upon the proclaimed date.
- (4) The Agriculture and Food Agency of the Council of Agriculture proclaimed and admitted the plan of the heredity character investigation and bio-safety assessment field experiment of the transgenic White Flower Oncidium, Michelle No. 1 on April 10.
- (5) The Penghu County amended the Sea Urchin Fishery Resource Management on May 4.
- (6) The COA's Livestock Research Institute reared a new goat species, named Kenting Goat, with a stress resistance property. The Council of Agriculture agreed to the new species' registration with the official document no. 1040042808 on June 5.
- (7) The Agriculture and Food Agency of COA set up the Caladium × hortulanum Birdsey Species Experiment and Verification Method on September 10, which became valid upon the proclaimed date.
- (8) In October, the Fisheries Research Institute of COA amended Item 14 of the The Aquatic GMO (genetically modified organism) Field Experiment Administration Regulations, indicating the field experiment of the genetically modified recreation fishery should apply for the incorporated implementation of the heredity character investigation and bio-risk assessment, simplifying the administrative procedure and support diversified development of the national fishery industry.

IV. Energy and Production Working Group

This working group is convened by the Industrial Development Bureau of the Ministry of Economic Affairs and takes sustainable energy development and green production promotion as the axis of its task, which includes the assurance of energy safety, booster of energy production, promotion of green industrial development and strengthening of international competitiveness. The group's achievements in 2014 can be referred to as follows:

1. Promotion of the green factory (Industrial Development Bureau of the Ministry of Economic Affairs)

Until September 2015, 26 green factory badges had been certificated and 61 factories passed the cleaning production assessment and systematic conformity identification. These green certificated buildings and cleaning production factories contributed carbon reduction of 597,000 tons per year equivalently, with a cost-down of NT\$3.3 billion (US\$103 million approximately).

2. Guidance of the small and medium sized enterprises to promote energy conservation and carbon reduction (Small and Medium Enterprise Administration of the Ministry of Economic Affairs, MOEA)

In 2015, SMEA assisted 105 small and medium sized enterprises in implementing related energy conservation and carbon reduction, such as the ECOS's services verification of the carbon/ water footprint and the establishment of the energy management system and related activities. The job training programmers on green energy, environmental protection or energy conservation techniques had 500 participants. The energy conservation, carbon reduction and water saving promotion were carried out with more than 80,000 participants.

3. Establishment of the verification and experimental system (Bureau of Standards, Metrology and Inspection of the Ministry of Economic Affairs)

BSMI completed the installation of the solar photovoltaic tomography system testing equipment, developed the reversible engineering to identify

and analyze the defectives occurred from energy technological products such as solar photovoltaic modules, refrigeration, air conditioners, small and medium sized wind turbine components and fuel cells...etc. thus, facilitating amendment of standards BSMI has passed NVLAP Lab (USA)'s qualification and accreditation on the secondary grade optical correction providing Taiwan's manufacturers a timelier, international and qualified correction service.

4. Promotion of the Green Electric Pricing System (Bureau of Energy of the Ministry of Economic Affairs)

The Bureau of Energy has been implementing a 3-year pilot plan for the green power tariff system since July 2014 to encourage the public and enterprises to purchase green power voluntarily. The activity was opened on February 16, 2015 with additional rate of NT\$1.06 (US\$0.03)/ kwh and an upper limit of 784million kwh. Up to October 15, the purchased amount had been 156 million kwh.



▲ Mr. John Chen- chung Deng, Minister of Economic Affairs and Mr. Chuan- neng Lin, Director General of the Bureau of Energy visited TSMC on August 28, 2015 and presented the sapling of ginkgo (maidenhair tree) as symbol that the development of the green energy means a welcome to happiness.



▲ Green Electricity Badge, which is divided into 3 levels in accordance with the degrees subscribed by the users.

5. Implementation of the Stipulation of Energy Conservation in the energy-intensive Industries and Used Energy Efficiency (Bureau of Energy of the Ministry of Economic Affairs) Regulated the energy-intensive industries to save energy with energy efficiency

On 4 March, 2015, BOE proclaimed "Electronics Industry Energy Conservation and Used Energy Efficiency" to set up the operation standards for the main energy-use equipment in the electronics industry, such as water chiller units, blower units, adsorptive dryers and compressed air systems, which estimated saved 127,000 KI. In the mean while, "Textile Industry Energy Conservation and Used Energy Efficiency" was also proclaimed to set up the operation standards for the main energy-use equipment in the textile industry, such as water chiller units and heat transfer boilers, which is estimated to have saved 39,000 KI in totals.

6. Promotion of the services hiring low or middle income households (Ministry of Labor)

In coordination of the concrete project to improve the income distribution, the Ministry of Labor implemented a 5-year assistance and supporting project for hiring low or middle income households, offering them with vocational training, subsidized to earn technical skill certification, or opportunities to visit job fields. A vocational management system was implemented for job services among private and public sectors.



▲ Celebration of the seminar to encourage middle-low or low income households to get employed and share experiences

7. Celebration of the diversified employment orientation (Ministry of Labor)

The multi-dimension employment orientation training programs were held to help the unemployed to be rehired by internal training, or commission and subsidy. The Ministry of Labor also strengthened to hold the training required by the industry to elevate their vocational skills, encourage employment and introduce the necessary updated skills and concepts. Until the end of September 2015, 41,077 persons had completed the training programmes.

8. Cooperation with universities and colleges to offer employment services (Ministry of Labor)

The subsidy plan to work with universities and colleges to offer employment services was promoted to sponsor the universities and colleges to hold career promotion activities such as campus recruitment, career lecture, enterprise visit...etc. to help their graduates get employed successfully.



▲ Celebration of the campus recruitment

9. Encouraging life-long study to famers and strengthening the professional knowledge and skills of the famers (Council of Agriculture)

The farmer academy was established in 2011 as the training base for farmers who wished to be professional and to establish a complete training system to the agricultural education in combination with the agricultural study, education and resource promotion and to program the systematic agricultural training from the experience, entry, primary, secondary to the advanced course for the different objects, offering a life-long study channel in agriculture.

10. Promotion of the agricultural operation zone and effective use of farmland (Council of Agriculture)

The Council of Agriculture set up the agricultural operation zone to preserve good farmland and develop a safe productive base for the agriculture and concentrated the related resources on the excellent agricultural production in the zone to improve the agricultural operation environment, elevate the use efficiency of the farmland and increase the income of the farmers.

V. Transportation and Life Working Group

This working group is convened by the Institute of Transportation of the Ministry of Transportation and Communications whose tasks focus on four categories: sustainable transport, human-oriented traffic, smart transport, green life and consumption, and the establishment of the relevant action plans. Its achievements in 2015 can be referred to as follows:

1. Continuous promotion of the track transport construction and elevation of service efficiency (Ministry of the Transportation and Communications)

It actively promoted the related constructions of the track transport, which include the grade separation of the metropolitan railroads, acceleration of the track transport like the mass rapid transit elevation of the track transport services, establishment of energy conservation stations, continuous promotion of the metropolitan mass rapid transit system, accelerated promotion of the establishment of the high-speed rail stations in Miao-li, Zhanghua and Yunlin to advance the urban renewal development, satisfy the need of the passengers, to reduce the travelling time and save the cost.



▲ Exterior of the high-speed rail stations in Miaoli, Zhanghua and Yunlin

2. Construction of the smart transport system in Taiwan (Ministry of Transportation and Communications)

In addition to the traffic & trans services offered by the Institute of Transportation of the Ministry of Transportation and Communications and the overall freeway and expressway network traffic management system run by the Taiwan Area National Freeway Bureau, the Taiwan Railway Administration also promoted the Taiwan railway multi-use E-ticket service to offer an overall smart transport service so that the users can get timely traffic information and enjoy the convenience brought by the transport before the start of the trip or during the trip to reduce the travelling time, the transport energy spent during the trip and the exhaust pollution.

3. Promotion of the overall programming of the national bicycle rider- friendly environment network and the establishment plan of the bicycle network by the Ministry of Transportation and Communications itself (Ministry of Transportation and Communications)

The Ministry of Transportation and Communications has convened local governments, Construction and Building Agency of the Ministry of the Interior, Sports Administration of the Ministry of Education and their relevant units to investigate nine routes, using the local existing cycle ways and provincial roads to plan one main line around the island and 13 spurs and would complete the related use services and facilities like the guiding signals and lines, guiding indicators, supply facilities, elevators in stations, guiding roads, bicycle ports and racks. before the end of 2015.

In coordination with the zero pollution bike-riding activity promoted by the government to save energy and reduce carbon, the Ministry of Transportation and Communications, combining the two kinds of transport, railway and bicycle, has kept on promoting the environmental protection train for both railroad and bicycle for the public to make use of the railway as means to transport people and bicycles to arrive at the destination at the same time since 2008 and set up the depot for bikes in Kuanshan, Taidong and Toucheng to serve the tourists.



▲ Depot for bike in Toucheng Train Station

4. Promotion of ecotourism, environmental education and tourist- friendly environment (Construction and Building Agency of the Ministry of the Interior and Ministry of Transportation and Communications)

To promote environmental education and a tourist-friendly environment, the Construction and Building Agency of the Ministry of the Interior, national (natural) park administrations, city park administrations and scenic area administrations under the Tourist Bureau of the Ministry of Transportation and Communications, in addition to programming the tourist-friendly environment such as natural scenery, human historical sites for the public to visit, have cooperated to promote the environmental education in accordance with the environmental characters of each tourist area to elevate the consciousness and content of the civil environmental education, making the event edutainment.

5. Improving the weather and earthquake forecast ability (Ministry of Transportation and Communications)

The plan to establish the monitoring and forecast work of the destructive weather was implemented. The expansion and analysis of the search functions in the Taiwan extreme weather index of the weather monitoring and forecast operating system were completed. The new version of the model of the weather research and forecast (WRF), Ensemble Typhoon Quantitative Precipitation Forecast (ETQPF)/ Ensemble Typhoon Wind (ETWIND) was put online for operation. The ocean current track information service and index

of the sea surface condition and surge monitoring signal on the official website were strengthened. The ultraviolet forecast in each county, city and town was put online. The app for the division of the weather forecast and warning was added and the early warning and forecast of the weather and the earthquake information were shared through LINE. The broadcast function of the weather warning and forecast was strengthened. Moreover, the simultaneous rough wave information was added to the official website. The public can browse the website or download the daily weather app to get the related information and pass the message to the central and local government emergency operation centers, academic institutes and press media through the mobile text message and extreme weather monitoring system.



▲ Live Weather app for weather warning and forecast

6. Introduction of the environmental management system and facilities of the energy conservation and carbon reduction in the airports (Ministry of Transportation and Communications)

The Civil Aeronautics Administration of the Ministry of Transportation and Communications has pushed the related units of the airports to expand the participation in the accreditation of the ACA Level 3. In addition to obtaining the continuous accreditation to the mentioned environment, greenhouse gas and energy, the Kaohsiung International Airport also encouraged its related units to participate in the joint carbon reduction plan, taking green airport of the greenhouse gas emission and carbon neutrality as goal.

7. Promotion of the civic green consumption (Environmental Protection Administration)

To encourage consumers to put into practice the environmental protection concept in their daily life, the Environmental Protection Administration has promoted the green consumption actively with major measurements as follows:

- ① To establish the credible system of the green product accreditation
- ② To integrate the selling channels of the environmental protection products to facilitate the purchase of green products for consumers
- ③ To promote the concept of green consumption to change the consumption pattern of the consumers

VI. Technology and Evaluation Working Group

This working group is convened by the Department of Natural Science and Sustainable Department of the Ministry of Science and Technology whose tasks are to apply the existing scientific fundamental research and technological creative ability to the global ecological and environmental system assessment, to facilitate policy making by integrating the assessed information, to cultivate the technological talents, strengthen technical and international exchanges in order to reduce the major risks caused due to the development and the pursuit of science power by the people. Its achievements in 2015 can be referred to as follows:

1. Plan to establish the Taiwan Climate Change Projection and Information Platform

- (1) The Chinese subtitles for the movie of the 5th IPCC assessment synthesis report were completed and put in the TCCIP for the external reference and application.
- (2) To satisfy the need and application to prevent the disaster, the mentioned department completed the deviation correction of the hourly precipitation with the estimated data of 5km dpi, estimated the different rainfall duration and order of the extreme typhoons, sorted the maximum accumulated precipitation within 24 hours during the typhoon and made use of the related data to finish the inundation simulation of the Kao-ping River during the typhoon.

- (3) In response to the impact research of the agricultural food provision and public hygiene, the applied technology for the climate change data was developed. The assessment of the damage to rice farmers caused by the typhoons of the end of the century in Taiwan and the analysis of the impact, caused by the temperature change to the overall mortality rate, and the mortality rate of cardiovascular diseases were also completed.
- (4) The establishment of the extreme index of the high-resolution precipitation and temperature in Taiwan and the analysis of the extreme index change of the 11 kinds of precipitation and nine temperature values under the three scenarios were completed to facilitate the impact study of the extreme events.
- (5) The establishment of the standardized analysis of the extreme precipitation could be applied to the mutual comparison among different observatories and patterns.
- (6) The completed flow comparison between CMIP3 and CMIP5 could be applied to the climate change impact study and adaption assessment.
- (7) The establishment of the relationship between the drought of Taiwan and the land surface heating of the Tibetan Plateau and the relationship of the spring big scale circulation could be an important weather reference to the CMIP5 assessment for the future drought trend.



2. Integration of TaiBIF and connection to GBI

- (1) The Ministry of Science and Technology and the Council of Agriculture sponsored the Biodiversity Research Center of the Academia Sinica to set up TaiBIF, TaiCOL, TaiEOL to promote the collection and integration of the cross-

ministry biodiversity information and to strengthen the promotion and implementation of the open information policy. (Ministry of Science and Technology)

- (2) Continuous operation of the wild animal and plant database and biodiversity information sharing platform, Taiwan Biodiversity Network (TBN) and Breeding Bird Survey Taiwan (BBS Taiwan) (Endemic Species Research Institute of the Council of Agriculture)
- (3) The implementation of the biodiversity investigation in the artificial reef zones of the surrounding sea area of Taiwan, fishery resource conservation zone and the sea area of the three islands in the north of Taiwan has been a continuous commission to the related institutes and academic units and the compiled data was included in the Taiwan Surrounding Sea Area Marine Biodiversity Database. (Fisheries Agency of the Council of Agriculture)
- (4) Each national park administration has maintained and renewed information regularly in coordination with the National Park Biodiversity Geographic Information System, set up by the Construction and Planning Agency of the Ministry of the Interior. (Ministry of the Interior)

3. Promotion of the research plan of the climate change adaptation and technology integration

- (1) To establish the pisciculture adaptation pattern in the Taiwan Strait in conformity with the cold wave and the monitoring system of the dust and typhoons, to control the characters of the large scale sea-air interaction to the precipitation in the region of Taiwan, to analyze every drought event in Taiwan in these years to assess the drought characters such as the drought occurrence, average duration, average severance and the change in each year and decade.
- (2) To predict the change trend of the surge and wave height, caused by typhoons in the future through the simulation analysis of the wave height and surge, caused by the typhoon and to establish the safety assessment after the current and future disappearance of the lagoons and shoals.

- (3) To analyze the landslide probability in the drainage basin of Tsengwen River, forecast the landslide dimension, volume and the possible trend of the debris slide to have further prediction about the quantity of soil and gravel under the heavy rainfall and to analyze the disaster of the landslide and debris flow and the geological land form change of the drainage basin under the extreme rainfall.
- (4) To establish the basic diagram of eco-system and ecological conservation zone, coordinate with the environmental factor database to forecast and calculate the creature distribution model and to explain the bio-diversity change in mountain areas and coastal wetlands.
- (5) To establish the technological service platform for Taiwan climate change adaptation to offer technological service information such as the assessment tools and professional guidance.
- (6) To complete the policy-making procedures for the climate change adaptation (technical guidelines), support the adaptation policy making tool, adptCAB and CSDModel and strengthen the TaiWAP model to be the climate change integration and assessment model with the TCCIP-AR5 scenario.
- (7) The community (small scale) adaptation ability index was set to assess the community durability. The coastal, urban and rural community assessments (21 in total) had been completed. The space adaptation index was integrated to the model What-if to simulate the land adaptation under the future different adaptation strategies.

VII. Urban and Rural Development Working Group

This working group was convened by the Construction and Planning Agency of the Interior ministry whose tasks are to promote urban and rural development, advance urban renewal and rebirth, fulfill residential justice, implement residential policy, accelerate sewer construction, integrate vehicle paths (urban roads, bicycle paths), construct the zero obstacle space in the pavement, build up the urban green view and human-oriented environment and space and promote environmental

protection, recycled and permeable pavement to elevate the civil life quality and assure the sustainable development within the national land through the urban environmental transformation. Its achievements in 2015 can be referred to as follows:

1. Water resource exploration, use, management and conservation (Taiwan Water Corporation)

To implement actively the plan to reduce the leakage from 2013 to 2022: In the end of the year 2015, 634 kilometers of old and leaking pipelines were estimated to be replaced and 420 district meter pipe networks were to be completed.

2. Sewerage development (Construction and Planning Agency of the Ministry of the Interior)

The 5th phrase construction plan for the sewerage was made in 2014. In 2015, the central government budgeted NT\$11.44 billion (US\$357.5 million) for the Construction and Planning Agency of the Ministry of the Interior and the local county and city governments to encourage user's to actively construct the pipe to increase the popularity of the sewerage, expanding the recycling and reuse of the effluent from the public wastewater treatment plant for the sustainable use of the underwater resource.

3. Urban and rural sustainable development (Construction and Planning Agency of the Interior and the Soil and Water Conservation Bureau of the Council of Agriculture)

- (1) Promotion of urban renewal, conducted by the government 235 urban renewal exemplary zones have been selected since 2005 among which currently 63 were under the preliminary planning, 32 were under the preparation and announcement of the investment recruitment, 26 were introduced to the investors for investment and construction and 10 were invested by the government itself and under construction.
- (2) Guidance of the approval and implementation of the private urban renewal. There have been 1,699 private applications for the urban renewal plan (the plan to change rights included) since the proclaimed implementation of the Urban Renewal Act in 1998 among which 527 had been approved for renewal.

- (3) Subsidy for the private voluntary renewal 59 renewals have been appraised and ratified with subsidy since the implementation of the Subsidy Works of the Central Urban Renewal Fund Subsidy for the Implementation of the Self-Renewal Regulations in 2001, which included 12 cases for the plan and design of reconstruction, 43 for the plan and design of the restoration and maintenance, 2 for earthquake resistance assessment and 4 for the construction of renovation, maintenance.

4. Ecological city and green building (Architecture and Building Research Institute and Construction and Planning Agency of the Ministry of the Interior)

- (1) To promote the green building badge appraisal: Until the end of September 2015, 494 green building badges had been rewarded with the green building certificates, which estimated to save about 144,490,000 kwh of electricity and 6,960,000 tons of water and reduced 80,400 tons of carbon.
- (2) To promote the green building material badge appraisal: until the end of September 2015, 163 green building badges were rewarded among which 118 were for health, 12 for rebirth and 33 for high function, which covered more than 774 kinds of products.

5. Promotion of the social housing (Construction and Planning Agency of the Ministry of the Interior)

- (1) Five trial bases in Taipei City and New Taipei City, which include the section of Chingnien, Wanhua and Baoching, Songshan in Taipei City and Datong South and Daan, Sanchong and Shiufong, Zhonghe in New Taipei City were promoted with plans to construct 1,919 households in accordance with the Short-term Implementation Project of the Social Housing, ratified by the Executive Yuan on June 16, 2011.
- (2) From 2014 to 2023, NT\$6.7 billion (US\$209.375 million) were budgeted to sponsor the local governments as costs for the construction of the social housings such as the preliminary planning fee, construction fee or appropriation for the land in accordance with the Middle-long Term Promotional Project of the Social Housing ratified by the Executive Yuan on January 6, 2014. Till 2023, there would be 34,000 social housings.

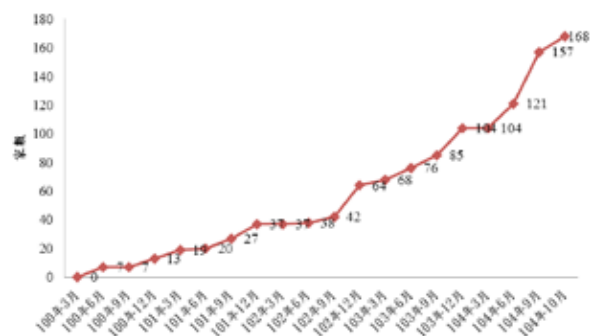
VIII. Health and Welfare Working Group

This working group is composed of Ministry of Labor, National Immigration Agency of the Ministry of the Interior, Water Resource Agency of the Ministry of Economic Affairs, Environmental Protection Administration, Council of Agriculture, Council of Aboriginal Affairs, and Ministry of Health and Welfare to implement together tasks like the health risk management and social welfare, which is convened by the Health Promotion Administration of the Ministry of Health and Welfare with specific tasks like attention to the population dynamics, construction of a healthy environment, enforcement of social welfare, attention to the disadvantaged and guarantee of female right. Its achievements in 2015 can be referred to as follows:

1. Establishment of the elderly-friendly health care environment and services (Health Promotion Administration of the Ministry of Health and Welfare)

The introduced structure for the elderly-friendly health care in Taiwan, compiled in 2010 was developed in accordance with the 3 WHO principles for the elderly-friendly health care and WHO standards for Health Promotion in Hospitals. Such structure was introduced in hospitals with priority in 2011 and expanded to other health care institutions like the clinics (medical groups) and long-term care institutions. Until October 20, 2015, 168 health care institutions (128 hospitals, 20 health centers and 20 long-term care institutions) have obtained the accreditation to the elderly-friendly health care institution.

高齡友善健康照護機構成長圖



- ▲ The number of the passed accreditations to the elderly-friendly health care institutions continues to increase.

2. Promotion of the long-term care service system (Social and Family Affairs Administration of the Ministry of Health and Welfare)

To respond to the care need caused by the aging society, the 10 year plan for the long-term care in Taiwan was promoted to give priority to the residence and community care, offering the disabled elderly multi-care services like the residence service, daily care, pick-ups/ drop-offs from which there have been 163,926 beneficiaries from January to August 2015. Moreover, the meeting to expand the communication for the multi-day care services is called annually to examine the current situation and to urge the county (city) governments for the massive expansion to achieve the goal set by the Executive Yuan for the 2016 care service plan in 368 towns of Taiwan. Until August 2015, 191 diversified care service units were installed, which included 161 day-care centers and 30 day-care sites.

3. To complete the regulatory environment for the food sanitation and safety management (Food and Drug Administration of the Ministry of Health and Welfare)

The related food rule and management measurements were amended adequately to encourage the food industry to fulfill the related food regulations about the autonomous management of food safety and sanitation. Partial articles of the Act Governing Food Safety and Sanitation were amended and proclaimed on February 4, 2015, which in addition to aggravating the penalty, include many items to advance the food safety and sanitation management system.

4. Implementation of the national insurance and medical subsidy services for the aborigines (Council of Aboriginal Affairs)

The aborigines who were unable to join the national insurance due to economic difficulties were sponsored with the insurance fee to protect their right to receive medical treatment. While the aborigines were sponsored for the medical transfer and medical treatment due to the transport difficulty in going to the hospital, caused by the regional characters of the aboriginal areas. The implementation efficiency of these two tasks was up to 99%.

5. Implementation of the torch plan for the national new immigrants and the life adaptation guidance for the foreign spouses (National Immigration Agency of the Ministry of the Interior)

To elevate the ability of married immigrants to adapt to life in Taiwan, Guidelines for the Foreign and Chinese Spouses to fit in to the life were proclaimed on June 30, 2015, for which 22 rallies were convened from August to September 2015 with 500 beneficiaries.

6. Creation of a career-friendly environment to balance the responsibility between job and home care (Ministry of Labor)

To encourage employers to create a career-friendly environment to raise children, on 10 February 2015, the Labor ministry proclaimed the amended rules about Regulations on Subsidy and Standards for Establishing Breastfeeding (Breast Milk Collection) Room, Childcare Facilities and Measures, which included the offer of breastfeeding room for employees by the employers in the sponsored scope with a subsidy of NT\$20,000 (US\$625) as maximum. Such regulations were amended and proclaimed again on 8th June of the same year to increase the maximum subsidy to the children care measurement from NT\$300,000 (US\$9,375) to NT\$600,000 (US\$18,750).

7. Promotion of the professional zone for the rice production and sale, the group production zone of good quality tea and safe production and supply chain for good and stable fruit trees (Council of Agriculture)

For the promotion of organic agriculture, until September 2015, the dimension of the farms, which passed organic verification, totaled 6,333 hectares with 2,647 organic agricultural households. To guide the production, there were 17 installed group cultivation zones of organic agriculture with dimensions of 677 hectares and in coordination with the activation of the fallow farmlands and to reward the change of organic cultivation, multi measurements of award and guidance were available. To expand the marketing channels, 19 organic farmers' markets were established under the guidance. There were organic e-shops with participation of 152 ranches and installation of 103 organic stalls. The celebration of organic agricultural product sales and expositions were also available. The annual plan for the random inspection of agricultural product was set to strengthen the quality control of agricultural products and the random inspection of products in farms and markets.

IX. Education and Promotion Working Group

This working group was convened by the Department of the Information and Technology, Education of the Ministry of Education, whose major tasks are to increase the public knowledge and awareness of sustainable development, integrate government, civic, enterprise and school resources to promote sustainable development, strengthen related research and international cooperation and expand civic participation. Its achievements in 2015 can be referred as follows:

1. Increased the public knowledge and awareness of sustainable development

- (1) Offered the public information about the rich biodiversity in the land and sea of Taiwan through permanent expositions, temporary exhibitions, other press media and related educational activities; to promote the concept of environmental protection and to apply social educational resources to sustainable education and learning resources in different educational stages to promote the concept of sustainable development (Ministry of Education).
- (2) The Grade 1-9 Curriculum Guidelines include environmental education as a major issue and integrates it into different teaching fields for implementation. The course objectives include related knowledge on sustainable education and issues like global warming and climate change, to educate students to understand the knowledge behind environmental concepts, values and attitudes. (K-12 Education Administration of the Ministry of Education).
- (3) Made TV commercials, broadcast tapes, print, on-line and outdoor ads on issues related to the sustainable development of water resources such as water conservation, disaster prevention, flood prevention; to transmit the knowledge and concepts of the water resource protection through different channels (Water Resources Agency).
- (4) Elevated the concepts of corporate social responsibility and of green enterprise environmental education, to celebrate the seminar about the corporate social responsibility and to reward the enterprise owners for corporate social responsibility (Environmental Protection Administration).

- (5) Completed the 30-second promotional video, entitled "Save your own electricity-Saving Chapter" to convey to the public the concept that electricity conservation should start from oneself and each one should work hard for the next generation and to call the public to change the habit of using electricity, through a short film to actively implement the idea of saving one's own electricity. (Bureau of Energy).

2. Integrate a public, civic, enterprise and school resources to promote sustainable development

- (1) Sponsored the establishment of 2 regional centers on energy and technology education and 19 middle and elementary schools to promote energy and technology education and integrated the local county (city) governmental resources for the joint popularization of the energy and technology promotional plan (Ministry of Education).
- (2) Advanced public knowledge and valuation of water and soil resource conservation, 140 promotional workshops for water and soil conservation and 50 for the prevention of landslides were held in 2015 to strengthen the concept that water and soil preservation is the responsibility of all people; deepened the education of the water and soil conservation of the next generation and promoted and implemented the work of conserving the soil and water and preventing debris flow. (Council of Agriculture).

3. Carry out related research and international cooperation on the sustainable development

- (1) Implemented the subsidy plan for youth to take an international grand tour and to join the international (China included) voices and actions. The sponsored plans totaled 67 with participation of 7,949 persons (Youth Development Administration).
- (2) The sponsored popular science activities totaled 11 with participation of preschool children, students of different academic grades, adults and teachers, 3,300 persons in total. The scientific theme exposition, titled "See the screaming of the Earth" was open to the public without age limits, whose estimated participation was over 10,000 persons in 2015. (Ministry of Science and Technology).

4. Expanded civic participation to elevate civic environmental consciousness

- (1) There were 5 approved plans to promote culture in public and private museums for the disadvantaged, for habitants in the remote areas or areas which lacked cultural resources and for aborigines, which got subsidies in 2015. These were Kaohsiung Museum of Fine Arts, Kaohsiung Museum of Labor, Taiwan Paiwan Sculpture Museum of the Cultural Affairs Department of the Pingdong County Government, which held activities related to human resource training, exposition, promotion and education for aborigines, visual disabled or children from the remote areas. (Ministry of Culture).
- (2) The 2015 human rights seminar for preparing teachers was held to cultivate teachers with human rights knowledge and skills through keynote speeches, forums with victims and visits to historic human rights sites for them to integrate human rights with their teaching so that the people of Taiwan could face history honestly through the learning and implementation of human rights in real life. (Ministry of Culture).

- (3) Sponsored different associations or institutions for physically and mentally handicapped to implement the training plan of orientation and mobility, the supportive care plan for the disabled, occurring during the lifetime. Physical fitness activities for the physical and mentally disabled, talent shows and performances, zero obstacle webpage additions and correction and common activities. There were 501 sponsored cases up to the end of September 2015 with a sponsorship of NT\$ 15,360,000 (US\$480,000) (US\$1=NT32) (Social and Family Affairs Administration).
- (4) Sponsored local county (city) governments to implement subsidy plans for the promotion and restoration of aboriginal languages. In total, there were 105 families, learning the tribal languages; 35 missions, which taught the tribal languages to the next generations; 19 experience activities for immersion learning of the tribal languages; 14 preliminary and 1 national tribal language theater and vocabulary contests with 10,000 beneficiaries. (Council of Aboriginal Affairs).



▲ Cool school for the Water and Soil Conservation- “Secret Holidays for the Small Fish” , Activity to promote the knowledge and teaching material about the water and soil conservation



▲ Cool School for the Water and Soil Conservation- activity to promote the knowledge and teaching material about the water and soil conservation



▲ Educational Promotion about the Prevention of mudslides



▲ Seminar of the 115 Years in Retrospect of the Taiwan Soil Investigation and Application of the Agricultural Resource Database

Chapter 3 The 2015 International Forum on Sustainable Development



▲ Taichung First Senior High School's Centennial Celebration

I. Background

The Executive Yuan's National Council for Sustainable Development (hereafter referred to as NCSD) held its 2015 International Forum on Sustainable Development on November 4, 2015. The goals were to understand the latest prospects of international sustainable developmental policies, in order to gather multi-faceted suggestions from the different parts of society and to serve as a reference in promoting sustainable development in Taiwan. Academics and experts with remarkable achievements in sustainable development from North and South America, Europe, and Asia, representatives from Taiwan governmental agencies and the NCSD, as well as Taiwan's academics and experts were invited to undergo discussions and experience-exchanges, sharing with the participants the latest sustainable development topics.

The theme of the Forum included the visions and responses to global sustainable development after the United Nations Conference on Sustainable Development on September 25~27, 2015, and also the progress of green economies in different countries after the UN's Rio+20, and the current promotion status of Taiwan and global sustainable, resilient cities, etc. Dr. Shin-Cheng Yeh, Minister without Portfolio and NCSD CEO, gave the opening speech, with presentations on Sustainable Development Trends and Green Economy by Taiwanese and oversea lecturers as well as NCSD members. A Forum discussion was undertaken among the speakers and the audiences.

In the opening speech, Dr. Shin-Cheng Yeh mentioned that our government placed significant importance on pursuit of sustainable development, and had established the NCSD as early as in August 1997. To reinforce the implementation capabilities, the NCSD completed key documents such as the Energy Sustainability Policy Guideline, Sustainable Development Action Plan, Taiwan Declaration on Sustainable Development, and Taiwan Agenda 21, etc. to serve as the basis of promoting sustainable development.

Moreover, Taiwan is matching international progress to promote global sustainable development. For example, a delegation was assembled to participate in the United Nations Conference on Sustainable Development (Rio +20) in Rio de Janeiro, Brazil in June 2012. In November of the same year, the Green Energy Task Force was created in response, and NCSD members as well as experts were invited to draft Taiwan's Green Economy Policy Guideline. Last year (2014), UN's 68th General Assembly passed the Sustainable Development Goals (SDGs), and Taiwan has also begun to formulate our own sustainable development goals. Currently, each division has completed drafting the mid and long-term goals and targets. These will be put to comprehensive discussion in NCSD's 40th work meeting. The entire process will be finished before February next year (2016).

Sustainable development depends on corporate-participation, in order to let people understand the truth of sustainable development

many promotion programs on the topics "sustainable development policies" took place, including (1) a 3 minute TV advertisement on environmental sustainability, economic sustainability, and social sustainability, were broadcasted 100 times; (2) held the Sustainable Development International Forum; (3) praised successful sustainable development cases; (4) established a website for sustainable development information.

The International Forum, which focused on promotion of sustainable cities, would achieve the cooperative efforts between the central and local governments to implement the sustainable development in Taiwan.

II. Key Points of Each Lecture

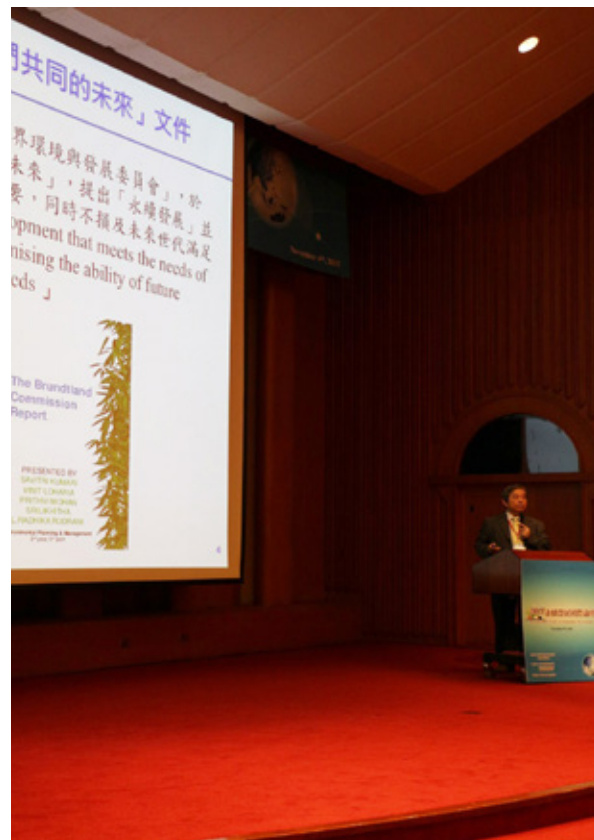
(1) Latest Trends in UN Sustainable Development

After the United Nations Conference on Sustainable Development, we invited Dr. Tetsuya Ishii and pointed out that UN's recently passed agenda for 2030 has 17 topics and more than 100 objectives. The purpose of sustainable development is to include every country in this cause, and therefore, it must be universal (applicable to all nations), transformational (social, economic, and environmental sustainable development), and inclusive (no one is excluded). The lectures focused on the execution of the SDGs and recommend synergistic, collaborative relationship among the goals to compensate for issues such as insufficient ability, poor management, and financial constraint, etc. To integrate different sectors, consolidating finances with politics in the international community will be critical. IGES actively pushed for Sustainable Development Solutions Network (SDSN) in Japan in July of this year. The next Asia-Pacific Sustainable Development International Forum will be hosted by IGES in July 2016. The tentative topic is Utilizing Knowledge for Sustainability: Facing 2030. They will invite all the experts from different nations to work together for Asia and the world's sustainable development.



▲ Mr. Tetsuya Ishii from Japan's IGES TIER's Dr. Yang, Feng-Shuo as the speakers on topics of global prospects and responses.

Dr. Feng-Shuo Yang's topic was UN 2030 Sustainable Development Agenda which elaborates on the agenda passed in UN General Assembly in September 2015. It mainly entails 3 objectives in the next 15 years (2015~2030) to eradicate extreme poverty, rectify injustice, and respond to climate change. The agenda has a large volume of discussion on setting SDGs and emphasizes the importance of global partnership. When promoting sustainable development, the relationship among people, Earth, prosperity, peace, and partners should be highlighted. Currently, the revision of Taiwan's sustainable development goals and quantifying indicators will be completed in February next year. The key will be including the Taiwanese version of Sustainable Development Agenda in the administration.



▲ TIER's Dr. Feng-Shuo Yang.

(2) Green Economy's Current State and Prospect

Advanced Energy Centre's General Manager Mr. Ron Dizey and Committee member Dr. Shaw, Daigee gave lectures in the morning's second session.

Speaking on the topic of Global Green Economy Promotion and Prospect, Mr. Ron Dizey talked about the most critical elements in green economy innovation, including policy and technical innovation, etc.

Mr. Ron Dizey compared California and Germany's green economy promotions and arrived at the most effective way to facilitate innovation, which are solutions via adjusting the key actors, construction ability, developmental policies, and adopting technologies. For instance, California Energy Commission first set goals for green economy and then raised innovative projects. However, the German green energy revolution not only buys solar energy with high pay rates, it also offers priority to be on the power grid. This places much solar energy on the power grid. Mr. Ron Dizey suggested green economy planning should begin with government policies, solution plans, and the ability to integrate new technologies to change. At the same time, market mechanisms should be respected to provide room for market development, not insisting on a single operating model but using holistic thinking to formulate solution plans.



▲ General Manager Ron Dizey of Canada's IGES

NCSD member Dr. Shaw, Daigee spoke on the topic Taiwan's Promotion of Green Economic Policies and shared several Taiwanese cases. For example, the solid waste reduction is 0.38 kg per day per person, the lowest in the world. Recycling began from 5% and rose to 55%. This is due to the mandatory extended producer responsibility system launched in 1987. This makes manufacturers and sellers responsible for recycling the waste generated by their products. The government also has a mandatory garbage sorting and recycling policy, recycling automobiles, electronic wastes

batteries, and light bulbs, etc. Moreover, garbage handling fee is levied along with collecting bags to achieve reduction and recycling. However, not every policy is a success. For example, to improve products' international competitiveness, increase foreign exchange reserves, help Taiwanese companies, and lower the cost of living, Taiwanese utilities and gasoline prices are lower than other countries, which is bad for energy saving.



▲ Council Members Dr. Shaw, Daigee

The past sustainable development policies were not successful because they neglected inter-generational inequality and over-emphasis on economic growth. Today's green economy is respecting Earth, inter-generational fairness, economic externality, improving quality of life, and sustainable lifestyle. The policy should cover humanity, society, institutions, nature, and other anthropic factors. Dr. Shaw, Daigee suggested that in terms of institutional capital, we need to create a mechanism that can protect the next generation's rights and facilitate the nation's finance. In terms of nature, producer's responsibilities are extended from cradle to cradle. In terms of society capital, we need to promote green consumption and production. In terms of human capital and innovation, we need to promote that enterprises' social responsibility requires a sound foundation for R&D.

(3) Sustainable Resilient City Cases

Delft University of Technology's Mr. Nico Tillie, Ms. Tsai, Ling-yi, Department of Environmental Protection's Assistant Commissioner, Taipei City Government and Ms. Wen-Mei Wang, City's Assistant Commissioner, New Taipei City Government, gave talks in the afternoon session.

Mr. Nico Tillie gave a talk on Rotterdam's Resilience and Sustainability. He introduced how the city planned flood prevention based on the resilience principle and managed water as a resource to improve parks, streets, buildings, and even traffic systems. He used various case studies

from Rotterdam and illustrated how these strategies were realized in city planning. In Rotterdam, energy's importance is only next to water, and the city used industrial waste heat to improve the city's energy efficiency. The databases from Rotterdam and other cities in the world are an important reference in the Dutch government's decision-making to improve the implementation result.



▲ Mr. Nico Tillie Speaking on Rotterdam's Resilience and Sustainability.

Assistant Commissioner, Ms. Ling-yi Tsai spoke on Promoting Taipei City as a Sustainable City, mainly highlighting the process of working with Central Government's carbon-reducing and energy-saving policy to build a brand new Taipei City. Since 2008, Taipei has set low carbon city as a goal and stipulated a variety of relevant regulations. Taipei City is now drafting regulations on light pollution and managing climate change to add another layer of protection to the city's sustainable development. Also, to make Taipei a safe, habitable city with flood prevention and eco-friendliness, parks are designed based on water conservation and flood detention. Water permeable pits, lawns, and pools are installed for water conservation. At the same time, they added water permeable pavement and soil water conservation to allow the city to breathe.



▼ Taipei City Department of Environmental Protection's Assistant Commissioner Ling-yi Tsai.

Assistant Commissioner, Ms. Wen-Mei Wang of New Taipei City's Department of Environmental Protection, lectured on the topic A Sustainable Low-Carbon New Taipei City to illustrate how to respond

the environmental impacts of global climate change, the city government promoted artificial wetlands for flood prevention, water-permeable city, and simplified urban renewal, etc. At the same time, five major strategies of green buildings, green transportations, green energy, resource recycling, and sustainable living environment are raised to promote sustainable development in New Taipei City, to achieve the ultimate goals of facilitating a green circulating economy, forge a low-carbon eco-friendly city, pursue a safe and happy society, and create a LOHAS environment.



▲ Assistant Commissioner Wen-Mei Wang Sharing New Taipei City's 5 Strategies for a Low-Carbon City.

(4) Experts' Forum

The finale was Experts' Forum on the theme of Sustainable Development Trends and Green Economy. The NCSD CEO, Dr. Shin-Cheng Yeh chaired with NCSD's 2 civilian members Dr. Jing-Tang Yang and Dr. Chien-Yuan Lin and 3 foreign speakers participating. Questions from the audience were accepted for direct exchange. This international forum was attended by government agencies, municipal and county representatives, research institutions, private organizations, and individual citizens, totaling 200 people. After its closing, related conference information and records were displayed on the website of National Council Sustainable Development for the public to visit.



▲ Experts' Forum in the 2015 International Forum on Sustainable Development

Chapter 4 The 2015 National Sustainable Development Award Winners

I. The 2015 National Sustainable Development Awards

The 2015 National Sustainable Development Award campaign was a 3-stage process: preliminary document review, field visits and assessments by the Committee's civilian members, and then the final objective appraisal by the entire Committee members, in that order. By this process, the 10 winners of 4 categories were recognized. They are: (1) 2 NGOs --the Community Empowering Society R.O.C. and the Garden of Hope Foundation; (2) 2 enterprises-- Taiwan Power Company's Dajia River HydroPower Plant and AU Optronics Corporation's Taichung Plant; (3) 3 educational institutions—New Taipei City's Chengfu Elementary School, Yomu Elementary School, and I-lan County's Suao Junior High School; (4) 3 sustainable development programs – the Council of Agriculture's Forest Protection and Forest Functions Promotion Program, Ministry of Transportation and Communications' Environment-Friendly Tourism Program, and the Bureau of Energy's Energy Efficiency Labeling Program.



▲ The 2015 National Sustainable Development Awards ceremony

II. Introductions to the Winners

1. Education

(1) Chengfu Elementary School

a. Introduction

Chengfu Elementary School is located in the Sansia valley, near a river and a mountain slope. This makes the groundwater level high, and water seepage, and dripping have been Chengfu's major problem. But teachers and students ingeniously applied ecological concepts and used the moist environment to create a campus wetland, developing wetland ecology courses, turning a major disadvantage into a big advantage.

b. Sustainable Development Promotion

In terms of campus environment and sustainable development, due to the high water retention, the campus ground was made into a natural eco-system. Beginning in 2005, they began to build a sustainable campus, and gradually replaced the hard pavement, making the campus green coverage increase from 33% to 70%, and water permeability from 36% to 88%. The campus became a habitat to conserve native species. Mountain native plants were imported from behind the school to construct a campus ecological corridor. Currently, there are 64 native tree and shrub species, 131 aquatic plant species, and four types of fish. They recorded an astonishing variety of wildlife. To realize carbon reduction and green living, 100% of school lights were replaced by high-efficiency energy-saving lights. A solar photovoltaic system capable of 3kw was set up. Water is now reused, and on average, the replacement rate was 10%. Waste reduction was also enforced, winning the New Taipei City Golden Bear certification for low-carbon campus.

Moreover, Chengfu continues to promote environmental education and publishes an environmental education magazine. Since its founding in 2005, the topics have covered environmental issues, exploring the campus and community environment, and environmental education achievements. They

also developed a diversified environmental education program, including food education courses.

Resources and experiences are shared and a Chengfu Pond blog was created to present observations and self-made teaching materials by teachers and students, for the entire nation's teachers to use. The website visitors have exceeded 600,000, winning first prize in the Ministry of Education's 2009 Teacher Education Blogs Competition. Chengfu also has a longterm involvement with Campus Noah's Ark, transforming Chengfu into a restoration base for native aquatic plants and freshwater fish resource center. New Taipei City has provided more than one hundred schools with native species to create a suitable campus habitat. Chengfu Wetland Workshop is a teaching community. In addition to jointly building Chengfu into an educational venue, it actively organizes training of teachers in the entire city, so they can grow professionally.

c. Vision for Future Development

Making the best use of the existing natural environment to create an "ecological corridor" is the core concept of Chengfu Elementary School. The school, through community organizations, breaks through the traditional closed campus environment and standardized management and integrates school and community to create waste reduction and an eco-friendly environment to make the campus a public learning space for sustainable development. They are filled with gratitude to their predecessors in education and NGOs' professional guidance and companionship.

The prize winner are filled with gratitude to their predecessors in education and for NGO professional guidance and companionship. They are also grateful to school team members, parents, and school children for the support and encouragement. Chengfu will continue to uphold the respectful and friendly coexistence with the natural campus concept of sustainable development.

▼ Just Do It!



(2) Youmu Elementary School

a. Introduction

Youmu Elementary School focuses on environmental education and sustainable development as the goal. Through analysis of the rich environment and community resources, it consolidates teachers' professional development by integrating inquiry teaching, outdoor education, experiential teaching, hands-on learning, and other innovative teaching methods to teach students. From the firefly and butterfly corridor to the forests and fields, wetland education, and from river ecology to stream education to aquaponics, they try to have the children experience the environment through the five senses for better learning, planting the seeds of a sustainable environment and ecology in the next generation.

b. Sustainable Development Promotion

Possessing waterfront, mountain, starlight, and rich ecology, Youmu combines natural ecology, local industry, and cultural knowledge to create special courses through policy development and space management. They strive for environmental education and sustainable development. Through professional community discussion, Youmu teachers and students do their best to develop this place, working for sustainable environmental education work and having concrete results.

In terms of campus environmental policy and management, between 2008~2010, it won the Ministry of Education's Excellent Specialty School; in 2012, it won the Ministry of Education Excellence Gold Medal; between 2012~2014, Chengfu won for three consecutive years the Ministry of Education's Featured Benchmark School for Consolidating Spatial Resources; in 2014, it was listed as the Ministry of Education's Outdoor Education Star School. Beginning in 2001, Chengfu has been a firefly and butterfly caring school, etc. as recognition of the school's effort.

Environmental construction, formation of the environmental education professional community, and community resources together forge a quality environmental curriculum, with many interesting courses.

In addition, the school is committed to sustainable humanistic care and community involvement. First, it partners with The Can and uses environmental resources to care for the underprivileged. Second, it partners with communities to build safety maps, potential hazard maps, and regional disaster shelters. It also has a campus open 24 hours to ensure the safety of the public and to provide a community gathering venue. Third, it implemented garbage reduction, and rainwater, leftover food, and resource recycling. Solar power, water-saving valves, eco-tableware, and aquaponics are highlighted to plant the seeds for a sustainable environment.

In promoting the developmental integration of community environment, economy, and society, the school partnered with the community to develop sustainable environmental courses. Four sets of courses are available that allow school exchanges, field trips, etc. On weekdays, the school is where students learn. On weekends, it is available for rent. The profit supports the school's sustainable development, creating a win-win situation.

c. Vision for Future Development

The school hopes to create a humanistic, caring, warm, quality environment, promote community parents' participation, import and fully use resources to educate, and follow international standards. They hope to create a forest school, with the visions of health, vitality, innovation, and excellence.

They are grateful to have this award, and winning it is a recognition of Youmu's long-term effort in sustainable management. It also provides them with the opportunity to continue to learn and grow. A sustainable future will be like a teacher, allowing us to learn from earth. Teachers and students work together to create a sharing, learning environment. The Youmu family will continue to safeguard the environment and promote sustainability.

(3) Suao Junior High School

a. Introduction

Suao Junior High School in recent years has had good results in energy, environment, daily life, sustainable campus, disaster prevention, and adult education. The school aims to promote environmental education to the entire county, from the development of curriculum and teaching modules, to building school facilities in order to become a model school.

b. Sustainable Development Promotion

The school team is committed to the integration of resources and curricula in different areas, having professional teachers plan for teachers' and students' professional growth. They also carry out advocacy programs promoting llan local characteristics. The objectives include: 1. Integration of the county (school) administrative and teaching resources, together shaping life education as the core of local cultural education. 2. They use formal and informal curricula, as well as potential courses to help students explore and recognize the environment where they grow up. 3. They reinforce the county (school) teachers and students to pay attention to the recognition and services that endow them with related



▲ Successful firefly restoration increases their numbers every year.



▲ Dialogue for self-organizing the county's Warriors of Life speaking tour (2013~2015)

beliefs. 4. They strengthen society's approval of the school's visions via local education resource consolidation. 5. They reinforce interdisciplinary and innovative approaches to improve educational exchanges with international practices and experiences.

The school was awarded the National School Management and Teaching Innovation KDP International Certificate of Excellence. In addition, it won the Ministry of Education's Life Education Specialty School, the Council of Agriculture's Soil and Water Conservation School, the Ministry of Economic Affairs' Energy Education Excellence School, the National Award for Excellence in Environmental Education, the Ministry of Education's Disaster Education Excellence, the Ministry of Education's 111 School Certification, the Sixth Taiwan Healthy City Award, as well as other awards.

c. Vision for Future Development

Forging Suao's own life education has been a key vision of Suao Junior High School. Every member of the school strives to have a sustainable campus to create vitality in the curriculum, bring out the vitality in the students' learning, and use renewable resources and system integration models to combine environmental, art, life, science, and health education. We thank the judges for the encouragement of our participation in the future and the continuing developmental program's planning and implementation. We will take the initiative to promote the vitality of Ilan County as the focus of school education.



▲ Dialogue with others for organizing service learning and teamwork



▲ Dialogue with future - organizing the Dream Project (to realize others' dreams, and also their own dreams)



▲ Dialogue with home - organizing the county's environmental exploration activities (group explorers discovering hometown and exploring nature)

2. Business Category

(1) Taiwan Power Co., Ltd. - Dajia River Hydro Power Plant

a. Introduction

For almost 100 years, the Dajia Hydro Power Plant has been improving water use efficiency through regulating reservoir water levels; in addition, the plant is an important electricity supply control and an emergency operating reserve of electrical power. After many devastating earthquakes, typhoons, and floods, Dajia Hydro Plant understands better the symbiotic nature between water and electric power. Thus, to be in harmony with nature, an eco-friendly power plant is developed.

b. Sustainable Development Promotion

To meet international standards, the Dajia Hydro Power Plant obtained ISO 9001 (quality), 14001 (environment), and OHSAS 18001/TOSHMS (occupational safety and health) certifications in 1999, 2008, and 2010, respectively. It was also the first to introduce the GHG inventory system to Taipower and GHG management systems to control greenhouse gas emissions. Moreover, the plant obtained ISO 14046 certification in 2015; in 2014, a water footprint inventory work was certified by a third-party agency. It is Taiwan Power Company's first power plant to be certified by ISO water footprint standard.

Dajia Hydro Power Plant works in concert with government's promotion of green procurement and implements an environmental accounting system in all levels to reduce the purchase and usage impacts on the environment. It also recognizes and compiles the expenditure and profit statistics from operations in industrial safety, environmental protection, and health care. In recent years, their green procurement has reached new heights (2013 up to 96.81%, 2014 up to 99.8%). Expenditures on environmental protection, industrial safety, and health care are NT\$70 million higher than in recent years.

The Dajia River Hydro Power Plant continues to undergo reservoir dredging works, on average removing 420,000 cubic meters per

year. It also conducts hydraulic sand discharge in typhoon or flood seasons. In 2014~2015, Deji Reservoir discharged a total of one million cubic meters of sand, effectively reducing carbon emissions from mechanical dredging and saving the Taiwanese Treasury up to NT\$1.5 billion. This is very beneficial to the sustainable usage of the reservoir, downstream sand source replenishment, and the ecological food chain. To achieve waste reduction, it is committed to improving the industrial waste recycling rate to nearly 100%. Driftwood and scraps in the reservoir area are also recycled mushroom nurturing and landscaping materials.

In 2012-2014, the company generated power totaled 5.711 billion kWh, equivalent to about 2.45 million tons of coals combusted. That reduced approximately 5.87 million tons of GHG emissions, a significant contribution to carbon reduction. In addition, it introduced gender mainstreaming, and hires a certain percentage of aborigines and disabled people in support of their rights.

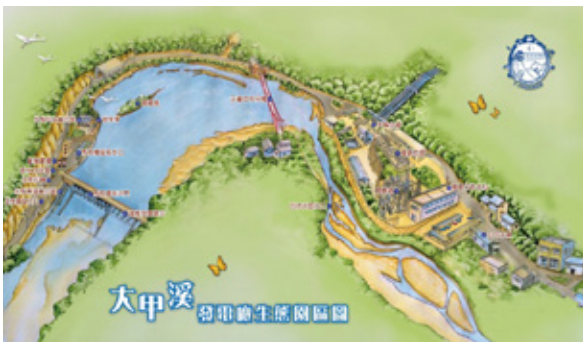
Thinking outside the traditional box, the company completed the restoration work at Guguan and Chingshan Hydro Power Plants while taking into consideration climate adaptation, natural environment, and social benefits. The Guguan Plant, in particular, was recognized with the Infrastructure Gold Award by the Taiwanese government. Dajia River Hydro Power Plant staff actively researched hydrological data over the years, which are then interpreted along with information released from the Central Weather Bureau. The aim is to effectively and instantly regulate the water level and reservoir capacity to reduce disasters and to increase generating volume. But this also allowed Taichung City to avoid severe water shortage in 2015 in a once-every-68-years drought. Hydro power generators are capable of being rapidly engaged and disengaged.

They also can recover from complete blackouts and provide other auxiliary services. They provide guarantees to maintain power system stability, and meeting the demands of national defense, medical care, disaster rescue, and other critical functions.

The establishment of Dajia River Ecological Park extends ecological corridors upstream. The enterprise drives ecological tourism and combines forestry, water resources, and power technology to begin a new era. This stimulates local economies, inspires cultural heritage, and promotes environmental education as well as corporate social responsibility.

c. Vision for Future Development

Taipower and its Dajia Hydro Power Plant are grateful for the recognition and support which reinforced their core belief that integration of science and technology drive local economies and culture. They believe this award will encourage Taiwan Power Company to grow and strive for excellence, but it will also better encourage other companies to accept their social responsibilities and be good examples for future generations. They hope this power plant will become the greatest legacy of the country's power generation.



▲ Taiwan Power Company's Dajia River Ecological Park

(2) AU Optronics Corp. - Taichung Plant

a. Introduction

As the world's leading TFT-LCD panel manufacturing company, AUO is not only committed to product innovation, but also to the core values of the three pillars enthusiastic service, pursuit of excellence, caring for society by implementing sustainable development. Because the effort to balance between economic, environmental, and social developments, earnings grew 324.7% between 2014 and 2013, and the company received from Taiwan Stock Exchange top 5% ranking in business management. In addition, it received recognition from the outside and had been chosen for Dow Jones Sustainability Index World (DJSI World Index) for six consecutive years, and as the top ranked in three years for the same group. Moreover, their energy-saving panel, high-resolution (4K2K) curved television technologies and patents (Ocean Tomo 300® Patent Index _2013 / 2014) reinforce their technology leadership.

b. Sustainable Development Promotion

AU Optronics has imported in its plants ISO14001 and OHSAS18001. Moreover, in 2011, it was the first to introduce an energy management platform, and became the world's first company awarded with ISO 50001 energy management system certification. It self-developed the ISO 50001 electronic platform for energy management systems, with the total energy savings from 86 degrees / m² down to 77.2 degrees / m² (2010 ~ 2014), an improvement of 10%. Since 2003, they have begun an annual greenhouse gas inventory, and imported ISO 14064-1 third party certification in 2005, so the eco-efficiency indicators can be tracked and properly managed. The installation rate of active removal equipment for substances with high potential of greenhouse emissions is 100%. Total fluorine-based greenhouse gas reduction over the years is 10.6 million tons, of which Taichung Plant reduced about 6.25 million tons. Furthermore, the Taichung Plant won the National Occupational Safety and Health

Award, a prize for good water conservation, recognizing efforts in occupational safety and environmental protection.

In 2014, AUO was certified by LEED Gold certification, and its rooftop solar power plant course was certified by the Environmental Protection Administration, becoming the best demonstration site for energy-saving greenbuildings and renewable energy. Since 2011, it partnered with Taichung Focus Junior High School and designed a series of environmental education curricula for grade school students, bringing the concept of sustainable homes to school children through puzzles and games.

AUO actively involves in innovative energy, building a large solar power plant that is by far the best in Taichung City. Its excellent power efficiency and maintenance and operation quality won the 2015 Light Duo Award 2015.

In humanistic cultivation, AUO revolves around developing smart but decent person, caring for public interests, and loving green earth as its corporate social responsibilities.

In humanistic cultivation, AUO revolves around developing smart but decent people, caring for public interests, and loving the green

earth as its corporate social responsibilities.

In addition to the existing volunteer service, the Smart but Decent Person Scholarships, and support for Taiwan's agricultural products, it also preserved the West Dadun Kiln on the culture and education side, incorporating environmental education curricula to create an important bridge to a sustainable home.

Beginning in November 2014, AUO reduced the work hours from the legally defined 84 hours per two weeks to 80 hours. It is the first manufacturing company in Taiwan to do so. Beginning in 2008, it actively hires mentally or physically challenged employees, taking into consideration all the barriers to colleagues with different needs.

c. Vision for Future Development

They are grateful for this recognition. AU Optronics has its own sustainable committee, and Chairman Peng pointed out that AUO will become an excellent sustainable business. In accordance with AUO's core values enthusiastic service, pursuit of excellence, and caring for society to achieve an innovative yet graceful future. Winning this award enables AU Optronics to become a Taiwanese industrial leader towards sustainable development.



▲ AUO's Innovative Solar Power Plant

3.The NGO Category

(1) Community Empowering Society R.O.C

a. Introduction

Community Empowering Society R.O.C was established in October 1985, based on the rationale of making our society sustainable by reforming the grassroots. This NGO is deeply supportive, has participated in community development, and is a driving force behind community empowerment around Taiwan. After central Taiwan's 921 Earthquake in 1999, the core value of this NGO has been increasingly significant.

b. Sustainable Development Promotion

Community Empowering Society is now reaching its 20th year. During this period, the momentum to empowerment has accumulated in Taiwan's society. This momentum has triggered social innovation, networking, mutual trust, and cooperation among the communities to solve environmental and social issues, as well as to create new social culture.

In the past two decades, the NGO's specific achievements include:

(1) Focusing on sustainable growth and developing community citizenship, so that people have the ability to participate in public affairs.

(2) Sustainable community-based organizations to raise community awareness, mobilization, resourcing, and organizing assemblies.

(3) Creating a sustainable environmental culture, change the shortcomings to strengths and opportunities.

(4) Promoting governmental sustainable policies, clarifying the policy of partnership between public and private sectors and the partnership's nature, creating a trusting relationship, and guiding the community to adapt to the latest trends.

Moreover, the NGO has started constructing a sustainable mechanism with Taipei Community Center as a home base to develop the next phase of community models. They promote community building, including community relations and issues to assist nearby communities. They also conduct international exchanges, increasing the quality and frequency to improve international visibility. They also conduct international exchanges, increasing quality and frequency to improve international visibility. The NGO also publishes many books on sustainable society.

c. Vision for Future Development

The NGO hopes to work hard for this land in the future, allowing Taiwan to become a home for sustainable living. Community Empowering Society winning the National Sustainable Development Award is not only an affirmation for the two decades but also the highest recognition of their efforts and intentions. Moreover, it is more important that this encouragement creates momentum in promoting community works. The Society is a non-profit organization, with perhaps more flexibility and credibility than the public sector or for-profit companies as an exchange platform for people's everyday living, environment, productivity, and public institutions. They will focus more on using community development to make Taiwan a great home for all residents.



▲ Community building is a gentle and sustainable social reform movement

(2) The Garden of Hope Foundation

a. Introduction

The Garden of Hope was established in 1986 in Taiwan by a group of Christian missionaries and Taiwanese Christians. Its original purpose was to create a halfway shelter to protect abused females. In 1988, the Taipei Garden of Hope Foundation was established as a social welfare foundation. In 1990, it was upgraded and officially registered as a nationwide social welfare institute. In the spirit of Christ, the Foundation pursues righteousness and love with the determination and courage to stop sexual abuse and domestic violence.

b. Sustainable Development Promotion

The NGO believes in both service and promotion, and changed the strategy from assisting victims to promoting reforming structural problems via services as well as legislative initiatives. In 2007, they pushed for amending the Domestic Violence Prevention Act; in 2008, they discovered flaws in regulating sexually abusive video games. In 2009, they pushed the government to add victim compensation in the Crime Victim's Protection Act. In the same year, they initiated to amend the Family Law of the Civil Code and the Offenses of Abandonment Articles in the Criminal Code; all of the amended chapters were passed by the Legislative Yuan in 2010.

The Garden of Hope Foundation expects to end all violence and create gender-equality in our society. It organized various activities and performances. Being with the victims throughout the process, Garden of Hope realized perhaps victims' inner voice is best to be their own, so the NGO leads them to tell their stories to audiences from a stage. So, Garden of Hope established several drama troupes and publications to help victims to become independent.

On the other hand, the NGO believes providing only shelter, financial assistance, and counseling for disadvantaged females is not enough. For the long run, it is necessary to educate and train them to have the capabilities to survive independently. The Garden of Hope Foundation has continuously tried to coordinate public and private sector resources to develop career exploration and employment programs for females. It has been

estimated that more than NT\$ 30 million worth of wages have been created from assistance to females obtaining employment or starting a business, which reduces social welfare dependence and creates a win-win situation.

The Garden of Hope Foundation, in addition to their work in Taiwan, also tries to better the world. Taiwan is not a big place, but it continues to care for the world's marginalized people using Taiwan's own experiences. The 2015 Geneva international ranking of the top global 500 NGOs has Garden of Hope Foundation at the 16th place.

Time	International Development
2004	New York branch established
2010	Set up Daughters'Home in Cambodia
2012	Set up service programs in South Africa
2012	Asian girls' human rights movement and network
2013	Respond to the international antiviolence OBR campaign
2013	Asian Females resettlement network

c. Vision for Future Development

Following the first award in 2005, the NGO is honored 10 years later. This is a great recognition for the Garden of Hope, and also inspires more motivation. The NGO expects and calls for greater involvement by civilians in public affairs. The NGO believes our society needs a collective effort to maximize their impact, create an environment for justice, and achieve their public service mission to help social progress. Garden of Hope will not be absent in this process. It will not be easy, but Garden of Hope will continue to do its best in the next stage.



▲ The 2015 Taiwanese Girls and Japanese Girls United

4. The Action Plan Category

(1) The Council of Agriculture's Forest Protection and Function Maximization Action Plan

a. Introduction

State-owned forest area under the Forestry Bureau is over 1.534 million hectares, and it contains abundant and precious flora and fauna. Thus, it has become the target of certain thieves, the so-called mountain rats. Responsibilities of the Forest Bureau are to fight against illegal logging to prevent the destruction of the forest environment, safeguard public interests served by forests, manage forests sustainably, and comply with international treaties. In 2007, the Forest Bureau's Forest Management Division created eight forest patrol teams to survey specific areas at random, implement and reinforce forest patrol, and investigate ecological conservation of resources, etc. to reinforce forest protection.

b. Sustainable Development Promotion

The forest Bureau currently has 927 rangers protecting and patrolling state-owned forest land. On average, each person patrols an area of 1,769 hectares. Between 2012~2014, 302 forest patrols had been conducted for inventory work. Mountain trips usually last 5 to 7 days, and the total number of participating rangers is 2,698. Each year, the length traversed by walking during patrols reached 8 times the length of National Highway No.1, more effectively protecting state-owned forest resources. The Bureau reviews detailed records of investigations on precious wood, and animal and plant resources from the patrols. This provides dynamic information on managing forests. Long-term monitoring allows research by academic institutions, and it can also be a reference in making business decisions to meet sustainable development purposes.

Prosecutors and police started cracking major forestry-related cases and seizing stolen goods to protect national forest resources. In 2014, 235 cases of forestry-related thefts were brought to justice. 233 suspects and

their stolen goods were caught red-handed in 140 cases. Compared to the 290 cases in 2012, the reduction is significant. Since 2012, the numbers of cases and suspects both have declined for two consecutive years, indicating an effective curbing effect.

Between 2012~2014, 64 man-made forests were surveyed, mainly for sampling, the status of forest growth, and whether there is pest infestation. With increasing investigations each year, afforestation area's tree growth data have been recorded. They also surveyed the island's different forest types and altitudes of forest permanent plots, to understand the current situation of growth and decline in forest areas. Between 2012~2014, 51 permanent plots were reviewed, and the results help in understanding the forest permanent plots.

In 2012~2014, 33 communities and tribes participated in the Communities Reinforcing Forest Protection Program. They used public participation and increasing employment opportunities for mountain residents to implement forest protection. They then signed an MOU (Memorandum of Understanding) with mountaineering groups, so that the mountaineering community can assist in reporting forestry thefts, suspicious people entering and exiting state-owned forest land, and incidents involving mountain trails or facility damage, etc.

Through a variety of promotions and activities, illegal logging and forest fire prevention is publicized. They encourage people to take the initiative to inform the authorities, and at the same time, create emergency response measures for comprehensive protection of forest resources. Articles 50 and 52 of the Forest Law were amended and raised criminal liability to effectively curb forest thefts and other illegal acts.

c. Vision for Future Development

The Bureau hopes that everyone recognizes the importance of forests to our lifestyle. The forest Bureau promises sustainable management for Taiwanese forests, so that our children and grandchildren can continue to enjoy this precious asset.

They are grateful for the assistance of Lijia Community Development Association. Their kind intentions and identifying with the conservation of forest resources made the work all the more meaningful. The National Commission on Sustainable Development would also like to thank the National Council for Sustainable Development for this recognition. The Forest Bureau will continue the effort to safeguard Taiwan's forest resources.



▲ Team members taking risks to cross landslides

(2) Tourism Bureau's Friendly Tourism Environment Construction Plan

a. Introduction

The North Coast and Guanyinshan National Scenic Area are well known for its local culture, ecology, geology, and coastal landscape with a unique Taiwanese charm. It has long been a famous tourist spot. It has abundant and diverse natural resources and landscapes, but the earlier over-exploitation caused many adverse effects. The North Coast and Guanyinshan National Scenic

Area Administration first removed excessive cosmetic artificial facilities to restore the natural landscape and then planned according to the local distinctness and communicating sustainable concepts. After 13 years of hard work, the Bureau is showcasing stunning landscapes, while building up local tourism and conservation, as well as facilitating local economic development.

b. Sustainable Development Promotion

When building the infrastructure, they adopted the principle of minimizing facilities and prioritizing environment to develop a continuous view of the sea. This creates the most unique waterfront district coffee shop in northern Taiwan by allowing the core landscape area to completely revert back to the natural look. The total demolition number for illegal buildings and advertisement constructions were 377 spots, transforming 20 scenic spots, removing 150 utility poles, and creating about 15 hectares of scenic green landscape.

The Bureau proposed the innovative I Love Clean Beach campaign to bring public and private tourists into public service, in addition to cleaning up the beach, people can also understand marine litter comes from improper garbage disposal. They invited civilian community groups and associations to call for public participation in beach cleaning, so that more people can experience a sense of fulfillment doing public service. In 2014, private citizen groups cleaned beaches 265 times, with 15,514 people. This saved public funding on cleaning up beach trash, and helped regular maintenance of a clean coastal environment.

They used the unique environmental characteristics to promote environmental education certification and reinforce environmental education. Yehliu Geopark was certified for environmental education in November 2012, becoming the first certified National Scenic Area.



- ▲ Combining local communities to maintain the highest quality in environment and landscape, and offering visitors the best tourism environment

They combined rescue groups and local communities, and based on the safety and average personal finances, they planned safe areas for water activities. They also promoted a barrier-free tourism environment and provided security for disabled people with friendly services. Yehliu Geopark Handicap-Accessible Trail, Guanyinshan Trail, Samji Trail have all been completed. The one-day handicapaccessible trip to Baishawan is the first demonstration route in Taiwan.

To encourage public participation, when the Bureau is building infrastructure, they conduct local briefings and full communication and coordination with local residents to solicit opinions from all sides, and develop the tourism industry.

They expanded the depth and breadth of tourism marketing, provided accurate information for the news media, intermittently issue press release on the Tourism Bureau and related websites, as well as making posters, etc. to strengthen the marketing and publicity.

c. Vision of Future Development

The word persistence describes perfectly their effort throughout the years. After many years, they finally won over the local residents and visitors. They would like to thank the National Council for Sustainable Development and judges for the encouragement and

affirmation. They will not forget their original intention, pursuing the sustainable tourism development core values.

(3) Ministry of Economic Affairs' Bureau of Energy

Creating a highly efficient, high-performance power consumption environment - Energy Efficiency Rating Product Labeling Program.

a. Introduction

The Bureau of Energy promotes an energy efficiency rating label, mainly to reveal product information on energy efficiency, providing a simple way to identify efficiency ratings, and give people a reference when purchasing. It provides a creative integration service to ensure the public's right to know and the right to information, creates market incentives to encourage people to buy green. Manufacturers are also actively involved in the production of high efficiency products, forming a benign cycle and lowering the use of electricity.

b. Sustainable Development Promotion

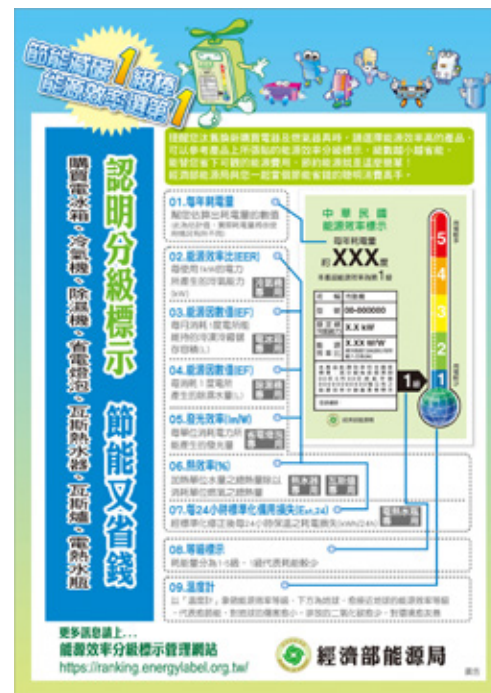
The Bureau of Energy has successfully promoted an energy efficiency grading system for 10 product categories. The promotion of this system also puts Taiwan's energy efficiency management policy on pace with international standards. Air-conditioner and refrigerator

energy efficiency standards are even above and beyond international levels. In terms of 3.6kW air-conditioners, the average energy efficiency ratio increased from 2010's 3.14 to 2014's 4.02, significantly enhancing the energy efficiency by 28%. For 500~600 L refrigerators, the average value of energy efficiency EF increased from 2010's 11.7 to 2014's 19.06, a 63% improvement.

Level 1, 2 air conditioners comprised 32.3% of the market share in 2010. This increased to 64.1% after 2012's energy-saving subsidy measures. In 2014, the growth continued to 71.9%. Level 1,2 refrigerators comprised 18.3% of the market share in 2010, and increased to 48.2% after the 2012 subsidy measures. All these demonstrate that promoting energy efficiency rating labels effectively encourages companies to invest in R & D, and produce high-efficiency models. This is a huge market structural change for energy efficiency.

For the past three years, residents of the five metropolises were surveyed on the energy efficiency rating label awareness. In 2012, the public awareness was 47.6%, and in 2013, it was 54.2%. In 2014, the awareness has reached 63.5%, showing a trend of gradual improvement. The energy efficiency rating labeling system promotion comes from the government, industry, and the public. The manufacturers are an important partner. In all stages, coordination mechanisms among industry chain upstream components and raw material suppliers, midstream manufacturers, and downstream distributors were established via stakeholder meetings. This can achieve the purpose of enhancing product energy efficiency, and utilize the existing industry to create a win-win situation. This program can be said to be the government establishing a public-private partnership model.

Revolving around the theme Efficiency Rating, Energy Upgrade, and Happiness Leap, they participated in the 7th Executive Yuan Government Services Quality Award, and were awarded by Vice-President Wu in June 2015.



▲ Energy efficiency rating label awareness among residents in five metropolises



▲ Setting an example for public-private partnership model

c. Vision and Award Acceptance Speech

Taiwan has insufficient natural resources, with limited environment capacity; we are very honored to stand out in the action plan category for sustainable development. In addition to thanking the judges, Bureau of Energy will continue to uphold the original intention of supporting sustainable energy policy. There are only limited resources, and we must use them with efficiency. We also must have development of environmentally friendly clean energy and ensure the continued stability of energy supply to create win-win scenario for intergenerational energy, environment, and economy.

Chapter 5 Interviews with the Non-Government Members of the NCSD



Biodiversity Is a Core concern of Future Sustainable Development

An Interview with Committee Member Ling-Ling Lee



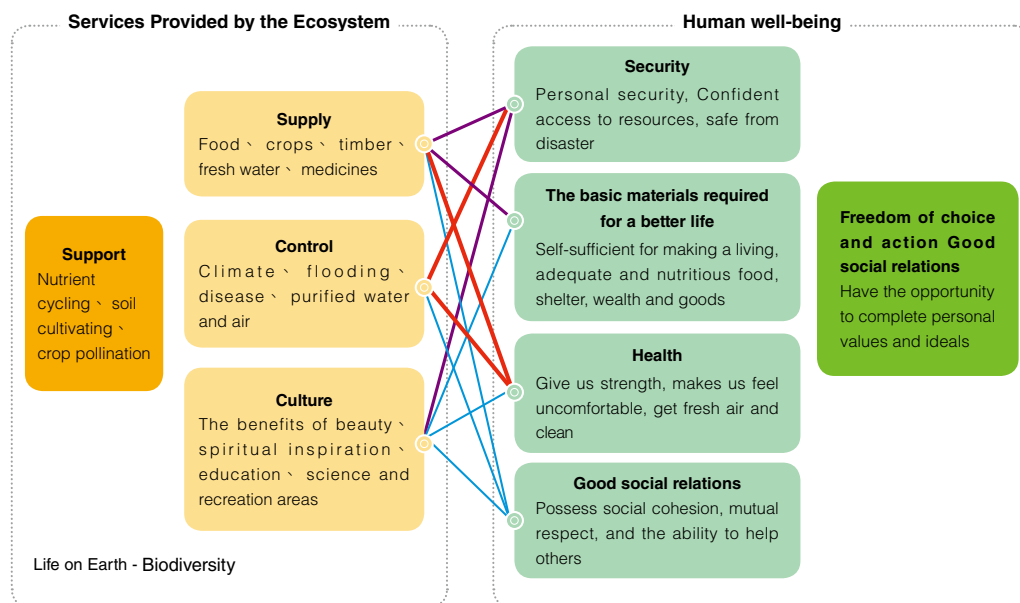
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Biodiversity refers to all forms of life on Earth, including wild plants and animals on land and in oceans, microorganisms, human farmed crops and domestic animals, as well as the genes and various eco-systems. It includes virtually everything. Professor Lee at NTU has been studying and promoting biodiversity for many years. She currently is also the director of NTU Biodiversity Research Center and has served as a member on the Committee of the National Council for Sustainable Development for many years. In the following interview, Dr. Lee briefly explained the relationship between biodiversity and human welfare as well as sustainable development, and raised suggestions for Taiwan's sustainable development.

Biodiversity and Sustainable Development Are Closely Related

The relationship between biodiversity and sustainable development gained more attention in 1992. In June of that year, a very important UN Conference on Environment and Development (aka Earth Summit) was convened in Rio de Janeiro.

During its sessions, the Framework Convention on Climate Change, the Convention on Biological Diversity, and Convention to Combat Desertification were available for the leaders from over 100 countries to sign. Moreover, the Rio Declaration on Environment and Development, Agenda 21, Forest Principles were released. In December of that year, the UN General Assembly created the Commission on Sustainable Development to supervise and follow up on the progress of the



▲ UN's Millennium Ecosystem Assessment (MEA) Organizes the Various Ecosystem Services Provided by Biodiversity and the Relationship to Human Welfare

Earth Summit, set policy guidelines, and facilitate dialogue among sustainable development partners. Since then, in the committee's subsequent meetings, through the United Nations Conference on Sustainable Development, Rio+20, and up to the UN Sustainable Development Summit soon to be held in September 2015, biodiversity's current state and future trends are a major concern and topic in sustainable development.

Biodiversity affects our everyday lives, from the raw materials required to ecosystem services, including photosynthesis, soil and water conservation, to coastal protection and reducing tsunami impacts (coral reef, mangrove), etc. Our welfare relies on biodiversity. However, global biodiversity is suffering from major threats: gene loss, species extinction, and ecosystems are increasingly deteriorating. This is very bad for sustainable development. So, the three goals of the Convention on Biological Diversity are conserving biodiversity, sustainable use of biodiversity, and fair and reasonable sharing of hereditary resources. We hope to reverse the continuing loss of biodiversity through international cooperation because once ecosystems deteriorate beyond the tipping point, the collapse will be very rapid and irreversible. This will severely impact human existence.

Biodiversity Is One of the UN's Sustainable Development Goals

The UN has been promoting sustainable development for over 20 years and has set 8 Millennium Development Goals (MDGs) in 2000. These goals' achievement will come to a hiatus in 2015. In their place will be the 17 sustainable development goals (SDGs) that are currently being drafted. They are mostly related to biodiversity. Biodiversity can contribute greatly to eradicating poverty and hunger, ensuring health, quality of life, and facing future uncertainty. All are to be achieved by SDGs. They are also important in responding to future climate change. However, how to convert these goals into concrete national policies is still to be seen. Take Taiwan as an example. Taiwan's river widths and curvatures are the result of original geological and geographic reasons. However, for human convenience, river courses are straightened, causing erosion and requiring maintenance periodically. This greatly increases the cost, damages original natural patterns, and generates more environment and social problems. Using water resources as an example, judging from the current trend of climate change, everyday water use, industrial water use, irrigation water use not

only cannot increase infinitely but actually can be lower or fluctuate drastically. How do we respond to water supply decrease? How to understand water resource's capacity to reasonably deploy water resources? All these should have comprehensive, long-term planning and be specifically dealt with in relevant policies.

Continuously Implemented via Government Planning

The Biodiversity Division is one of the 9 divisions in the Sustainable Development Committee. The division's biodiversity promotion is based on the Convention on Biological Diversity. That convention revises its policy goals on a rolling basis every 10 years based on past results. The Biodiversity Division also refers to the strategies and goals appropriately and at the same time takes consideration of Taiwan's promotion planning specifics to review if any reinforcement is necessary. If any area needs to be reinforced, an updated action plan will be included. Although the Convention on Biological Diversity is like the Framework Convention on Climate Change with 196 contracting parties, it has not been deemed as a priority treaty by the Executive Yuan and has received far less attention than the Framework Convention on Climate Change. Even so, with the Council of Agriculture as the convener, the Forestry Bureau as the secretary and coordinator, and promotion by the 22 relevant ministries, biodiversity related work still has had considerable progress, including connecting the various conservation areas to create a conservation corridor in the Central Mountain Range and continue to increase the number and area of various marine and land conservation areas, protecting important habitats and natural resources. Moreover, before the passing of the Wetland Conservation Act, programs are first promoted based on biodiversity and then the Ministry of Interior uses existing regional planning regulations and invites all experts to organize relevant information to confirm Taiwan's important wetlands. This helps Taiwanese people understand key wetlands. After the Wetland Conservation Act passed, the formal regulations, and competent authorities can plan for subsequent managing and operating businesses on a rolling basis. If the Biodiversity Promotion Plan did not include this matter, then wetland conservation will be delayed and the preservable wetlands are naturally limited.

Learning from Advanced Nations' Planning for Sustainable Development

The international solution for global issues is usually first to allow for sufficient discussion. The participants may raise very different views from different angles. Therefore, negotiation is needed to reach consensus, conclusion, and then set objectives that suit conclusions and the strategies to be carried out. Moreover, during execution, repeatedly reviewing results and execution policies as well as the propriety of methods are necessary. Proper adjustment, and revisions are also needed for smooth success. This type of process, with sufficient discussion, debate and negotiation to reach consensus, as well as the rolling adjustment of strategies are worthy of Taiwan to learn from.

The Sustainable Development Committee should be the best platform for cross-ministry policy consolidation. When planning sustainable development's overall policy goals, perhaps we can learn from the UN's SDGs and make a prioritized list based on Taiwan's situation. The public sector, private sector, and stakeholders can have sufficient discussions, negotiation on environment, society, and economy to reach consensus. With such mechanisms and comprehensive thinking and planning, even if new issues arise in the future, strategies and policies only need to be slightly adjusted, instead of having new issues included in the plan, wasting manpower, time, and funding.


Committee Members Play Key Roles in Policy Integration

Committee members who are not government officials play very important roles in coordinating ministries and divisions. Originally, committee members only spoke on behalf of the division of their expertise, but now members can be inter-divisional and this helps in communication among the divisions and ministries, providing opinions from different angles to allow the planning and execution to be better. I recommend when the divisions draft policies in the future, average people must also participate to gather popular opinions. People's participation is not entirely based on their opinions but to examine whether their opinions have been considered in the framework. If the goals set have been thoroughly discussed, they can be the mid and long-term goals for national sustainable

development without regard to partisanship or political motives. The recently discussed topics is to be based on the UN SDGs (17 major goals and specific goals) to draft Taiwan's sustainable development goals. It is hoped that past unclear items can now be clarified. If the central competent authorities can set out more concrete long-term goals (which are also accepted by Taiwanese people) via participatory discussion, the responding policies and ministerial division of labor will be more clear. This prevents work overlapping or conflicts, and promotion of action plans by each division will be easier.

Sustainable Development Policies Should Be Long-Term Plans with Global Perspectives

Based on the UN Millennium Ecosystem Assessment (MEA) in 2005, natural ecosystems are the key to human survival, providing necessary ecosystem services. However, human activities inflict various degrees of damage on global ecosystems, causing loss of biodiversity, reduced biotic carrying capacity, and lowered earth environmental restorative power. It is necessary to quickly check and reinforce maintenance to restore natural ecosystems and their services. Therefore, many nations began to monitor the change in their ecosystems and examine the overall impact to their country from these changes. Then, they assess the validity of land use planning via land usage to maintain or restore natural ecosystems. If Taiwan can quickly undertake similar monitoring and analysis, it can serve as the most important basis for future planning and promoting biodiversity related work.

Sustainable development cannot use old thinking to solve new problems, nor can new works be added on old work. Systems must be properly adjusted, remain flexible, or they cannot be sustainable. For example, in the past, different opinions were seen as sources of conflict. From today's views, different opinions express concerns over issues not yet thoroughly considered. We should allow and respect all parties to express opinions and reach the common denominator that everyone can accept, even if less than happy. Taiwan's main agency for sustainable development should have a macroscopic vision, studying international trends and issues, consider Taiwan's environment, society, and economy, consolidate everyone's opinion, clearly plan visions, and long-term policies, and make blue prints for national sustainable development. These should be thoroughly carried out to achieve sustainability. 





The Green Buildings fir Energy-Conservation and Carbon-Reduction

An Interview with Committee Member Mr. Wim Chang



Energy conservation and carbon reduction have always been the core of sustainable development and issues that people care about. Realizing energy conservation and carbon reduction is actually quite easy. Member of Taiwan Sustainable Development Committee (TSDC ,the Committee) and expert Mr. Wim Chang shares the following achievements and efforts made by his Delta Electronics Foundation (the Foundation) throughout many years in promoting environmental protection, innovation, and education.

A Communication and Coordination Platform for Sustainable Development Policies

Governmental agencies often individually carry out or outsource research cases, and are unable to know each other's specific study details. However, via the Committee, relevant policy implementations can be shared, and joint responsibilities and businesses can be consolidated. Taking corporate social responsibility (CSR) reports as an example, Financial Supervisory Commission requires all publicly listed or traded companies to submit and disclose them; however, the Small and Medium Enterprise Administration at the Ministry of Economic Affairs (MOEA) has been assisting small and medium businesses to write them for a very long time. The two can actually be integrated. Moreover, the competent authority for the recently passed Greenhouse Gas Reduction Act is the Environmental Protection Administration's, but the Bureau of Energy under the MOEA is in charge of processing enterprise applications to purchase green electricity. Whether green electricity purchases can be turned to carbon footprint offsets may create conflict here. Perhaps the Committee can serve as a cross-ministry coordinator role like the National Development Council to make a maximum contribution to our country's sustainable development.

Sustainable Development Should Have Industries Taking Roots as the Goal

Currently, the Committee's sustainable development goals (SDGs) focus on energy conservation. Goal-orientation is very important because when the policy always use subsidies and incentives, industry is less likely to be formed. If industry cannot be formed, all sorts of bizarre situations can happen, such as in southern Taiwan, subsidizing solar PV power policy created conflicts with agriculture as well as fake mushroom growing shacks, etc. If we treat it as an industry, then innovation is truly necessary.

For the government, when green technology becomes industrialized, related standards and regulations can become more stringent to catch up to the global standards and give Taiwan's companies some competitive edge. Taiwan does not have a big market. But through effective practices domestically, we should try to become an exporter of green technologies instead of being forced by international standards to purchase foreign technologies and become a mere consumer, which is not helpful to industrialization.

Encourage People to join in Promoting Energy Saving and Carbon Reduction

Energy conservation, climate change, and green construction are the Foundation's core businesses. Unlike other Taiwan environment-protection groups or corporate foundations which use the clichés such as turning off lights after use, we use a lively, culturally creative type of promotion to make this indicative and representative, even meeting the international standards. The Foundation hopes to be a leader in energy conservation and carbon reduction, leading not just corporations but the entire society.

The Foundation uses public participation to introduce international hot issues, letting people know the global trends. In addition to energy conservation and carbon reduction, other environment-related issues are also our promotion focuses, such as the Journey of Water "Run for Water, Water for Run Exhibition". Many people are not only unaware of this; but also do not know why this is relevant. If not properly revealed, such as major beverage companies' sources of water somewhere in India resulting in the locals having not clean drinking water, while the beverage manufactured is sold all over the world, this raises many social and environmental justice issues. The Foundation uses exhibitions to interact with people, in these ways, we can reach out to more people with wider scope. Even though the exhibition visitors are from different fields or speak different languages, it is still very effective.

Energy Conservation and Carbon Reduction Begins with Green Construction

Taking into account the energy efficiencies of all electrical appliances, all of us need buildings. If we can quantify all the electricity consumption, and carbon emissions from electrical appliances within buildings, then architects and owners will be able to make judgments and choices. In the past, we have discussed with Taiwan's related agencies the possibility to promoting concepts such as an energy passport to register energy-related data and records; carbon is also included. Generally, assuming a building has a 40 year life-span, about 70% of a building's carbon emissions come from its energy consumption. Building materials themselves are relatively minor. For example, in Germany, for a real estate transaction or house rental, people used an energy passport to assess transactions and be favorable for taxation. For mortgage loans, it also has relevant measures that are worthy to study.

Passive Building Design Can Effectively Reduce Energy Consumption

In June this year, the Foundation supported the remodeling work of an elementary school in Namaxia, Kaohsiung Metropolitan. After a whole year of field measurements, we found that it has reached zero balanced net energy consumption. In other words, the power generated (solar PV power generation) is greater than the power consumed for one year. This is the first excellent example in Taiwan. However, it is not very unique in light of international trends because California has planned to have 10,000 zero net energy consumption houses by 2017, then by 2020, all houses must have zero net energy consumption.

Moreover, although the restoration of historical sites is not listed as a green construction item, a high school in Taichung City had a history gallery building that was also a negative carbon emission building. These two above mentioned schools are installing solar PV. The elementary school has only 22kW solar panels, not a large installation. Solar PV power just supplies a small portion of their power used, the saving is mainly from the adoption of a passive energy design. The original design is to have Energy Usage Intensity (EUI) of 7 kWh per square meter annually which can be easily supplied with solar power. This is the architect's genius, using physical characteristics to achieve energy conservation.

Current building codes require certain window-wall ratios, but this can be constrained by geographical conditions (latitude) because opening windows means hot air will rush in. The solution is adopting deep eaves which have been widely used on many buildings, such as the CTS Building near the Taipei Dome. However, deep eaves sometimes block sunlight, which can be ameliorated by properly deploying light guide plates. Secondly, the heat buoyancy venting principle is adopted to let air flow within the building to take away the heat. The most famous example would be the NCKU Green Magic School -- Sun Yun-Suan Green Building Research Center.



▲ Completion of Namaxia's Mincyuan Elementary School Sponsored by Delta Electronics Foundation

Green building has 9 essential elements, but we think energy saving should be given the most attention because buildings have very high potential to conserve energy. A report published by the UN's IPCC in 2014 pointed out that existing buildings have 50~90% energy saving potential. After being verified by the Foundation, energy efficiency can be easily elevated via building design to recycle waste heat, water, and air, confirming the validity of the report's data.

Taiwan's energy saving regulations on building exterior and internal facilities are separately under the jurisdiction of the MOI's Construction and Planning Agency and the MOEA's Bureau of Energy. The government did set out relevant regulations and specifications, to be implemented first by the private sector. For example, the US has the Energy Star based on a green building assessment system (same as electronic products or electric appliances), and its private sector launched the Leadership in Energy and Environmental Design (LEED) and Living Building Challenge as two different ways to assess. However, they developed properly as an industry. The Foundation's current modus operandi is to do something meaningful for our society and to reduce energy waste from buildings. Thus, our society can develop in a sustainable way.



▲ Taichung First Senior High School's Centennial Celebration



▲ Taiwan's Green Building Label

Private Sector is a drive-force to Promote Energy-Saving Green Building Certification

Before the government's relevant policies be finalized, the Foundation acts as a think- tank. We currently promote carbon footprint certification system for low-carbon buildings jointly with Cheng Kung University (NCKU). This can be a pilot demo package for government's relevant policies. The first case was the 2013 Hsinchu Lantern Festival. The Foundation calculated the carbon dioxide emission of 15-days "Ring of Celestial Bliss exhibition" to be less than the fireworks of Taipei 101 (not only fireworks, but also the transportation to and from the site), which is 80% less. However, the firework lasted s 5 minutes, and the " Ring of Celestial Bliss" was a 15-days exhibition. Also, all the used steel structures can be recycled.

The most valuable steel materials became the roof of an elementary school's basketball court. The 70m long, 10m tall cloth projection screen was made of recycled plastic bottles. Been taken down after the exhibition, it was made into 800 eco-bags for volunteers. The used bamboos were sent to Taitung's school as classrooms' walls. LED lights were used as lighting decoration in the National Museum of Natural Science in Taichung City. Light-up with music in the evening daily. All lights were 100% recycled.

Actually, in the stage of designing and setting up the Ring of Celestial Bliss, we thought concrete material was very carbon expensive so that we tried to minimize its use, it was designed to suspend on the ground. The connecting points were are steel structure, covered with soil and sand. Steel structure is recyclable material, and the steel we used was 40% from recycled steel. We used recycled steel meant its enlongation of life-cycle In the past, people judge whether a building is green with assumption methods , now, we use quantification .



▲ The Foundation Sponsored the Ring of Celestial Bliss

Developing MOOCs for the Future, build up Seeds for Energy Conservation

As we know, the globe will face the challenge of Industrial Revolution 4.0. The project is a solution on one hand and an impact on another. The solution is the rapid aging of the global population which will make working with robots unavoidable. Smart production, man-machine, machine-machine, and machine-supervisor communications will absolutely require the Internet of Things (IOT) technology. The other impact means the wages in Taiwan, East Asia, and mainland China will continue to rise, and the shortage of labor will continue. Therefore, robots will be indispensable. If Taiwan continuously to focus on manufacturing or industry, then the Fourth Industrial Revolution should be an issue that must be confronted to gain the initiative in the future, We

must treat the Fourth Industrial Revolution 4.0. as one big and important issue.

The Foundation has developed its own MOOCs these couple of years and worked with the K-12 Education Administration to promote online educational courses. In the future, we will have courses on Industry 4.0, inviting teachers to discuss automation. We want to let students first understand the Industry 3.0 automation, then study IOT to prepare for the future. We believe green building carbon reduction and energy saving coupled with Industry 4.0's IOT can work in concert with environmentally, economically, and socially sustainable long-term national goals. 🌐



The Ideal Operational Blueprint for the Sustainable Development Research Committee

An Interview with Committee Member Dr. Jing-Tang Yang



The Sustainable Development Research Committee is meant to integrate government's various policy promotions in different aspects of economy, society, and environment. Via the participation from government ministers and private sector experts and academics, national sustainability related works can be effectively facilitated. Dr. Jing-Tang Yang's specialty is mechanical and energy engineering. In the past year, he also served on the committee's divisions on climate change and carbon reduction/energy conservation, energy and production, technology and assessment, as well as education and promotion, etc., and he is still in the process of fully understanding the committee's functions. Below is an interview with Dr. Yang on his personal perspective as a technical R&D academic on the committee's modus operandi and visions.

The Efforts Made by Sustainable Development Research Committee Should Be Recognized

The committee has been established for over 20 years, and its relevant policies that facilitate the desired achievements are worthy of recognition, especially in environmental amelioration. My hometown Hsinchu where I grew up had rivers with very clear water. Fish and loach could be seen swimming with ease. When I was in high school, the rivers became polluted and were very turbid, but they later gradually became clear again. This is due to the work of environmentalists and also the committee's efforts.

Sustainable development means our consumption of resources will not result in great damage to the next generation. In fact, as long as someone consumes material, earth's physical composition will change. Such change must be very small to be called sustainable development. Before consuming resources, we must consider if this is necessary, and will it generate waste instead of being recycled after use. If we can think carefully before use, perhaps we will then realize we do not actually need it. Not to mention certain wastes are unrecyclable.

The Committee's Role and Visions Are Thoroughly Implemented in Practical Operations

The Sustainable Development Research Committee is a high-level agency at the national level. The organization is necessary because Taiwan needs people with macroscopic vision to participate in policy-making. However, in actual operations, because the tasks are too many, too tedious, and difficult to organize, this agency has not been able to fully realize its potential. The national development of its objectives should be accurately and concretely passed down to the middle and lower government workers. In other words, the vertical communication must be smooth and without obstacles. Sustainable development must also be actually implemented by the rank-and-file government workers.

All current action plans of sustainable development emphasize environment, but economy is also important. Environmental experts advocate zero standards, absolute standards. This may be suitable for countries with average income over USD\$ 35,000, but currently Taiwanese people's average income is only USD\$ 20,000. The balanced development between environment and industry is still very important. Sustainability should have national development as the ultimate goal, and then take into account various factors, not just over-emphasizing one single objective.

Discussion and implementation of sustainable development involve long-term planning. The politically appointed officials may understand this concept, but the civil servants actually in charge of implementation may not be as familiar with the idea of sustainable development. Taking electricity pricing adjustment as an example, Taiwanese people are not aware that the government subsidizes electricity pricing, and the source of funding is the taxes people pay. The subsidy adopts an absolute equality where the more electricity is consumed, the higher the subsidy. Low and average-income households, therefore, receive less than the higher-earning households which consume more. For the same reason, residential users consume less than enterprises and receive

less subsidy. The electricity pricing adjustment is, in fact, realizing the principle of users pay, plus assistance to the marginalized groups. It benefits the society. Also, for work and class cancellations due to typhoons, students and average people might feel happy, but enterprises will have to bear the negative impact of reduced GDP. This harms national competitiveness. Having small personal happiness expanded to the entire society may lack macroscopic and long-term thinking.

The Committee's Division of Labor Should Be Supported with Task Teams

It is undeniable that national level sustainable development involves the future and survival of national development, and it is critically important. When I was first invited as a committee member, I thought I would then be able to see the national energy and environment issues from a higher position. However, it is in reality difficult. The committee handles a wide range of issues. Also unlike government ministries, the committee's members came from different fields, including civic groups. With limited expertise, committee members cannot process the issues raised by the ministries single-handedly without a task team. Although the committee now has specific divisions of labor, some task teams should also be there to digest and organize information.

Moreover, when communicating with ministries, it should be through a task team, and not just that committee member himself. This allows communication to be more consistent. In addition, the current practice only takes feedback from committee members sharing perspectives and experiences during meetings for future improvement references. Having task teams in place for in-depth follow-ups will be more effective.

The Committee Should Improve the Ability to Compile Data and Define Itself

The United Nations recently announced its sustainable development objectives, and relevant personnel in the various ministries all strive to find

out how to properly localize; however, effectively compiling each ministry's implementation is not easy. The United Nations' recently announced global sustainable development objectives. Taiwan should wisely consider its circumstances when localizing these objectives and not necessarily apply them all non-discriminately. We should define our own roles (setting own goals) and clarify the weak points that require strengthening as well as the advantages, instead of having the competent authority give all the orders to be completely and thoroughly implemented. Only the areas requiring reinforcement should be reinforced.

The current Taiwanese government agencies should only proceed after assessment with macroscopic perspectives. Only long-term goal-setting or strategy-setting can provide a sense of direction. In terms of teacher training, assuming a demand of 85,000 teachers by 2030, the education agencies may want to train 5,000 teachers each year, with 50,000 more after 10 years and 85,000 by 2030. However, estimation based on this type of thought process may not have considered the fact that Taiwan's population is likely to diminish by 2030. So, will so many teachers still be needed? Thus, we should first study the roles and situations of social development in 2030 before planning to be more effective.

Experiences from Other Countries Should Be Taken into Consideration with In-Depth Analysis of Situations

During the process of promoting sustainable development, it is necessary to observe current international situations, their differences from Taiwan, and whether the experience is applicable in Taiwan. All should be further analyzed, including the country's reasons for adopting measures, their applicability in Taiwan, etc. Many excellent measures in other countries (e.g. energy tax) may not be completely implemented here because of different circumstances. This would then require classification to filter those suitable for us. If after studies and discussions, no suitable measure is found, we can then create new ideas and measures based on this premise. This has become almost a cliché, so I am sure many government agencies have already had some in-depth considerations.






When setting national long-term sustainable development objectives, we should learn from advanced Western nations. Because they tend to be more advanced, they can serve as a model of an ideal society for Taiwan. However, when planning for short-term policies and measures, we should learn from countries similar to us, mainly due to the capability to carry out these policies and measures. If directly emulating the advanced countries without these assessments, the implementation will not be possible due to different society backgrounds. This can then only serve as a reference for predicting future directions. Short-term actual operation must be based on observation of countries similar to us in development to evaluate whether we are making progress and are ahead of our peer countries. Feedback mechanisms are also needed for rolling revision.

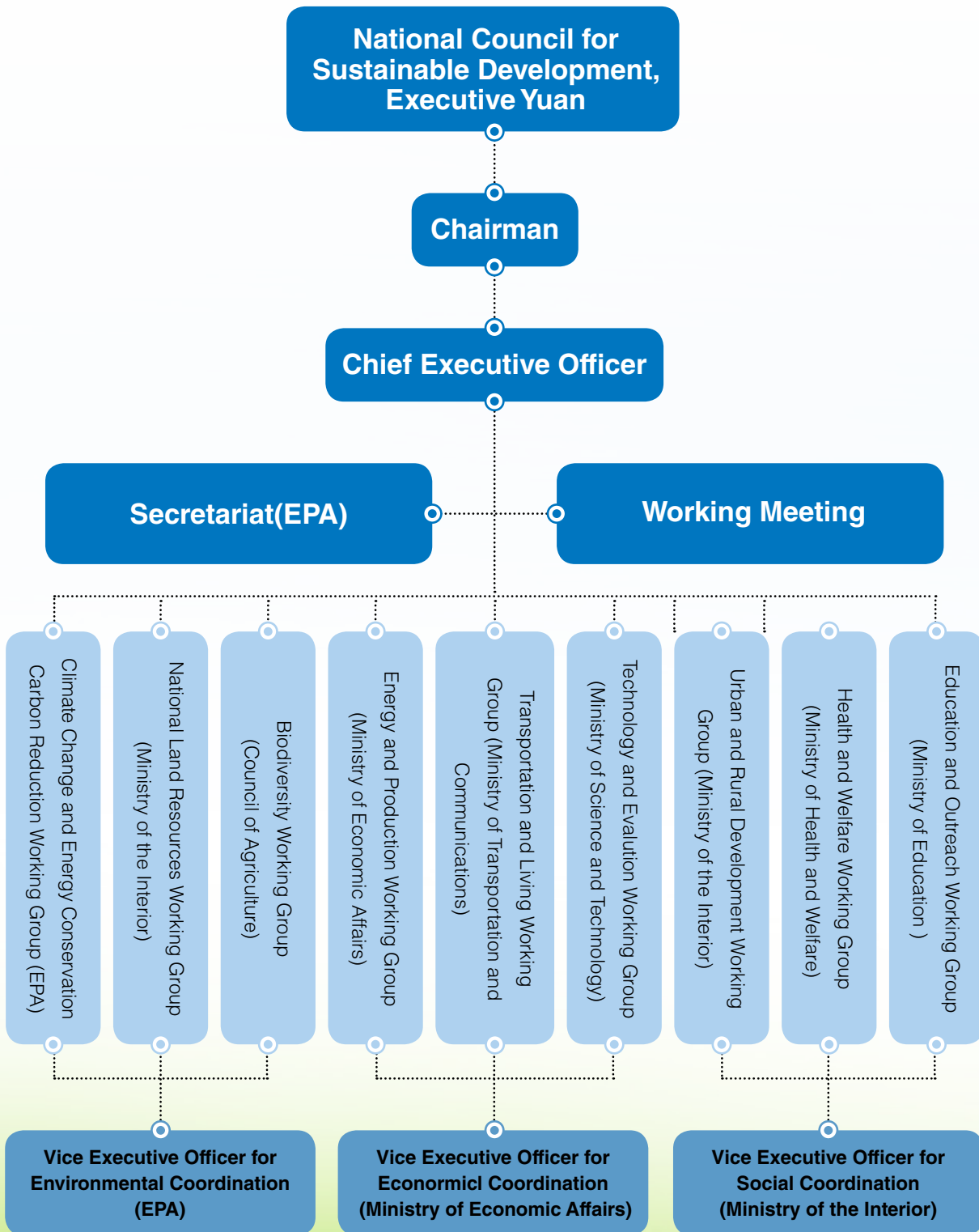
Consolidation Is the Foundation of Sustainable Development

Taiwan's sustainable development is continuously progressing. In the past, environmental protection and economic policies developed separately. However, when developments reach a certain level, they should be consolidated, and we must consider how best to consolidate to maximize the benefits to society. Environmental protection has its benefits, and so

does economic development. When consolidating, the economy may need to be sacrificed a bit, and environmental protection sometimes may need to be as well. Such sacrifices are not permanent, but only temporary phases. Therefore, we must set out schedules and development goals.

Sustainable development is the explicit top tier objective, with the society (country) and people underlying it. Underlying that is a variety of professional expertise, such as economy, environmental protection, and public interests, etc. Classifying based on professions makes them more specialized and not fragmented. This is like a mechanical engineering curriculum being divided into solid mechanics, fluid mechanics, and material science, etc. Classification makes passing down the knowledge easier. However, teaching only a very narrow discipline without other related key subjects will be only a very small part of the entire field. Consequently, the senior year in college should be integrating these fields. Similarly, the division of labor in sustainable development must be consolidated at the end. If one plus one plus one equals three, it will have little impact. One plus one plus one must equal a very large number to create a new, multiplying effect. Thus, sustainable development should have holistic and national visions. 

Appendix 1 Organizational Structure of the NCSD



Appendix 2 Members of the NCSD

Government Official Members

Name	Position	Organization
Chi-Kuo Mao	Premier, Executive Yuan of the Republic China	
Shing-Cheng Yeh	Minister without Portfolio, Executive Yuan	
Chen-Chung Deng	Minister, Ministry of Economic Affairs	
Jian-Yu Chen	Minister, Ministry of Transportation and Communications	
Meng-Chi Hung	Minister, Ministry of Culture	
Tyzz-Jiun Duh	Minister, National Development Council	
Bao-Ji Chen	Minister, Council of Agriculture, Executive Yuan	
Ming-Chung Tseng	Chairman, Financial Supervisory Commission	
Kuo-Yen Wei	Minister, Environmental Protection Administration, Executive Yuan	
Tsyr-Ling Lin	Deputy Minister, Ministry of the Interior	
Der-Hwa Chen	Deputy Minister, Ministry of Education	
Hu-Ti Chiou	Director General, Healthy Promotion Administration, Ministry of Health and Welfare	

Non-Government Members

Name	Position	Organization
Ling-Ling Lee	Professor, Institute of Ecology and Evolutionary Biology, National Taiwan University	
Kwang-Tsao Shao	Research Fellow, Biodiversity Research Center, Academia Sinica	
Tsai-Yi Wu	Premier, Chairman of Taiwan Research Institute	
Chien-Yuan Lin	Professor, Graduate Institute of Building and Planning, National Taiwan University	
Yu-Chen Lin	Professor, Graduate Institute of Environmental Engineering, National Taiwan University	
Lucy-Sun Hwang	Adjunct Professor, Institute of Food Science and Technology, National Taiwan University	
Cheng-Min Feng	Professor, Institute of Traffic and Transportation, National Chiao Tung University	
Jing-Tang Yang	Distinguished Professor, Department of Mechanical and Engineering, National Taiwan University	
Sandy Yeh	Secretary-General, Association of Chinese Police Research	
Pen-Chi Chiang	Professor, Graduate Institute of Environmental Engineering, National Taiwan University	
Daigee Shaw	Research Fellow, Institute of Economics, Academia Sinica	
Shou-Hsia Cheng	Professor, Institute of Health Policy and Management, National Taiwan University	

NGO representative Members

Name	Position	Organization
Alice Yu	President, China Times Culture & Education Foundation	
Dung-Liang Lee	President, Business Council Sustainable Development, Taiwan	
Chun-Shin Lin	President, Archilife Research Foundation	
Chih Sen Lin	President, Taiwan Green Productivity Foundation	
Julia Chou	President, Conservation Mothers Foundation	
Lien-Siang Chou	Director, Taiwan Cetacean Society	
Romy Kung	Director, Taiwan Responsible Care Association	
Shih-Chang Chen	President, Formosan Society for Indigenous Sustainability	
Yang-Gan Chien	Deputy Executive Director, Delta Electronics Foundation	
Vicky Liu	Executive Director, Cycling Life Style Foundation	
Jung-Hsiao Lai	President, The Society of Wilderness	
Shang-Lien Lo	Chairman of Board, Taiwan Environmental Management Association	

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