

2013 ANNUAL REPORT ON NATIONAL SUSTAINABLE DEVELOPMENT



永續發展
SUSTAINABLE DEVELOPMENT



Contents

Preface	53
Chapter 1 Current Status and Achievements of NCSD in Taiwan	54
Chapter 2 Summary of Working Group Achievements	56
- Energy Conservation, Carbon Reduction and Climate Change Working Group	56
- National Land and Resources Working Group	58
- Biodiversity Working Group	60
- Energy and Production Working Group	61
- Transportation and Livelihood Working Group	63
- Technology and Evaluation Working Group	65
- Urban and Rural Development Working Group	66
- Health and Welfare Working Group	67
- Education and Promotion Working Group	69
Chapter 3 Evaluation of Taiwan's Sustainability Indicators in 2012	71
Chapter 4 2013 National Sustainable Development Awards Recipients	73
<i>Education Sustainable Development Awards</i>	
- Jiqing Elementary School, Rueifang District, New Taipei City	73
- Yongan Elementary School, Houbi District, Tainan City	74
- Hushan Elementary School, Rende District, Tainan City	76
<i>Sustainable Enterprise Award</i>	
- Taiwan Semiconductor Manufacturing Company (Fab 3)	78
- Taiwan Li Kai Green Company (Aleees)	80
- Da Ai Technology Co., Ltd.	82
<i>Civic Sustainable Development Award</i>	
- Wild Bird Society of Taipei	84
- Renhe Care Association, Pingtung County	85
<i>Execution of Sustainable Development Action Plan Award</i>	
- Forest Bureau, Council of Agriculture—Post-Disaster Reconstruction Promotion of Tribal Villages Participation in Monitoring Protected Area Plan—Ali Tribal Village of Wutai Township	87
- Construction and Planning Agency, Ministry of the Interior—the Fourth Phase Sewage System Construction Plan	89
- Health Promotion Administration, Ministry of Health and Welfare—Active Aging and Creating an Age-Friendly Healthy Environment and Services	91
Chapter 5 2013 International Forum on Sustainable Development	93
Chapter 6 Words from Our Members	96
Index	106

Preface

Taiwan is a densely populated island nation with limited natural resources, frequent natural disasters, and unique international status. These realities make its quest for sustainable development even more pressing than other nations. In response to global sustainable development trends, in August 1997, the Executive Yuan established the National Council for Sustainable Development (NCSD); and in December 2002, the President promulgated Article 29 of the Basic Environment Act, effectively granting the NCSD legal status.

The 2013 Annual Report on National Sustainable Development compiles the significant achievements made by the public, private and civil society sectors toward sustainable development in 2012. Topics covered in this edition include Current Status and Achievements of the NCSD (Chapter 1); Summary of Working Group Achievements (Chapter 2); Evaluation of Taiwan's Sustainability Indicators in 2012; 2013 National Sustainable Development Award Recipients (Chapter 4); 2013 International Forum on Sustainable Development (Chapter 5); and Words from Our Members (Chapter 6). The appendix provides a chronicle of important events related to sustainable development, the organizational framework of the NCSD and the names of council members.

The Annual Report on Sustainable Development is published each year for the purpose of providing the international community with a better understanding of our nation's efforts and achievements towards sustainable development. Another objective of the report is to raise public awareness and encourage more people to work together in attaining the vision of sustainable development.



Current Status and Achievements of NCSD in Taiwan

Convening Work Meetings

In the year 2013, the National Council for Sustainable Development of the Executive Yuan convened two work meetings to discuss issues related to sustainable development. These two meetings were held on 28 May and 6 November, respectively.

1. Holding the 36th Work Meeting

Dr. Chung-min Kuan, CEO of NCSD, chaired the meeting. The agenda included two issues under discussion: (1) How the special task force was promoting green economy; (2) What are Taiwan's voluntary commitments to sustainable development after it participates in UN's knowledge platform?

With regard to topic (1), it was resolved that the Council for Economic Planning and Development should take into consideration the opinions raised by members of NCSD and revise its plans for sustainable development. After revision, the special task force would submit a comprehensive report in NCSD's next work meeting.

With regard to topic (2), "Taiwan's voluntary commitments to sustainable development after participating in UN's knowledge platform," it was resolved that:

- (1) All related ministries and departments should take NCSD members' opinions into consideration and review the businesses under their management to see if they could modify or add any voluntary commitments which can be logged onto UN's Knowledge Platform for Sustainable Development.
- (2) In principle those voluntary commitments are logged onto UN's Knowledge Platform in the name of NCSD.
- (3) Generally those voluntary commitments are implemented in Taiwan.

2. Holding the 37th work meeting

This meeting was chaired by Dr. Chung-min Kuan. The agenda included: NCSD's response to the outcome document of UN's Rio+20 Conference on sustainable development and the voluntary commitments of Taiwan to the UN knowledge platform of sustainable development. In addition, the

related policies and promotional plans were discussed, and future proposal-making mechanism for NCSD member meetings was studied.

With regard to the resolutions on Taiwan's response to the outcome document of UN's Rio+20 Conference and NCSD's voluntary commitment to the UN Knowledge Platform, the Premier's instructions are as follows:

- (1) Each working unit should take reference of the United Nations "Rio+20" Conference Outcome Document and make amendments of the related matters accordingly as soon as possible.
- (2) The units and agencies that pledged Taiwan's voluntary commitments to sustainable developments on United Nation's knowledge platform should do their best to implement their commitments so that Taiwan's achievements in pursuing sustainable developments can be known to the world.

With regard to the resolution pertaining to the motion of "Planning concepts for the promotion of sustainable development policies," the Premier gave his instructions:

- (1) As the planning concepts can let our citizens further understand the three-dimensional contents of sustainable development, while promoting the local governments and the general public to actively participate in the tasks of sustainable development, their purpose should be affirmed.
- (2) Regarding the subsequent detailed planning, division of labor, allocation of funding and execution, the three deputy CEOs who represent the environmental, the economic, and the social aspects of the NCSD will be responsible for coordinating the principles of fund apportionment. The CEO will be responsible for holding a meeting to discuss these matters, and each working unit within the NCSD and related ministries will be invited to a meeting for consultation.

Modifying and Implementing the action plans for sustainable development

In order to incorporate the contents of the outcome

document “The Future We Want” into the promotional tasks of NCSO, the NCSO convened a meeting on 1 February, 2013. Various units within the NCSO and related ministries were invited to attend this meeting. The relationship between the outcome document and Taiwan’s ongoing documents on sustainable development was studied, and the action plans of various units, their action plans, including strategies and actual implementation, were reviewed to see if any additions or deletions were needed.

Amending the Sustainability Development Indicator System and Announcing Evaluation Results

With regard to the yearly amendment of the Sustainable Development Indicators (SDI), the NCSO held a discussion meeting on 1 February 2013 to study the relationship between the Rio+20 outcome document and Taiwan’s ongoing documents. At the end of the discussion meeting, the NCSO asked the various units to take stock of “The Future We Want” document and, if necessary, make the additions or deletions accordingly. In addition, the NCSO asked its civilian members to hold a meeting on the amendment and reporting of the 2012 SDIs to ascertain the dimensions, themes, and indicators of the 2012 SDI system. After making amendments on the basis of “The Future We Want” document, the 2012 SDIs, in comparison with that of 2011, added two themes (sustainable tourism and capacity building) and four indicators (unemployment ratio, number of tourists visiting national scenic spots, the number of certificates issued to patent holders, and the number of research personnel with a Master’s degree or above). The evaluation results of the 2012 SDI system were posted on the global information website of NCSO by the end of December 2013.

For information concerning the contents of the indicator system and its evaluation process, please refer to Chapter 3.

Selection and Commendation of the 2013 National Sustainable Development Award

In 2002, the UN “World Summit on Sustainable Development” passed the “UN action plans for sustainable development”, which encourages its member nations to pursue sustainable development

through the implementation of action plans. To conform to the global trends, the NCSO decided to establish the “National Sustainable Development Awards,” and started its application and evaluation process from 2004. The purpose of the Awards was to select units and agencies with outstanding performance in sustainable development and, by giving them the Award, encourage them to share their successful experiences so that the pursuit of sustainable development can be expanded to all facets of society.

As mentioned before, the goal of the National Sustainable Development Awards was to encourage all citizens to participate in sustainable development efforts through their concrete actions.

By way of learning and experience sharing, the spirit of sustainable development can be deeply rooted in all facets of society and implemented in people’s daily work and living. In 2013, the NCSO organized the 10th selection and evaluation for the Awards. Each applicant had to undergo three evaluation processes, i.e., “paper review”, “field review”, and “final selection.” At the end, 11 winning units were selected from four award categories: education, corporation, civic, and sustainable development action plan implementation. The award ceremony was held on 6 December 2013 and awards were presented personally by Premier Yi-huah Jiang.

For information concerning the evaluation process, the winners and their outstanding performances, please refer to Chapter 4.

Organizing the 2013 International Forum on Sustainable Development

The newest global trends on sustainable development can be of tremendous reference value to us. In order to keep abreast of these trends, the NCSO held the 2013 International Forum on Sustainable Development on 13 September, 2013 in Taipei. Foreign experts from North America, Europe, Asia and local experts on sustainable development were invited to give keynote speeches, which spread the newest information on global sustainable development to Taiwan. In addition, our invited guests shared their opinions with members of the NCSO and the general public, and their opinions shall serve as important references to our policy-making in the future.

For information concerning the contents of the International Forum, please consult Chapter 5.



Summary of Working Group Achievements



↑ Wind-driven generators in Penghu Island.

● Energy Conservation, Carbon Reduction and Climate Change Working Group

1. Establishing greenhouse gas management infrastructure (EPA)

- (1) Continued to promote the legislation of Greenhouse Gas Reduction Act (draft).
- (2) Twenty-four pilot cases of greenhouse gas reduction were approved, with a total CO₂ reduction of 3.615 million metric tons; Five exchange cases were registered, with an estimated 2.69 million metric tons reduction of CO₂.
- (3) Actualized examination and management of greenhouse gases: one certification enterprise and 11 certification agencies were approved; in total, 487 enterprises volunteered to provide inventory information. The process encompassed around 70% of the total emission of domestic industrial and energy departments.

2. Integrating governmental efforts (CEPD, MOEABOE, MOHW, NSC)

- (1) Coordinated and encouraged proposal of action plan in eight major disciplines by various

departments, which was then used as the foundation for the formulation of the National Climate Change Adaptation Action Plan (draft).

- (2) Assisted 11 local governments in organizing climate change adaptation plans.
- (3) Completed people-centric lamp development and adopting direct-insertion light that are readily applicable in office hallways or hospital wards. During blackouts, its efficiency is automatically lowered to 1/4 output. LED lighting system was also developed, which was demonstrated in numerous expositions.
- (4) Continued to promote national energy and technology plan which includes themes such as smart electricity network, advanced meters, offshore wind power, natural gas hydrate, solar power, energy storage technology, biomass energy, hydrogen technology, lighting, electrical appliance technology and industrial energy conservation technology.
- (5) Completed energy conservation and carbon



reduction counseling for 39 hospitals to accomplish 13% of the 2020 goal; organized the 2013 International Environment-Friendly Hospital Team Work Best Practice Award, which saw participation from members of the Health Promoting Hospital (HPH) and members of the Task Force on HPH and Environment.

3. Promoting international participation (EPA, CWB)

Participated in the UNFCCC COP19/CMP9 in Warsaw, Poland; Kiribati's weather bureau director and environmental minister, as well as weather bureau director of the Solomon Islands were invited to the Asia Pacific International Exchange on Climate Change Adaptation and Application; Experts and scholars from Germany, Australia, and Japan were also invited to participate in the 2050 Taiwan GHGs Reduction Pathway Forum.



↳ The latest round of talks on the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP19/CMP9) held in Warsaw, Poland. The representatives of Taiwan and the International Emissions Trading Association (IETA) jointly held a side event.

4. Expanding public participation (EPA)

Organized a Public Forum on Feasibility and Necessity of Zero Carbon and Renewable for Taiwan by 2050 on May 18. Thirty discussion tables on various topics were carried out in coffee shop style, establishing a platform of communication and partnership between the government and the general public.

5. Counseling low-carbonization and greenification of industries (MOEAIDB, MOEABOE)

(1) In 2013, 245 enterprises across 11 industries participated in voluntarily GHG reduction agreement; 1,065 cases of reduction measures were carried out, reducing 1.31 million metric

tons of carbon and generating an economic benefit of approximately NT6.65 billion.

- (2) Energy conservation and carbon reduction group for the manufacturing industry completed 1,800 consultation cases in 2013; 359 plants benefited from the 1,100 improvement suggestions provided, with a total CO₂ reduction of 166,000 metric tons.
- (3) Promoted swap plans for the industry; in addition to ten localized application tools for carbon reduction, five demonstration enterprises for carbon swap were counseled on how to draft GHG swap plan. Seventeen thousand and seven hundred metric tons of CO₂ reduction was applicable per year.
- (4) Forty-two hospitals and hotel enterprises voluntarily participated in energy reduction; it was estimated that this resulted in a 59.5% reduction in total power consumption for all domestic hospitals and hotels.
- (5) Since 2006, 151 enterprises from across 15 industries such as convenient stores and supermarkets had voluntarily responded to energy conservation. As of end of 2012, more than 1.2 billion watt of energy was conserved, and 660,000 metric tons of carbon emission reduced.
- (6) As of the end of September, 470 green building mark and candidate green building certificates were awarded. It was estimated that 128.14 million watts of energy, 7.35 million tons of water and 74,100 tons of carbon can be saved.
- (7) Assisted an enterprise in New Taipei City and Kaohsiung City respectively in establishing at least 30 electric motor battery exchange stations; announced common battery format for electric motor vehicles by the end of October 2013; assisted businesses that transport fruits and vegetables, and provided support for operational facilities, purchase cost and battery rentals of electric motor vehicles.

6. Promoting green LOHAS and low-carbon transportation (EPA, MOEABOE, Tourism Bureau)

- (1) As of the end of October 2013, 2,387 products received energy label; an estimated 44 energy label certification items were promoted, with 160 million label usage; promoted energy efficiency level classification and product registration management, and a total of 14,795 product



models were registered; announced energy efficiency label for motor vehicles, with an estimated increase of 15% energy efficiency; in 2013, more than 3,000 vehicles were inspected to ensure car manufacturers apply or append energy efficiency labels according to regulation; as of the end of September 2013, more than NT5.6 billion was used in green procurement; expanded cycling festival period from one month to span the entire year; the newly constructed Luoshan Management station and Nangan Tourism Center of Matsu National Scenic Area head quarters received the Green Building silver award from the Ministry of the Interior.

- (2) Established information platform for environmental protection and low carbon activities, and 8,494 activities were registered;

assisted existing 52 model communities to promote low carbon; assisted various counties and cities to form and operate low-carbon sustainable home system; 100 action items were prioritized and composed into action plans, registered at the Low Carbon Sustainable Information System (<http://less.epa.gov.tw>); assisted various county and city level GHG inspections, composed inspection manual, and strengthened the Carbon Disclosure Service Platform; co-organized two tiers of 2013 Taiwan-Germany Low-Carbon City Forum: Architectural Concepts and Technology of Low-Carbon Smart Cities with the Deutsches Institut Taipei; co-organized the 2013 Taiwan-UK Low-Carbon Sustainable City Forum with the British Trade & Cultural Office.

● National Land and Resources Working Group

1. Water resource development, utilization, management and conservation (EPA, Taipei Feitsui Reservoir Administration, WRA)

- (1) Promoted pollution remediation works for 11 key rivers, and organized pollution remediation for six urban rivers, thereby effectively improving water quality. In addition, on-site treatment for water purification was promoted; as of September 2013, 110 sites spanning 542 hectares of land treated 887,500 CMD (cubic meter daily) of water and reduced 24,700 kg of BOD (biochemical oxygen demand) daily.
- (2) In the course of implementing carbon neutrality plans in the first half of 2013, the Taipei Feitsui Reservoir Administration organized several measures to reduce greenhouse gas emissions; a 1259.93 hectare Wildlife Conservation Area for Yellow-margined Box Turtle in Feitsui Reservoir was designated to actualize wildlife conservation; the Feitsui Reservoir Environmental Learning Center was established to actively promote environmental learning, which included diverse environmental learning programs. As of October 2013, 2,139 people through 34 tiers of activities learned at the Learning Center or participated in student tours.
- (3) Organized Zhongzhuan Retention Basin project, Remediation of Tsengwen, Nanhua and Wushantou Reservoirs and stabilized water supply for the southern region projects;



↑ Primary School students participate in the tour of Taipei Feitsui Reservoir.

completion of the aforementioned projects can effectively ensure hillside conservation of reservoirs, reduction of silt, and steady supply of water.

2. Conservation and management of groundwater resources (EPA, Fisheries Agency, WRA)

- (1) Continue monitoring of 431 nation-wide groundwater monitoring work; as of the end of September 2013, 90.3% of monitored sites had results lower than the Groundwater Pollution Monitoring Standards; 100% of monitored sites had results lower than Groundwater Pollution Regulatory Standards.
- (2) Promoted the Groundwater Conservation and



Management Plan, and completed the project to improve seawater supply system for aquaculture in Xialun Township of Yunlin County. It is estimated that 500,000 metric tons of groundwater can be saved. Investigation indicated that land subsidence is most severe in Huwei of Yunlin County and Zhouxi of Changhua County; subsidence in other regions was milder. All monitoring information will be completed by the end of 2013.

- (3) Organized groundwater recharge facilities for Zhuoshui River, improved river level during dry spells, recharge groundwater, and nurtured groundwater environment; as of July 2013, a cumulative of 21.36 million metric tons of water was recharged.

3. Sustainable management of maritime resources (CPAMI)

- (1) Continued to promote Sustainable Coastline Overall Development Plan, monitored abnormalities along the coastline, provided immediate responses, and maintained the natural coastline so that the coastline can be gradually restored to its natural state.
- (2) Continued to organize the Demonstration Plan of Coastline Restoration and Landscape improvement: Six direct municipalities and nine county (city) projects were approved for subsidy in 2013. The projects helped to improve coastline landscape, promoting the reasonable management of coastline land and its remediation.

4. National land planning and management (CPAMI, Department of Planning of the COA)

- (1) Completed the formulation of the National Land Planning Act (draft), which was presented to the Executive Yuan for deliberation on 16 September 2013. The draft will be sent to the Legislative Yuan for review after the Executive Yuan had completed its deliberation.
- (2) Demarcated sensitive regions and formulated regulatory measures, including: Demarcated class 1 sensitive regions (20 items encompassing rivers with landslide potential, severe landslide or other high-risk areas) and class 2 sensitive regions (21 items encompassing severe landslide), and formulate regulatory principles.
- (3) Organized the National Land Usage Monitoring Plan: Conduct monitoring of land usage changes

through satellite images, land usage detection management system, and change spot network reporting system in order to curb illegal land development. Three phases of change spot reporting work was completed in 2013, and a total of 1,124 cases were reported (a 97% reporting rate), of which 36% of cases were deemed illegal.

- (4) Promoted planning of agricultural land usage and established reasonable usage mechanism for agricultural land: Assisted 15 direct municipalities or county/city governments in completing agricultural land resource classification and verification pertaining to information and plotting of unique regions and key agricultural production regions. These gave the government a firm grasp on the information of the distribution of agricultural resources within respective administrative regions.

5. National land conservation (SWCB, WRA)

- (1) Organized overall mountain conservation and disaster prevention plan: 30 cases of land remediation for landslides were conducted in 2013, restoring approximately 15 hectares of land.
- (2) Organized the review, adjustment and update of debris flow precaution standards and precipitation reference stations: Review debris flow precaution standards for 11 townships that span over Nantou, Yunlin and Chiayi Counties; after review, the debris flow precaution standards for Lugu Township and Zhushan Township in Nantou County and Gukeng Township in Yunlin County were lowered.
- (3) Implemented the Treatment Plan for Flood-Prone Areas: Improvement was made on 455 km² of flood-prone land.

6. Conservation of wetland ecology (CPAMI)

- (1) The Wetland Conservation Act was promulgated and entered into force on 3 July 2013. The Act has 42 articles in 8 chapters.
- (2) Assisted 17 county/city governments in implementing 46 sub-projects of the National Key Wetland Conservation Plan.
- (3) Participated in the Annual General Meeting of Duluth, Minnesota and publicized results of our nation's wetland conservation efforts. Dr. Stephen



Faulkner, President of the Society of Wetland Scientists (SWS), was invited in August, along with Dr. Royal C. Gardner, to an international

wetland workshop in Taiwan. This helped align Taiwan's efforts with the international community.

● Biodiversity Working Group

1. Hotspot investigation and confirmation of land and maritime biodiversity possibilities

- (1) The NSC completed biodiversity and distribution information on liagoraceae along Taiwan's coastline. Fifteen species in ten genres were previously recorded; four new genres of Taiwan liagoraceae and three new world genres were published, three newly recorded species and five to ten species awaiting publication were probably new world species; there was a high level of biodiversity in maritime regions around Gueishan Island of Yilan; after conducting specific research, there are a total of 420 species of decapoda.
- (2) The COA added 121 new entries of Taiwan's land squamata, discovered in Hualien and Taitung County; added two new civet distribution spots, a discovery rate of 15.4%; added four investigative sample spots at high-altitude stations in Hehuan Mountain, and completed two arachnida investigations, recording 18 species in 11 familiae; completed 82 sample collecting spots for Tamsui malacofauna in the western region, recording 512 samples in 29 species; completed resource investigation for vascular plants in five counties/cities.

2. Twenty percent of maritime region incorporated as Protection Region prior to 2020 (COA)

Added two *austinogeton edulis* aquaculture farms at Shengang and Wanggong, and amended eight announcements at the Fisheries Agency Conservation Region. Eleven conservation regions had established warning sign posts that incorporated our nation's maritime protection classification system.

3. Establishing and integrating biodiversity information database, with regular updates and amendments (NSC, COA)

- (1) Established, maintained and integrated Taiwan Biodiversity Information Facility (TaiBIF). Currently, there are eight information providers,

32 collections, and 2.51 million entries; The Biota Taiwanica (<http://biota.taibif.org.tw/>) is currently in its 29th edition, of which 23 of those were uploaded to the Biota Information Management Platform. The Taiwan Encyclopedia of Life (TaiEOL) contributed 2,827 explanations of Taiwan's fish species and 2,850 photos of fish species to the EOL in the U. S. (<http://eol.org>).

- (2) 2,608 species, 3725 photos and 215,175 entries of Taiwan's wildlife were documented; 9,298 species and 86,711 entries of Taiwan's wild fauna were documented; the Taiwan biodiversity network has accumulated 10,304 photos and 311,202 entries thus far.

4. Establishing National Bio Culture Database (COA)

Only Kinmen and Penghu act as resting and breeding grounds for horseshoe crab; after years of cultivating, the horseshoe crabs reached their 13th cycle on 30 July 2012; at the Lugang Bio Culture Database, 22 original aqua species and 50 conservation species were preserved; at the eastern Bio Culture Database, 24 aqua species were preserved.

5. Planning of a Land, Wetland, and Maritime Biodiversity Monitoring System

Groundbreaking discovery of *puerulus mesodontus* and *munidopsis dissimilis*, and seven species of decapoda by the NSC this year, which resulted in the publication of four academic papers; 318 volunteers adopted 370 sampling regions and confirmed establishing sampling spots for BBS Taiwan.

6. Strengthening sustainable reuse of the fisheries industry, collecting information and monitoring resource changes (COA)

Fisheries Management Measures were announced pertaining to specific species such as mackerel, seine, eel and crabs; up to 360 days of investigations were conducted using harpoon method for billfish tagging. In terms of resource monitoring for bottom fish,

ecological research for *priacanthus macracanthus* and *saurida undosquamis* were completed; completed investigation and research for maritime resources in Taiwan's waters; thus far, investigations for Taiwan's surrounding waters amounted to 195,600 entries on thermohaline circulation, 930 entries on chlorophyll, 3,720 entries on nutrient salt, and 5,580 entries on zooplankton.

7. Implementing boat reduction and fishing moratorium, regulating fishing yield, and implementing fishery management (COA)

Eight fishing ships, 60 fishing boats totaling 442.05 tons were approved for procurement in 2013. As of the end of September, NT130 million in incentives were awarded to 7,835 ships for moratorium. Regulatory standards were established for issues such as trawling, drift netting, light fisheries, *encrasicholina heteroloba*, corals, flying fish caviar, and sharks. Standards also encompass measures concerning restricted zones, moratorium period, restriction on fishing equipment, restriction on fish length, and restriction on fishing yield. Aid from the Coast Guard Administration was requested in curbing illegal fishing. The competent authority issued 121 cases of penalties in 2013.

8. Prevention and cataloguing of invasive species

(1) **EPA:** Formulated emergency containment plan for new invasive species, and conducted regular drills with local governments; established long-term prevention plan for invasive species to minimize economic damages and ecological impacts; for instance, the EPA monitored SOPs for local environmental bureaus in organizing preventive drills for household fire ants, including the use of medicament in prevention.

● Energy and Production Working Group

1. Promoting green factories and integration of energy and resources

(1) Provided demonstration counseling for three green factories, and diagnostic counseling for six cleaning plants, as well as assisted factories in acquiring green building and cleaning product standards; three on-site visits to green factories that encompassed 70 plants and 112 participants; issued 13 green factory mark and 28 factories

(2) **COA:** Established a list for domestic and foreign invasive species, and analyzed the ecological and economic threats, and pertinent management strategies; established list for international high-risk invasive species, and analyzed potential invasive channels and pertinent preventive measures. Participated as a member of the Bird Documentary Committee of the Chinese Wild Bird Federation, and published the 2013 Checklist of Birds of Taiwan.

9. Completed investigation and compilation of traditional biodiversity knowledge of the indigenous people

- (1) **Council of Indigenous Peoples:** Organized investigation and compilation of traditional biodiversity knowledge of the indigenous people, and assisted 16 villages from eight tribes to participate in the Knowledge Implementation Plan of Indigenous Biodiversity Knowledge. One thousand six hundred entries of such information is expected for completion in 2013.
- (2) **Hakka Affairs Council:** Sparked understanding and emphasis of Hakka folk culture and natural landscape through subsidizing Hakka publications.



↑ The "Ocean Rhapsody-Game Party" parent-child activity held in the "Taiwan's reef, Dongsha Atoll" expo.

passed the cleaning production evaluation system; the approved enterprises had a combined carbon reduction of 219,000 metric tons, and a budget saving of NT1.21 billion.

(2) Completed 190 items of resource planning for steam, hydrogen gas, waste coolant, waste insulating materials and waste solvent in key industrial parks, a chained volume of 823,000 metric tons and yearly carbon reduction of



293,000 metric tons.

2. Encouraging energy conservation and carbon reduction, developing renewable energy (MOEABOE)

- (1) Assisted the establishment of 20 cases of solar power in Penghu County, which had a total capacity of 1560kw; in addition, 166 cases of solar-powered water heater were subsidized.
- (2) From 2012 to the end October 2013, 8,024 air-conditioners and refrigerators received subsidies; further, LED was installed in 5,041 road lamp posts.
- (3) Three thousand three hundred and forty-six electric motor vehicles were active from August 2011 to August 2013; further, 591 charge points at 71 locations were subsidized.
- (4) Announced the Incentive Measures for Offshore Wind Power Demonstration Systems; three selected companies need to complete four demonstration modules before 2015, and complete 100-200 MW demonstration fields prior to 2020.
- (5) Target for solar power has increased from 100MW to 130MW in 2013. As demands increase, the goal will be raised to 175MW, generating NT17.5 billion in production value.
- (6) The MOEA subsidized the development of swamp power system; currently, the Central Pasture in Linluo Township of Pingtung County and Hanbao Pasture of Changhua County were approved; their generator capacity is 195kW respectively, for a total of 390kW. Combined, they can produce 2.52 million watts annually.
- (7) From 2009 to the third quarter of 2013, NT212.9 billion was invested in the Green Energy Industry Elevation Plan; the production value as of the third quarter 2013 reached NT313.4 billion, giving employment to 61,700 people.
- (8) Energy efficiency management for power-intensive equipment of the manufacturing industry: The concrete industry needs to report semi-annually, and all pertinent enterprises had complied; 30 and 15 on-site energy efficiency inspections need to be completed for the steel manufacturing and paper manufacturing industries respectively before the end of the year.
- (9) Subsidy for effective energy conservation demonstration plans: 14 units were subsidized and were expected to create NT325 million production value and conserve 3,999 KLOE per year.



↑ The MOEA subsidized local governments the development of swamp power system.

3. Invigorative measures for agriculture (COA)

- (1) Planned 74 recreational agricultural zones that promote food tourism and nature tourism; counseled cuisine classes, developed local agriculture souvenirs and encouraged agricultural tourism; thus far, the plans had attracted 11 million visits.
- (2) Encouraged lifelong learning, organized agricultural institute to train existing and new farmers, implemented systematic education, and promoted professional certification to strengthen professionalism.
- (3) Maintained balance in the production and consumption of the poultry industry: Assisted in the establishment of information platform within the poultry industry to actualize precaution mechanism and autonomous adjustment within the industry; maintained a 80% market share for domestic poultry.
- (4) Promoted CAS label products: Four accreditation agencies were certified by the COA and responsible for the testing of 16 products. Nine hundred inspections covering over 3,000 products were conducted annually. As of September 2013, 6,550 items from 337 production plants received CAS label, a yearly production value of over NT51.6 billion.
- (5) Promoted agricultural business zones and advanced better utilization of farmlands: 16 business zones were established nationwide that covered 4,142 hectares; Sanxing Safety Production Base was established to nurture young farmers; traceable mushrooms from the collaboration between the new zones and farmers attracted 40 young farmers to participate.
- (6) Counseled farming groups to emphasize core unique product, creating a cross-zone value-add platform; Dongshi District FA established an

integrated marketing center that focused on top-grafting sand pears; Yuchi Township Farmers Association purchased tea leaves from farmers at a 10% markup, and established a dedicated tea production farm.

- (7) Monitoring and management of irrigation water quality, and completed irrigation water quality monitoring network that improved water quality passing rate; established irrigation water quality monitoring spots at key furrow paths of the 380,000 hectares of irrigation zones of the Department of Irrigation and Engineering; inspections of the spots were conducted on a bi-monthly basis.
- (8) Continued to plan, advise and supervise the cooperative and diverse marketing of agricultural products; as of September 2013, 1.79 million tons of fruit and vegetables and 54.45 million stalks of flower were marketed; 430,000 tons of cooperative fruit and vegetables were marketed.
- (9) Prioritize feed corn and grains in the re-cultivation of fallow, and counseled farmers to plant alternative crops through contract farming. One hundred and ten thousand hectares of land

were dedicated to planting feed corn and grains in 2013.

- (10) Encouraged farmers to use poultry feces and local farm waste as raw materials for natural fertilizers; an estimated 104,000 metric tons of organic fertilizers were used across 26,000 hectares of farmland.

4. Encouraging transformation in the fishing industry and curbing illegal fishing (Fisheries Agency)

- (1) Eight hundred and fifty thousand people were entertained through ocean fishing, viewing and ecological tours through the fishing industry in 2013; in addition, 45 leisure boats from eight harbors in five counties/cities were randomly inspected for public safety.
- (2) Ensured installation of VMS in fishing boats, sent inspectors and examiners to randomly inspect boats and their logs, and created a mobile maritime inspection unit to curb illegal fishing and provide latest update on fishing information; actively participated in meetings of relevant fishing management organizations.

● Transportation and Livelihood Working Group

1. Improving public road transportation efficiency

- (1) Organized subsidies for public service routes in cities and remote regions; altogether, 1,126 routes were subsidized with NT1.122 billion.
- (2) Three hundred and sixty-nine buses were replaced, and the average national age of public buses was lowered, paving the way for transportation services that encompass barrier-free design and green energy concepts.
- (3) Completed electronic ticket verification system for all bus operators in Taiwan.
- (4) Subsidized 345 barrier-free taxis in seven counties and cities, satisfying fundamentals

transportation needs of those with disabilities.

2. Constructing railway transportation and improving service efficiency

- (1) Continued to promote metro railway and MRT projects. The TRA Chaozhou MRT Plan for Kaohsiung-Pingtung was completed in 25 June 2013, which encompassed five elevated stations used for transfer and transport in the Xizheng Line. Other key tasks included: establishing round-island electric rail network, expediting the construction of HSR stations in Miaoli, Changhua and Yunlin, as well as extension of airport MRT to Chungli train station.



Widened Wugu to Yangmei section of National Highway 1.



3. Widened Wugu to Yangmei section of National Highway 1

The project spanned from Wugu viaduct in the north to Yangmei toll station in the south, totaling 40km in length. The project was planned to avoid sensitive environmental regions, with accompanying protective measures to minimize impact on the ecological environment along the route. Measures include lowering trestle to minimize environmental interference, plant transfer within disturbance zone, reuse of surfaces soil, establish escape route for animals, and nurture grass swamp habitat and shore/river habitat. The project incepted on 28 October 2009, and was open for traffic on 20 April 2013.

4. Conducting offshore harbor construction and ship procurement plan

The plan aimed to improve offshore island transportation service in conjunction with mini-three-links to boost tourism and recreational industries. Piers one to three of Liaoluo Harbor began construction in 2009, and construction was completed this year.

5. Advancing road traffic safety education

The Road Traffic Safety Inspection Committee formulated three main themes of motorcycle accident prevention, accident prevention for the elderly and DUI accident prevention for the year 2013. Through collaboration with central agencies and local governments, traffic accident deaths had reduced by 81 people compared to the same period last year (January to September).

6. Promoting ecotourism, environmental education and friendly tourism environment

In addition to providing an amiable leisure environment of natural landscapes and historical monuments, the various National Park head quarters, Metropolitan Parks and Administration Offices of the Tourism Bureau at various scenic areas organized numerous ecological tours with explanatory sessions. In response to the unique environmental characteristics of tour and emphasis on environmental education, green building method was employed in the design of the Tourism Center; in addition, five barrier-free tour routes were developed at Fulong, Baisha Bay, Sun Moon Lake, Guangu, and Dapeng Bay national scenic areas.

7. Improving weather forecast and earthquake detection capabilities

- (1) Implemented Immediate Weather Forecast for Catastrophic Weather, developed ensemble weather forecast application technology, completed standardization of quantitative precipitation forecast, and announced reporting mechanism for catastrophic weather forecast and integrated typhoon prevention. Daily and customized weather services were also provided, such as Matzu ceremony, Hakka village weather, and weather figure.
- (2) Implemented Catastrophic Weather Monitoring and Forecast Establishment Plan; cutout boards and posters with QR code facilitated ease of search by the general public with regard to weather information.
- (3) Implemented the Earthquake and Geophysical Monitoring System Enhancement Plan. In 2013, 105 geophysical database management system stations, two structural strong-motion systems and 20 global positioning monitoring systems were upgraded.

8. Strengthening disaster prevention system for roads and bridges

- (1) Implemented disaster prevention mechanism for roads: Continued to improve disaster prevention mechanism, and incorporated 47 sites prone to flood and cascade into the alarm system.
- (2) Improved seismic retrofit for highway bridges: Seismic retrofit is a key issue in creating a sustainable national disaster prevention plan; by February 2013, 58 bridges completed seismic retrofit along National Highway 1.

9. Promoting environmental management system and energy conservation/carbon reduction equipment for the aviation industry

- (1) A 4% reduction of CO₂ by each passenger in the Taipei International Airport, and an average waste production of 240g, which is 250g less than the international indicator, was accomplished. In terms of green label procurement, the rate was 94.88%; recycling was in full force. Kaohsiung International Airport received ISO14001:2004 certification on 28 September 2013.
- (2) The PC AIR and 400HZ aircraft power equipment passenger ramp was completed by the Taipei International Airport on 20 July 2013. Carbon

emission reduced by 85% through alternative usage of electric-powered vehicles and gas-powered vehicles.

10. Promoting green consumption in the general public

- (1) Established credible green product certification system: as of September 2013, 124 product specification standards were open for application, and a total of 9,566 products received green product label.

● Technology and Evaluation Working Group

1. Taiwan Climate Change Projection and Information Platform (NSC, EPA, CWB, TBROC, BRCAS, Forestry Bureau, ESRI, FA)

- (1) Completed initial verification of raster-based database information for Taiwan region.
- (2) Analysis of sea level change after homogenization of the four monitoring stations: Keelung (north), Wengang (central), Kaohsiung (south), and Hualien (east).
- (3) Completed deviation adjustment of precipitation for MRI-WRF typhoon incident, and made improvements on average delay time and total precipitation estimates.
- (4) Completed 251 dynamic downscaling typhoon and storm simulations, as well as height estimates for maximum storm surge.

2. Establishing, maintaining and integrating TaiBIF and GBIF

- (1) Conducted improvement works on TaiBIF, TaiBNET and TaiEOL.
- (2) Updated information of wildlife animals, wildlife plants and biodiversity in the Taiwan Biodiversity Network (TBN) and BBS Taiwan.
- (3) Conducted investigation on the biodiversity of artificial coral reef regions, conservation fishery areas and three islands of the north, and compiled aforementioned information into the Biodiversity Database on Marine Life of Taiwan's Waters.
- (4) Organized the 4th Phase of Government Digitization Plan – Integration of Environmental Resources Database.
- (5) Established biodiversity database on Liuqiu plants and tidal zones at the National Scenic Area Administrations of Dapeng Bay, Siraya and Sun Moon Lake; monitored natural ecology resources

- (2) Building a comprehensive marketing environment for environmentally friendly products, allowing consumers convenience in purchasing such green products.
- (3) Assisted in the planning of secondhand/creative markets at vacant lots in traditional markets, developed relevant management talents, enabled distribution channels for these products, and promoted meaningful use of vacant market lots, generating business in the process.

and investigated resources on amphibian, reptile and avian species.

3. Promoting Climate Change Adaptation Technology Integration Research Plan

- A. Overall plan:** (1) Complete second volume of scientific report that entailed the formulation process, information platform testing, adaptation strategies that support policy evaluation and examination of system structure; (2) Confirm location, issue and procedures for demo plan; 3. Establish scientific and simulation measures that adopt the international network and adaptation strategies that support decision system, demonstrated by the CLIMSAVE of the European Union and the UNESCO-IHE of the United Nations.
- B. Environmental Group:** (1) Establish key exposure aspects for pairwise comparison under the theme of climate change; (2) Confirm regional key issues and climate change factors; (3) Complete preliminary key indicators and potential classification for changes in extreme environment and gradual environment, as well as prototype for GIS environment (subject to interpretation) database and value-add information; (4) Analyze the latest trend in international adaptation technology and development.
- C. Evaluation Group:** (1) Edit key cross-disciplinary research subjects and knowledge; (2) Establish standard evaluation procedure for vulnerability of various aspects, and vulnerability and recovery indicator system; (3) Develop research methodology for evaluating cross-disciplinary climate change adaptation; (4) Develop a cross-disciplinary dynamic model



prototype; (5) Propose format analysis for cross-disciplinary information flow, and research suggestions; (6) Analyze latest development report on adaptation technology in the sphere of international vulnerability.

D. Governance Group: (1) Establish key aspects of adaptation under climate change; 2. Establish potential indicator framework for climate change

adaptation; (3) Complete prototype for climate change adaptation evaluation matrix; (4) Propose decision-making procedure for multiple standards in adaptation technology; (5) Analyze latest international development report on adaptation technology in the sphere of adaptation governance.

● Urban and Rural Development Working Group

1. Urban and rural sustainable development (CPAMI, SWCB, WRA, Taiwan Water Corporation)

- (1) Created a comprehensive environment for amendments to regulations of urban renewal: This ensures a complete overhaul of urban renewal regulations that allows the government to lead urban renewal, and develop a balanced and practical resolution to potential conflicts of interest in the renewal process; the amendments were sent to the Executive Yuan for review on 14 June 2012; the Executive Yuan notified the Legislative Yuan for review on 7 December 2012.
- (2) Promoted the Fourth Phase of Sewage System Development: Parallel progress of government handling and civic organization participation method though BOT were facilitated to expedite the construction of sewage system and improve sewage system coverage rate. In 2013, NT 10.6 billion was allocated for such purposes through the CPAMI and various county/city governments.
- (3) Promoted recycling and reuse of effluent from public sewage treatment plants, and accompanying measures were incorporated to

reuse effluent in the expansion of existing sewage treatment plants. Fengshan River Sewage Treatment Plant was prioritized for feasibility studies and early planning, thus providing a model for other plants to follow.

- (4) Expedited the lowering of water leakage rate and provision of steady water supply plan: From 2009 to date, 3,664 km of old water pipes were replaced, and 614 district metered networks were established.
- (5) Counseled private urban renewal projects: Since the promulgation of the Urban Renewal Act, 1,255 cases of urban renewal projects were organized, and in particular, 400 of those were approved and implemented; as of 2013, 115 cases of urban renewal projects (including transfer of rights) were approved and implemented; in particular, 24 of those were maintenance and renovation projects.
- (6) Promoted government-led urban renewal projects: Since 2005, 215 demonstrate sites were selected; 54 were still in the early planning phase, and 76 sites were temporarily evaluated as infeasible; 53 urban renewal demonstration sites



📍 The sewage treatment plant in Hopin Island, Keelung.

were in the phase of bidding and early preparation – in particular, 8 of those completed the bidding phase, 10 of those were led by the government, and 3 are in the process of bidding.

- (7) Assisted in the organization of County (City) or Township Road Landscape and People-Centric Environment Improvement Plan, Pedestrian Walkway, Bicycle Path and Barrier-free Environment Improvement Plan, Campus or Campus-related Walkway and Bicycle Path Improvement Plan, and Greenification through Planting and Continuous Establishment of Green Zones Plan. From 2009 to the end of 2012, NTD5.646 billion was allocated to the plans, which resulted in 76,964 trees being planted, an increase of 483,853 square meters of green land and a carbon reduction of 1.118 million metric tons.
- (8) Promoted talent nurturing plan in rural areas: As of the end of 2013, at least 108,439 people in 2,127 rural communities were trained; 458 communities completed all four phases of training, and 340 communities came up with their own rural renewal projects.
- (9) Restoring natural coastal landscape: From 2009 to end 2013, 387 hectares and 81 km of coastal environment were improved, and 5.4km of natural coastline was restored.
- (10) Restoring natural river: From 2009 to 2013, 26 key rivers were remediated, spanning over 83.4

km in river length.

2. Green building for eco-cities (ABRI)

- (1) **Green building materials mark evaluation:** As of October 2013, 105 green building materials mark were evaluated, including: 79 healthy, 5 renewable, 19 high-functionality and 2 ecological materials.
- (2) **Green building diagnosis and improvement plan:** Completed 44 cases of improvement in 2013.

3. Enhancing living environment (CAPMI)

- (1) Organized investment plan for appropriate housing in the Banqiao and Fuzhou districts of New Taipei City: 4,455 appropriate houses (including 446 rental houses) were scheduled for construction; 4,009 houses completed purchase procedure, and the project is scheduled for completion in March 2015; In April 2013, the project received Diamond-grade candidate green building certification in the community category, and in August 2013 received the Diamond-grade candidate green building certification.
- (2) Actively promote social housing: Promoted five demonstration sites for first phase of social housing in conjunction with Taipei City and New Taipei City. The project is estimated to provide housing to 1,661 households.

● Health and Welfare Working Group

1. Protection and service for women, children and youth (Ministry of Health and Welfare, MOHW)

- (1) Provided related protection services to children and youth, and in 2013, the total amount of handled cases numbered over 28,000, serving over 770,000 times throughout the year in terms of providing related protection placement, family intervention, and compulsory parental education.
- (2) Established the 113 Protection Hotline that provide all-in-one channel for the general public to seek help, thereby implementing protection and aid works for victims, strengthening preventive counseling for families prone to violence, and ensuring the personal safety of women.
- (3) Promoted multi-faceted intervention services for victims of domestic violence, and formulated

various subsidy standards for victims. In 2013, it was estimated that the aforementioned plan can provide protection and assistance services for 900,000 domestic violence victims through a subsidy of NTD350 million.

2. Relief and social aid for citizens in distress (MOHW)

Established the “Immediate Care” project to look after the disadvantaged; as of 30 September 2013, 153,778 families had benefited from the project, subsidized through NTD2.34993 billion of aid.

3. Molding a friendly city for the elderly, and enhancing their social participation (Health Promotion Administration, MOHW)

- (1) Organized health promotion competition for the



elderly, integrated civic organizations in communities, and encouraged the elderly to form teams to compete.

- (2) The Vietnam Branch of the United Nations Population Fund (UNFPA) cooperated with the General Office for Population & Family Planning, Ministry of Health, Vietnam (GOPFP), and organized the Responding to Rapid Ageing: Workshop to Exchange International Experiences event at Hanoi. Director-general Chiu Shu-ti of the Health Promotion Administration participated in the event and shared the current condition of aging in Taiwan as well as corresponding health care measures. Director-general Chiu was also interviewed by the local media.
- (3) As of the end of September 2013, 347 hospitals and clinics within the 22 administrative counties and cities had integrated with 1,179 community care spots. The rate of integration constituted 70% of all care spots in the medical care system, and by the end of 2013, the rate will exceed 80%.
- (4) Provided preventive healthcare services for the elderly over the age of 65 once annually; and more than 600,000 elderly had undergone such services.
- (5) Since 2011, healthcare framework and certification system for the elderly is in place; as of October 2013, 42 hospitals had received accreditation.
- (6) International cooperation: 1) The "Task Force on HPH and Age-friendly Health Care" was proposed and approved at the International Conference on Health Promoting hospitals and Health Services organized by the WHO on May 22. Director-general Chiu Shu-ti of the Health Promotion Administration acted as the convener of the task force, which consisted of 17 members from 13 countries. 2) Co-organized the pre-conference event, Symposium on Campus Health, for the 21st International Union for Health Promotion and Education (IUHPE). More than 60 participants from 20 countries participated in the discussion.

4. Handling epidemic and promoting the development of vaccine production (Centers for Disease Control, MOHW)

- (1) Convened the Meeting of Policy Instruction on Human Vaccines, and its resolutions included: confirm development direction for production of



- (2) The Director-general Chiu presented the prize to the second place of "Healthy 2013 Grandfather and Grandmother Get Moving Contest - Finals".

human vaccines; formulate short-term and long-term goals for the promotion of NRA certification; prioritize development items for vaccine production; confirm R&D strategies for new influenza vaccines, focusing in principle the completion of the mock-up vaccine for the new model of influenza.

- (2) Gradually introduce new vaccine inoculation: Promoted inoculation of pneumococcal conjugate vaccine (PCV) for toddlers aged two to five, and lowered infection complications for the children. As of the end of August 2013, 182,000 doses of vaccines were administered.
- (3) Established central epidemic control center for rabies and H7N9 that include cross-ministerial mobilization and updates on epidemic situation.

5. Medicinal product review and safety management (MOHW)

The Integrated Medicinal Product Review Office (iMPRO) was established to effectively streamline medicinal product review process; an internal inspection group was established to strengthen monitoring of cases and ensure consistency of review quality; digital submission of application was encouraged, and an electronic digital registration system was established, which was expected to be operational by the end of the year; announced the "Mechanism to Expedite the Testing, Registering and Accrediting of New Medicine" that can shorten trial period and expedite the launching of medicinal products.

6. Risk assessment and management of environmental pollution quality (EPA)

Co-organized education seminars on electromagnetic waves with the Health Promotion Administration; completed a children's website on

non-ionizing radiation that allows children to learn correct information on electromagnetic waves; supervised various environmental bureaus to conduct water quality testing on tap water system, achieving a 99% passing rate; conducted environmental monitoring, risk assessment and management on pollutants and persistent organic pollutants (POPs); established background information database on environmental POPs as reference for risk assessment.

7. Promoting excellent agricultural products (COA)

- (1) Promoted tea with traceability and production certification, marketed and promoted to consumers information on tea consumption.

- (2) Invited experts for consultation and established excellent internal and external supply chain for fruits. In 2013, 14 fruit products in 26 designated regions were counseled, and integrated pest prevention and monitoring, examination of pesticide residuals, diagnosis on soil fertility and reasonable fertilization, and health management courses were organized.
- (3) Counseled and promoted traceability for poultry products, and in total 416 companies passed certification; strengthened tracking of poultry farms (venues) and product examination. An estimated 545 cases of poultry examinations were planned for this year, and thus far, the passing rate is 99%.

● Education and Promotion Working Group

1. Improving knowledge and understanding of sustainable development and environmental awareness (MOE, HPA, EPA, NSC, MOEAIDB, Forestry Bureau)

- (1) Assisted universities in organizing general knowledge courses and credit courses on sustainable development and climate change, and assisted 64 general knowledge courses and 7 credit courses to date this year; organized seed teachers' training camp on climate change adaptation for universities and senior high schools; organized MOE Green Campus Partner Networks Plan that entailed an information platform with 6,207 submissions.
- (2) Assisted 460 cases of senior citizen education programs that foster ideas on sustainable development and environmental consciousness, through which 79,583 people benefited; 762 cases aided pertaining to promotion of the International Day of People with Disability (3

December).

- (3) Established libraries on environmental protection; promoted the personal learning passport and encouraged environmental education and life-long learning. Seventy-one sites for environmental education facilities were established, and 13 environmental education institutions and 1,662 teachers on environmental education passed certification this year.
- (4) Published a report compiling the best practices of CSR in Taiwan, promotional guide on the CSR report, organized an explanatory meeting on the CSR report, and provided CSR consultation services; 158 enterprises participated in the meeting.
- (5) Produced promotional videos and short films on the Month of Tree Planting to encourage more participation in such activities. As of the end of September 2013, 590 classes of outdoor teaching, 121 thematic activities, 117 professional seminars, 1,076 rounds of environmental explanations had provided the excellent opportunity of touring the forest and learning from the environment to over 78,000 people.



⬆ The EPA cooperated with 28 community colleges to start "Climate Change Environmental Education" courses and activities.

2. Advancing sustainable development through collaboration with the government, schools and the general public

- (1) Assisted 22 counties and cities in establishing the Environmental Education Counseling Task Force, which encouraged integrating resources of various counties/cities, and planning action plans



and strategies for an environmental education plan, international in scope and localized in nature.

- (2) Organized the first National Environmental Education Award, which recognized outstanding schools, organizations, agencies (institutions), civic organizations, communities and individuals for their remarkable contribution to environmental education; 35 units (people) received the award. In addition, the Annual Enterprises Environmental Protection Award was held, and 20 enterprises received the award.
- (3) Created an environmental education tour map that integrates environmental education facilities and resources.
- (4) Organized the Taipei International Vegetarian and Organic Food Festival from May 10 to 13, which saw the participation of approximately 50,000 people; From September 27 to 29, approximately 30,000 people participated in the Taiwan Rice Expo, which stressed the concepts of food safety and cherishing of food.
- (5) The Central Environmental Learning Partners Alliance was formed by the Endemic Species Research Institute and nine other agencies, including the Yushan National Park Headquarters. A MOU was signed on June 2.
- (6) The Soil and Water Conservation Bureau (SWCB) organized 140 water and soil conservation meetings and 176 soil erosion prevention promotion events in 2013; the concept of “everyone is responsible for water and soil conservation” was stressed repeatedly in the events.

3. Strengthening social education centers and promoting sustainability and environmental protection (MOE, EPA, MOEAIDB, NSC, COA)

- (1) Continue to promote issues of sustainable development and environmental protection through expositions and activities; co-hosted 33 activities with social welfare organizations that facilitate the visiting of the National Museum of Marine Biology and Aquarium by the disadvantaged, benefiting 1,540 people.
- (2) Assisted in the production of general science video programs on environmental education targeted at young age groups; three short films and eight promotional short videos (30 seconds) on easy steps for environmental protection was



⬆ The ecological class in wetland.

broadcasted at the national media, LCD monitors in the MRT and outdoor LEDs.

- (3) Conducted training for volunteers in conjunction with the Society of Wilderness (SOW). Four trainings were completed and 109 energy conservation volunteers were trained; carbon reduction volunteers were trained in conjunction with the National Science and Technology Museum (NSTM). From January to the end of September, 37,800 people participated in a total of 427 trainings.
- (4) Established the Virtual Museum of Taiwan Agriculture, which boosted an additional 1,000 videos in 2013.

4. Promoting research and international cooperation on education of sustainable development (MOE, EPA, NSC)

- (1) Assisted in the organization of international conferences such as the Hydrobiologia – International Conference for Global Editing Committee Members and the Challenges Facing Aquatic Biosciences, International Conference on Social Environmental Education for an Emerging Eco-Civilization, and the 9th International and Cross-Straits Symposium on Marine Biodiversity and Fishery of the East Sea and Environmental Science.
- (2) Assisted in the planning of activities for seminars on environmental education and sustainable development: 14 research projects related to environmental education, and 400 tiers of outdoor learning promotion programs were held by the Environmental Learning Center.
- (3) Hosted certification for environmental education personnel; as of September 30, more than 350 people received certification.



Evaluation of Taiwan's Sustainability Indicators in 2012

Summary of Taiwan's Sustainable Development Indicators

Sustainable development is a fundamental national policy and a common goal pursued by nations worldwide. To establish an objective evaluation of the nation's sustainable

development progress, the NCSD referenced the first edition of the Sustainable Development Indicator (SDI) system announced by the United Nations (UN) in 1996 as a framework to develop the nation's own sustainability indicators. The nation's SDI system was established in May 2003 and the computational results of the previous year are posted annually.

To keep in step with the latest international sustainable development trends, a consensus was made at the NCSD 25th Working Meeting in December 2008 to reference the framework of the UN's third edition of the SDI system announced in October 2007, along with other relevant international SDIs. Drafting of the nation's second edition of the SDI system began in January 2009 and was approved during discussions at the 29th Working Meeting on 31 December of that same year. The NCSD's 2nd SDI system includes 12 themes, 41 sub-themes, and 86 indicators, which is considerably more encompassing than the 1st edition.

This year's annual report includes updated content referencing the 2012 United Nation's Conference on Sustainable Development (Rio+20) outcome document, titled "The Future We Want." The 2012 SDI system contains a total of 12 themes, 39 sub-



themes, and 88 indicators presented as follows:

- 1. Environment (12 indicators):** PSI (pollution standards index), air pollutant concentrations, water reservoir quality, marine environment quality and marine environmental water quality, ratio of rivers suffering minor pollution, biochemical oxygen demand (BOD) concentration, garbage recycling rate, daily per capita garbage volume, environmental impact assessments (EIA) approval rate, number of publicly announced toxic substances placed under monitoring, ratio of environmental and ecological budget by the central government, and financial measures in promoting pollution prevention and recycling.
- 2. Energy Conservation and Carbon Reduction (8 indicators):** Per capita CO₂ emissions due to fuel combustion, annual increase of CO₂ emissions due to fuel combustion, daily per capita power consumption, energy concentration, ratio of resource-consumption based industries to manufacturing industry, percentage volume of renewable energy, energy conserved due to green buildings, and bicycle path length per 10,000 people.
- 3. National Land Resources (11 indicators):** Slope

variation ratio, subsidence land ratio, developed land ratio, forest coverage area, natural coast ratio, natural coastline loss ratio, effective water resource, ratio of water usage to production value of the manufacturing industry, groundwater recharge volume (tonnes), total national land area planting betel nuts, and human casualties and economic loss due to natural disasters.

- 4. Biodiversity (6 indicators):** Genetic resources and species preservation of biodiversity, change in specific wildlife population, land area covered by specific exotic plants, populations of specific exotic invasive species, eco-sensitive area, ratio of protected area to total land area, and marine protection area.
- 5. Production (14 indicators):** Reuse rate of industrial waste, reuse rate of toxic industrial waste, reduction rate of low-radioactive solid waste, ratio of cultivated land, area of organic cultivation, fertilizer usage rate per hectare of farmland, pesticide usage rate per hectare of farmland, labor production and unit production cost, ratio of females receiving salary in non-agricultural sectors, per capita GDP, ratio of gross domestic capital formation to GDP, annual increase in consumer price index (CPI), ratio of all levels of government borrowing above one year with outstanding non self-liquidating debt to GNP, and unemployment rate.
- 6. Livelihood (11 indicators):** Percentage of population with access to suitable drinking water, sewage treatment rate, daily per capita water consumption, number of times public transport journeys, domestic energy consumption by transport sector, times of tourist visits in Taiwan, road casualties per every 10,000 vehicles, road maintenance efficiency, total green procurement amount of public and private sectors, number of green marks awarded, and number of visitors at national scenic spots.
- 7. Technology (5 indicators):** Percentage of GDP spent on domestic R&D, ratio of Internet users, number of people using mobile phones for every 100 people, number of patents granted to nationals, and number of graduate level or above R&D professionals.
- 8. Urban and Rural Culture (3 indicators):** Number of villages in compliance with SDI, expansion rate of urban areas, and green area per capita.

9. Health (7 indicators): Percentage of population with access to basic health care infrastructure, infection controls and immunization measures for children's diseases, usage rate of preventive health insurance by those 65 and above, standardized cancer mortality ratio, infection rate of contagious disease, smoking rate of those above 18, and betel nut use rate of those above 18.

- 10. Welfare (6 indicators):** Ratio of low-income families, housing price income ratio, average family income and expenditure per household by five equal divisions of households according to disposable income, National Pension Plan coverage ratio, elderly participation in society, and suicide rate.
- 11. Administration (3 indicators):** Crime rate, number of dropout students, and adult education participation ratio.
- 12. Participation (2 indicators):** Official Development Assistance (ODA) ratio and community-based participation of social welfare.

Evaluation of 2012 Sustainable Development Indicators

To study and review the SDI system and coordinate the 2012 indicator evaluation tasks, on 9 September 2013, the NCS D Secretariat invited indicator competent authorities and NCS D civic members to convene the 2012 Sustainable Development Indicator Advisory and Reporting Introductory Meeting. At the meeting, aside from discussing and approving the additions, deletions and revisions to the indicator system, uploading of annual data from each agency was coordinated. Afterwards, each indicator competent authority had instant access to the indicator system to facilitate reporting of annual data and information.

Once each member had reported, the Secretariat completed the preliminary draft of the evaluation results at the end of October. The competent authorities will complete the interpretation of evaluation results, and by the year-end, the 2012 Sustainable Development Indicator Evaluation Results will be announced on the NCS D website making this information available to everyone.

For more detailed information about the 2012 Sustainable Development Indicator Evaluation Results and a backlog of previous years, please refer to the following website: <http://nsdn.epa.gov.tw/CH/DEVELOPMENT/INDEX.HTM>.



2013 National Sustainable Development Awards Recipients



The NCS members listened to the briefing for evaluation in Ali Tribal Village.

Education Sustainable Development Awards

Jiqing Elementary School, Rueifang District, New Taipei City

Jiqing Elementary School is nestled amidst mountains and the Keelung River flows by the school's front gate. This segment of the Keelung River is home to indigenous breeds of fish that can't be found in other parts of the river: Large-eye Chinese Bream (*Sinibrama macrops*), Round-snout nase (*Distoechodon tumirostris* Peters), and Taiwan bagrid catfish (*Pseudobagrus brevianalis taiwanensis*). It has an ecology endowed with bountiful natural resources and unique environmental features. At the end of 2009, the school began devoting itself to create a sustainable eco-school.

1. Diversity in Sustainable Environment Education

At the heart of Jiqing Elementary School's sustainable environment education are a group of specialized environmental education instructors and a native ecology encompassing a 9-district radius.

These elements have enabled Jiqing to design an ecology curriculum with vast aesthetic capacity. Starting in 2012, the school's principal has been personally overseeing a bi-monthly Environmental Education Instructor Professionals Meeting held at the School History Room. Aside from periodically reporting on the school's efforts and achievements towards establishing both the software and hardware for an eco-education environment, instructors from the community are invited to design their own unique environmental education courses, seek assistance from specialists and scholar, and present the results in a special report.

The school has extended its initiatives into the community, organizing forest education activities and cooperating with neighborhood chiefs and associations to develop forest education. The culmination of everyone's dedicated efforts has resulted in outstanding performances in both the

quality and quantity of the curricula and instruction. These curricula were designed in coordination with efforts to create an ecological environment and are combined to form the nine Major Environmental Education Curriculum. By 2012, over 20 environmental education courses had been developed and were compiled and published into a handbook.

2. Innovation and Concern for Environmental Protection and Healthy Lifestyles

Concerned about the holistic health of their kids, Jiqing designed the "85210" program, which advocates these healthy daily habits: 8 hours of sleep, 5 portions of fruit and vegetables, reducing the amount of computer and video game time from 4 to 2 hours, at least 30 minutes of exercise, and 0 sugary beverages. All the kids at Jiqing can recite this



↑ Ecology volunteers can gain knowledge and help students gain confidence in themselves.

● Yongan Elementary School, Houbi District, Tainan City

Origins Yongan Elementary School was founded in 1961 and is located in Houbi Township with verdant waters encircling this rural rice-growing paradise. The school district is home to "traditional agricultural village industries" and "Tugou Village," and in recent years professional faculty from colleges and universities have joined forces to promote collective community construction projects that have received widespread support. Additionally, the social, cultural and environmental factors involved with being part of Chiehtung Township, a traditional agricultural village, directly defines its intimate relationship with rice and water.

Located in this environment, Yongan Elementary School has planned and introduced environmental (water) resources projects and programs within the

catchphrase by heart, and it has been evident they really practice what they preach based on extraordinary performances on a variety of health advancement contests. Concerned about the health of their children, this academic year the school has taken their attentiveness a step further by planning the "Jiqing Healthy 8s," which promotes various creative, healthy ideas.

Jiqing Elementary School is also bolstering its efforts to conserve electricity by forming and training Volunteer Power Saving Teams and keeping lights off during midday hours; and has also launched the innovative "Jiqing Water Bucket," working to advance the effective conservation and reuse of water.

3. Comprehensive Humanistic Concern and Community Participation

- (1) **Leading the community to recognize environmental education:** Through the organization of forest education activities, the community gains a solid conceptualization of environmental education and the mentality for protecting and cherishing the earth.
- (2) **Organizing activities that care for the disadvantaged:** Through the organization of various activities and programs, such as the Moonlight Angels Class, Magnanimous Care Class, Original Warriors Volunteer Team, and Holiday Arts School, disadvantaged children are given a platform to stand on as well.

school district. Endowed with ample educational and experiential capacities, the school continually expands students' learning space. It has even created a Study Tour Map that connects the various types of resources in the school district. Through these multifaceted "education in the environment" courses, the substance and breadth of environmental education is improved. The school's unique characteristics and the generative capacity of environmental education is gradually taking shape.

In 2007, the school applied with the Ministry of Education to participate in a competitive program to install an Energy (Resources) Educational Center—Home of the Green Elf. This was a three-year plan that was implemented as follows: In 2007, a Green Energy Dream House classroom was built; in 2008,



experiential Green Energy Experimental Lab interactive spaces were installed giving unused space a new educational identity with function and value; and in 2009, the role of the Energy (Resources) Educational Center was fortified by fusing the respective classroom and interactive features of the Green Energy Dream House and Green Energy Experimental Lab, adding a renewable energy and resources monitoring educational system, to become the Home of the Green Elf. These developments enabled Yongan to successfully evolve into a Regional Energy Resource Educational Center.



☛ Making a Study Tour Map that integrates educational instruction and onsite resources and ecology.

1. Environmental Upgrade

Backed by the support of Yongan Elementary School's principal, interdisciplinary Sustainable Education Affairs Promotional Teams were formed through the collective initiatives of administrative personnel, teachers, students, community parents, and specialists. These Teams formed Evaluation Committees to conduct periodic and spontaneous assessments on implementation results to determine whether improvements have been made and if promotion is ongoing. Following these on and off campus audits, the appropriate external resources were channeled in to improve the campus environment and faculty intent on constructing a green campus with comprehensive software and hardware.

Over the past five years, the school's energetic efforts have resulted in upgrades that blend local environmental characteristics, green sustainability, and aesthetics such as reusing resources to beautify the walls of the campus enclosure, transforming idle

space, supplementing and fortifying classrooms, and renovation and reconstruction of the school's buildings. The surrounding scenery has been drawn into the campus and environmental education is deeply engrained, earning the Green School Gold Medal Award, and for the hard work devoted to remaking the school buildings, the school was awarded the Yuanyeh Architecture Awards. Excellent Building Award.

2. Educational Upgrade

The school has taken the initiative to apply with the Ministry of Education for a variety of competitive programs and projects. The emphasis of curricula development is on environmental education, arts and humanities, energy resources, and community interaction classes. Additionally, since Yongan Elementary School is part of a rice-growing community, water pollution is a focal point when discussing environmental problems. Students go onsite to test water quality conditions and a variety of theme-based classes are held encouraging students to think about environmental problems and how they can improve their own habits as well as their family members. Periodic community assessment environmental education activities are sponsored in which all the students and teachers go out into the community to get a firsthand look at the community's environmental status and humanities resources. Knowing more about their hometown and environment encourages students to cherish where they live and feel an obligation to take care of it. With the assistance of personnel and instructors from the Taiwan Permaculture Institute, students are introduced to natural farming methods using the bare land on campus. These activities get students in touch with the soil and "earth" and enables them to go home and share their farming experiences, planting seeds throughout the community.

To further deepen and expand its energy resource education, Yongan has used the success of the Energy Resource Education Center—Home of the Green Elf as material for putting together an Energy Resource Education Picture Book called Elf's Guardian, which includes a broad spectrum of arts and humanities topics. An adaptation of the picture book's storyline has been written into the school's puppet troupe's script and has received awards of excellence. Ultimately, the combination of Yongan's achievements prompted it to win the Executive Yuan's 2011 Energy Resource Promotion



Outstanding School Award.

In response to the impacts brought on by climate change, Yongan's students and faculty are thinking about the future and have taken the initiative to apply for the Ministry of Education's 2013 Public Elementary and Middle School Ideas for the Future and Innovative Talent Cultivation Plan—2030 Little Southern Island Ideal School. The main theme is "low carbon environment," which includes "low carbon living" and "environmental protection." Instructors teach children about these issues and encourage students to think about the types of impacts and changes they will face in the environment and society of the future. Also, the influence of technology on our lives in the future are presented in hopes of sparking creative ideas for the future.

3. Environmental Protection in Daily Life Upgrade

Besides promoting the recycling and reuse of textbooks, uniforms, and school supplies and implementing resource recycling and measures to reduce the amount of garbage on campus, the school is integrating protection of wilderness ecology concepts by setting up defoliation composting sites. These sites lessen the load of students' campus environment clean-up efforts, allows the natural effects of composting to give back to nature, and the reused kitchen waste and foliage composting can be further used in natural farming methods, realizing the benefits of organic composting through an integrated curriculum.

4. Community Upgrade

Multifaceted and concerned, caring for the disadvantaged is one of Yongan Elementary School's essential sustainable development objectives. It provides remedial instruction to help underachieving students from low-income families improve academic performance. Afterschool Care and Moonlight Little Angel programs help disadvantaged

families take care of students' livelihood and learning. The school assists students in education priority areas, from remote areas or disadvantaged families, to develop their special attributes and elevate learning effectiveness. Lunch allowances, tuition subsidies, and emergency relief scholarships are among a variety of assistance funding provided as a means of reducing the burden of disadvantaged families and relieving the extraneous pressures on these students so they can focus on studies. The school also sponsors remedial Mandarin language education classes for children of newly arrived immigrants and the Torch Program that assists recently immigrated families to integrate into society. Through these initiatives, teachers and students and community residents alike have a great opportunity to learn about and experience the value of cultural diversity, endeavors that enrich local culture.

Yongan Elementary School has also popularized Study Tours within the school district and, at the shake of a rice stalk this local agricultural industry has evolved into the ideal Study Tour experiential classroom. Lotus rice and Yonghsing soy sauce are representative products of traditional rural culture, and via cooperation between industry and school, the factory transforms into a classroom and the boss turns into an instructor. The students are genuinely interested in participating in these Study Tours and they also serve as a marketing channel for the industry, with the industry and school working together and mutually benefiting.

5. International Exchanges

The not for profit organization (NPO) Asian-Pacific Children's Conference (APCC) holds an annual convention in Fukuoka, Japan. Jiqing was selected to represent Tainan City at this convention, having the opportunity to engage in cultural and environmental education exchanges with instructors and students from Japan and further advance the mutual friendship and bilateral exchanges between Taiwan and Japan.

● Hushan Elementary School, Rende District, Tainan City

Hushan Elementary School was founded in 1917. It is nestled amidst over a hundred hectares of forest with a wide variety of tree species, and there are no residential homes within a one-kilometer radius of the campus. It is truly a beautiful eco-school. Storied historical buildings more than one

hundred years old like the Rende Sugar Factory, Baoan Railway Station historical monument, Tainan Metropolitan Park and the New Chi Mei Museum, which will be opening soon, surround the school.

The school has integrated a flourishing forest ecology and actively developed an eco school



curriculum based on its local characteristics with the results of its efforts receiving affirmation. In 2012, the United Nations Messenger of Peace Jane Goodall accepted the school's invitation for a visit. She participated in the school's tree planting activities and told stories to the children, becoming a catalyst in efforts to promote sustainable development education. Aside from this, in 2012 the school was selected as the one of Ministry of Education's Top 100 National Environmental Education Program Schools. The school also independently proposed the green beautification refurbishing plan "Charming Colors of Taiwan," chosen among the top three nationwide, and became the first school in Taiwan selected to implement the Charming Colors of Taiwan plan.

Eco Elementary School Children's Exploration of Nature's Amusement Park Eco School

Children in our modern world have been disconnected from nature, resulting in the so-called "nature deficit disorder." In efforts to mend this missing link, Hushan Elementary School has integrated the school's flourishing natural ecology and forest resources to energetically develop an Eco Elementary School Forest Curriculum. Backed by the coordinated efforts and assistance of Hushan teachers, community, numerous parents involved in The Society of Wilderness, green thumbs, and the Kaohsiung Ciaotou Sugar Refinery's White House, three main courses were designed based on students grade level: "Tree Ethics" for lower grades, "Forest Library Preparation" for middle grades, and "Gaia Restaurant" for higher grades. This creates a Forest Curriculum stable as bedrock, everlasting like a diamond, and filled with the wholehearted love of heaven and earth, whose goal is to establish environmental education and sustainable development education.

Strolling and Learning Hushan & Exploring Time Immemorial—Local Characteristics Revealed

Backed by the coordinated assistance from the community, nearby universities, the Chi Mei Museum, and Ten Drum Cultural Village, Hushan Elementary School designed the Strolling and Learning Hushan & Exploring Time Immemorial—Local Characteristics Revealed course. With Hushan Elementary School at the center and incorporating



↑ Students dress up as little frogs 'ribbitting' concern for Taiwan's ecology.

the outskirts of Tainan City's Southeast District, a curriculum was developed focusing on the four aspects of green living, arts, humanities, and industry. The curriculum's purpose is to promote children's well-rounded development, increase interaction with nature, and blend local characteristics with the innovative educational methods of inquiry teaching, outdoor teaching, experiential teaching, doing teaching, and media teaching. This program is divided into short-, mid- and long-term development phases. In the short term, the school's competitiveness must first be improved; in the mid-term, community construction is integrated to advance the protection and preservation of Hushan District's cultural heritage and the development of local industries' unique characteristics; and in the long term, the sustainable development curriculum is transformed and marketed as a "Unique Study Tour Center." Via the link up of the High Speed Railway (TRA) with the existing Taiwan Railway, the new transportation line will open a new corridor to the Tainan Study Tour, allowing Hushan Elementary School to become the front door of Tainan City, instead of its backyard.

Ecologically Diverse Campus and Multifaceted Instruction and Environmental Protection

Interaction and dialogue among teachers, students and the community led to the formulation of a short-, mid- and long-term local sustainable development plan that incorporates the unique characteristics of the school, community, and ecological environment and implements a mutually beneficial environmentally symbiotic green building concept. Specific implementations include permeable road surfaces, red brick pathways, waste and reusable logs for benches, a grass turf running track, hedges, hydroponic vegetables for onsite food supplies,



establishing an organic LOHAS farm, and the construction of beautiful Charming Colors of Taiwan space. These measures will enable the entire school to reach a water permeability of 85% and a ratio of green cover of 78%. To instill the practice of environmental protection in daily life and manifest the spirit of the 3Rs (Reduce, Reuse and Recycle), measures such as garbage reduction, recycling and reuse, defoliation composting, a "vegetarian lunch" on Mondays, water resource conservation, and water quality testing were implemented.

Additionally, the multifaceted instructional activities and environmental action will cultivate sustainable development concepts such as teachers, students, and their families planting trees together, a "one student, one teacher, one tree" activity, and

teachers and students working together to make an aquatic pond. NGOs and outside resources are brought in to co-organize environmental activities, and community members and retirees form environmental protection volunteer groups. Water resources conservation tours, young environmental protection cavalries, carbon reduction expert Internet contests, environmental education research planning, and eco school promotion are all implemented. These activities create a multilayered ecological environment, allowing diversity of species to flourish and the school to become the children's exploration nature amusement park and the community's sustainable development education center.

Hushan has been striving to build an "Eco School for Children's Exploration of Nature's Amusement Park" for many years now and has earned the support of local parents. Thus, amidst calls for a reduction in classes at other schools, in 2013 Hushan's incoming 1st grade class set a record by adding classes for the first time in nearly 100 years of the school's history. The school will continue working hard in the future integrating the local forest natural ecology and the community's flourishing arts and humanities environment. The culmination of these efforts will build Hushan Elementary School into a sustainable development education center allowing children to put the material from daily lives and nature into practice and continually cultivate children's environmental action.



Teachers and students harvest vegetables together.

▶▶ Sustainable Enterprise Award

● Taiwan Semiconductor Manufacturing Company (Fab 3)

Taiwan Semiconductor Manufacturing Company Limited (TSMC) pioneered the specialized integrated circuit manufacturing service business model propelling the growth upsurge of semiconductor design companies worldwide. Its four core values are integrity, commitment, innovation, and customer orientation (ICIC). TSMC is also dedicated to actualizing sustainable operations, and in 2010, 2012, and 2013, it was selected as the Dow Jones Sustainability Index (DJSI) Group Leader of the Semiconductor and Semiconductor Equipment Industry.

TSMC Fab 3 is one of the world's most advanced semiconductor eight-inch wafer foundries. Since 1995 to date, it has ceaselessly engaged in innovative research and development efforts. In recent years, it

has focused more on cutting-edge process technology development, resulting in many spectacular technologies such as the MCU (eFlash), HV(BCD), and MEMS, which have enabled TSMC to occupy a leading global position. As for corporate responsibility, in addition to receiving occupational health and safety and product safety certification, such as ISO 14001, OHSAS 18000, AAA disaster prevention, and QC 080000 early on, in 2013, TSMC took further steps by receiving a water footprint inventory approval, pulling in the reins even tighter on the path to a sustainable enterprise.

The following achievements demonstrate TSMC's ongoing efforts to actualize enterprise sustainable development in environment, operations, giving back to society, and innovative R&D:





Annual volunteer facilitator training camp.

1. World-class Sustainability Benchmark Enterprises

■ DJSI leader in the semiconductor industry:

Each year, the Dow Jones Sustainability Index (DJSI) invites the world's top 2,500 market value companies to participate in an enterprise sustainability performance appraisal. In 2010 and 2012, TSMC was selected as the Group Leader of the Semiconductor Industry; and this year (2013) it became the first company ever with the double-award recipient honor selected as the Group Leader of both the Semiconductor Industry and the Semiconductor Equipment Industry.

■ Mature plant completed water footprint certification:

TSMC Fab 3, an eight-inch wafer plant, was the first to receive approval for its water footprint inventory and was approved and certified by third-party inspection units.

■ "People" are the greatest resource:

In accordance with TSMC's social responsibility principles of "providing more than just an employment opportunity, but also good benefits and a safe, healthy work environment," Fab 3 has implemented occupational safety management measures and received the Taiwan Occupational Safety and Health Management System (TOSHMS) performance approval with the maximum of 10-years validity. Also, in 2013, it was the only tenant to be recognized by the Hsinchu Science Park Administration with the Excellence in Labor Safety and Hygiene Award.

■ Promoting second party OHSAS audits on contractors:

In addition to carrying out occupational safety and environmental protection measures on its own facilities, Fab 3 takes further steps to encourage second party OHSAS audits on its contractors. To date, TSMC has assisted 100 factories gain OHSAS certification approval and anticipates that together

with the cooperation of contractors they can achieve the target of zero accidents.

■ Enterprise environmental benchmarks:

TSMC pays close attention to global environmental protection trends. Each plant has introduced ISO 14001, QC 080000, and ISO 50001 environmental and energy management certification, and has aggressively promoted green building certification in the construction of new plants. By 2012, TSMC already had three factory buildings leading the way in receiving the Green Factory Label, and three other factories located in Tainan and Taichung are currently in the application process.

Despite being a mature factory, Fab 3's water and electricity consumption and greenhouse gas emissions have steadily been reduced each year. In 2013, the unit's consumption of water and electricity declined by 18.1% and 11.37% respectively compared to 2011, and emissions of greenhouse gasses were reduced as well. In 2012, the unit's per wafer PFCs was reduced by 47.2% compared to 2008.

2. Engraving Sustainable Operations Concepts

■ Steady, continually growing enterprise

In 2013, TSMC's total production capacity reached 16.45 million eight-inch equivalent wafers. Regarding consolidated revenues, in 2012 revenues reached NT\$506.2 billion, an increase over the previous year of 18.5%, and up to the third quarter of this year revenues of NT\$451.2 billion have been recorded, a 20.2% increase over the same period last year. Fab 3 is TSMC's largest eight-inch wafer plant in terms of production volume. Over the three-year period from 2010 to 2012 the gross profit margins are at the highest levels ever, while cost reductions have reached 155.7%, the highest percentage of any of its eight-inch wafer plants.

■ Creating employment opportunities and



actively giving back to society

TSMC Fab 3 wafer plant has a male-to-female employee ratio of nearly 1:1 (46%:54%), implementing gender equality and taking care of labor, and provides premium remuneration packages above industry standards. It fosters the growth of domestic industry, working tirelessly to support the industrial competitiveness of domestic materials suppliers and maintenance sub-contractors, facilitating their development in line with international standards, and achieving an overall win-win situation for the domestic semiconductor industry. Moreover, it strives to plant industry roots here in Taiwan, increasing GDP, and creating employment opportunities.

In other areas, employees independently participate in a variety of public interest volunteer services and programs involving ecology, energy conservation, education and environmental protection. Their contributions reach out into the community helping all levels of society, including sustainable home instruction, campus environment refurbishing and energy conservation service teams, Taiwan Lantern Festival environmental protection volunteers, Family Support Center family friendship activities, and collecting goods for donation to those in need.

3. Innovative Technology and Service Development

■ Mature plant innovation and heritage

Selflessly sharing experiences: water and energy conservation observation activities TSMC Fab 3 has

accumulated nearly 20 years of experience and techniques. In the area of environmental sustainability, it has selflessly shared the keys to success, including organizing water and energy conservation technique demonstration workshops for other semiconductor enterprises in their industrial park, as well as cross-industry sharing among traditional industries such as textiles and circuit boards. Simultaneously, TSMC also shares these experiences at domestic and overseas technology forums. Additionally, it serves as a communication bridge between industry and government, assisting government to formulate related laws and regulations.

■ Transparent sustainable operations policy

TSMC's web portal opens up to complete disclosure of sustainable development information, welcoming public reviews and inspections. It announces a corporate social responsibility report each year and has received the Taiwan Corporate Sustainability Report Award for four consecutive years.

In 2011, TSMC established the Corporate Social Responsibility Committee. A working meeting is held on a quarterly basis to advance corporate social responsibility and environmental affairs. Lastly, in addition to striving for maximum achievements in its industry, TSMC's superior operating efficiency continuously creates added value, and throughout its daily operations it has established progressive relations with competitors, joining hands to ensure sustainability and striving to create a more beautiful future for society and generations to come.

● Taiwan Li Kai Green Company (Aleees)

In Taoyuan County's Guishan Industrial Park located on Hsinghua Road, there is a wall completely different from the surrounding environment. Why is there a montage of paired elephants, lions, and pandas on the wall? If you look closely, you will discover that it is an ark filled with animals. This kind of arrangement is also Taiwan Li Kai Green Company's (Aleees) special design, intending to convey the company's culture of upholding utmost respect for life and a passionate concern for ecology.

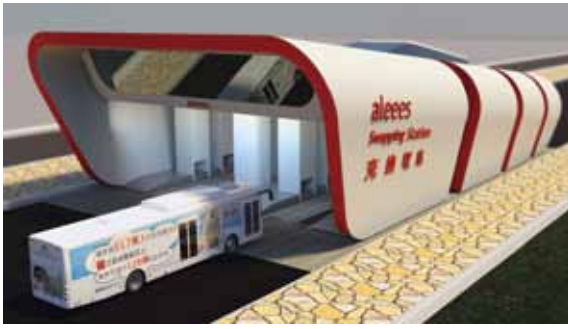
1. Human Safety and Environmentally Friendly Operational Concept

Aleees upholds the principle of human safety and



Development of electric buses transforms our children's future.

environmental friendliness. The company is devoted to reducing air pollution and the risks of cancer and strives to develop a full range of alternative energy



3D image of an electric powered vehicle recharging station.

solutions. It hopes to reduce dependency on fossil fuels and slow down the pace of global warming. Crossing over from "a driving force in lithium battery materials manufacturing" to the final phase, assuming the role of "electric bus rechargeable battery and power conversion service supplier," continually engaging in innovative R&D to create a more beautiful environment for future generations.

Since its establishment in 2005, the company has focused on the research and development of lithium ferrous phosphate (LFP) materials, and its patented core technology "LFP-NCO TEC" has been distributed worldwide. It led in global market share for three consecutive years from 2008 to 2010, gradually realizing the "new frontiers of green energy." To implement environmentally friendly energy conservation and carbon reduction, in 2009 Aleees fully devoted its energies to developing electric powered buses and an innovative electric conversion system that provides low carbon transportation, creating a green, friendly and livable city!

Aleees has capitalized on the advantages of LFP materials and battery design capacity and joined forces with up- and downstream partners to create a world-class electric bus. Innovative operational models offer a comprehensive green energy service system that overcomes initial difficulties in popularization and provides the public with a low carbon environmentally friendly and economically affordable mass transit solution.

The company combines a unique "intelligent charging station and bus control center" that can control the power operations on the buses and recharge stations efficiency from long distances. The recharging time has been leveled off thus reducing the impact on the electrical grid permitting full utilization of energy. This system not only reduces carbon emissions it also lowers public health care costs, leading the world's green energy transportation

into new frontiers and gradually actualizing the low carbon, green city vision.

2. Zero Emission Electric Powered Buses Safeguard the Public's Health

Pollution from motor vehicle emissions is a serious problem that every country faces. Aleees electric buses produce zero pollution and zero emissions. All the material used for making the bus down to the design of the recharging and power conversion operating system framework is modeled after nature's perpetual cycle of reuse, recycle, and recovery. In this way, it reduces resource waste and environmental pollution to achieve a "zero waste and full recovery" ecological environment. The company estimates that each electric bus annually reduces 128 tons of CO₂ emissions and 46,980 liters of diesel fuel consumption. Aleees is actively engaged in innovative R&D to transform our children's future.

Aleees has coordinated with various city and county governments and passenger transport operators to establish a connecting green transportation network of free electric bus shuttle services—Taoyuan County Line, Holiday Dasi Line, Chungli Loop Line, Taipei Route 246, Kinmen Sightseeing Bus, Hsinchu Expo Line, and Hsinchu Chuchien Minibus. Low-floor accessibility features on electric buses offer a friendly environment and have received overwhelmingly positive public response with a satisfaction rate of 97%. Aleees' electric buses have also coordinated with the Taoyuan County government to install automatic defibrillators for passenger use in case of emergency on their free electric shuttle buses in an effort to realize green transportation.

3. Implementing Environmental Protection, Working Towards Sustainable Development

Aleees has received approval for ISO 9001, ISO 14001, ISO 14064, and ISO/TS 16949 certifications. It has formulated environmental management procedures, proposed a feasible plan to reduce greenhouse gas emissions, and implemented effective reduction measures. Cumulative figures from 2009 to date show that Aleees has reduced 136,400 metric tons of CO₂ emissions and in the future will introduce carbon footprint calculations. These efforts are geared at promoting an independent Green Factory Transformation Plan to elevate energy efficiency, upgrade equipment function, apply waste-



to-resource technology, and utilize cleaner production techniques that integrate up- and downstream factories, work towards developing a green supplier chain, and realize a corporation's responsibility to society.

4. Dispatching Love Through Electric Buses

Aleees' low-floor electric bus allows the elderly to easily step on/off the bus and integrates tilt function and specialized wheelchair ramps allowing the physically disabled to get on/off the bus with ease and convenience. In addition, the company regularly extends its services to local orphanages and assists mentally and physically disabled children to go on the trips of their dreams. Moreover, in 2011 Aleees held the inaugural Aleees New Year's Party charity event for the first time, inviting children from several orphanages in the Taoyuan area to participate in a

concert, and also initiated a "one person one donation" activity where employees can give donations to show their concern for disadvantaged groups.

In 2013, it held the Aleees Caring and Sharing Hearts Thank You Party, encouraging more colleagues to get involved in charity events and experience the joy of volunteer service. The company has replaced the traditional year-end company banquet with this charity party event, inviting children from orphanages to come perform with physically disabled musicians and giving gifts of bakery goods from the Hsihan Bakery (a bakery providing employment opportunities to mentally challenged employees). This public interest spirit adds a touch of graciousness and well-being to the annual year-end celebration, and within its program and gift-giving, the message of charity and love is dispatched throughout.

● Da Ai Technology Co., Ltd.

1. Humanism, Compassion, Happiness and Fortune

Da Ai (Gan Un) Technology Co., Ltd. received its name from Master Cheng Yan. The name may seem simple and straightforward but its underlying essence is profound. The purpose of life is "unconditional love (Da Ai)" and the lessons of life are "graciousness (Gan Un)." "Environment and humanities, love and togetherness, and completely giving back" are core values deep in the hearts of every member of Da Ai (Gan Un) Technology. It is emblazoned on each of their ID card ribbons hanging on their chest, reminding everyone to use their hearts in every action and intent.

Da Ai Technology purchases all of its raw materials from the Tzu Chi Recycling Stations nationwide. The Da Ai [Gan Un] team unite the selfless dedication of nearly 200,000 Green Bodhisattva's, cooperating partners, and caring public to establish a love and togetherness platform. The surplus from profits is then given back to the Tzu Chi Foundation, allowing this charitable foundation to complete the cycle of love and compassion. Da Ai Technology is Taiwan's and the world's first company solely established with the purpose of "environmental protection and public welfare" and sentiments of humanity and graciousness, working to develop spiritual consciousness and environmental education. Its



Over 200,000 Green Volunteer Bodhisattvas recycling more than 300 million PET bottles.

ultimate goal is to serve as a model for green enterprises all over the world.

2. Learning from the Secrets of Nature Cradle to Cradle^{CM} Aspirations

Da Ai Technology has been at the forefront of the green textile industry since its establishment and has been devoted to developing and advancing environmentally friendly reusable material products. It stringently implements environmental friendliness into the production process, reducing the consumption of resources and avoiding environmental pollution. Da Ai's green textile products are made from recycled polyester taken from recycled PET bottles that have been processed

into ester capsules, green yarn, and textile, which are then used to produce their products. Compared to the original raw polyester textile products, recycled polyester can conserve energy by 84% and reduce CO₂ by 77%. Da Ai refuses to use post-production dyeing for its products and thus can save on the large amounts of water and chemical dyes normally needed for this process to achieve significant energy conservation, carbon reduction, environmental protection and water conservation benefits.

Da Ai Technology is a member of Taiwan's Cradle to Cradle^{CM} league. The company's Grey Eco Blanket was audited and approved by the U.S.'s Cradle to Cradle[®] Products Innovation Institute, and last December it became the first in the Asian Region to become Silver Level Cradle to Cradle Certified^{CM} for recycled polyester products. This Grey Eco Blanket is produced from 100% recycled PET bottles, the fabric is pure and soft, warm and comfortable, easy to wash and dry, and it doesn't fade on washing. Aside from using recycled PET bottles in the production process, in the future Da Ai will work even harder to research and develop use of recycled surplus fabric, reuse recycled textile products, and remanufacturing from recycling, allowing resources to realize the sustainable value throughout the industry cycle.

3. One Part Green, One Part Love—Assuming Educational Responsibility

"Turning resources into gold, gold into love, love into purity, and returning purity back to the Earth." Da Ai Technology takes the recycled PET bottles that we see all around us and uses them to reproduce green textile products for consumers. With the philosophy of "garbage is simply a misplaced resource," the company energetically advocates and promotes the green concepts of recycling and reuse, energy conservation and carbon reduction. Da Ai strives to provide eco-friendly education concepts to the general public and fellow textile industry partners. It also welcomes local and overseas organizations, government agencies, and school groups to come and understand the "Da Ai (Big Love)" eco-friendly unconditional love brand.

Da Ai Technology has always been more than a manufacturer. With green textile economies of scale inherently limited by the amount of PET bottles recycled, the company has been working even harder developing interests in the environmental protection and humanist industry through the promotion of an

environmental education platform. In the short period of only 4 years, Da Ai has been approved for ISO 14001 Environmental Management System and ISO 9001 Quality Management System certification. Over a two-year period, it held a total of 94 environmental protection, humanist, and professional topics education training courses, and among these 27 were environmental protection related. Responding to the growing number of invitations to provide environmental protection education instruction, Da Ai has cultivated more than 10 Mandarin and English speaking professional environmental protection facilitators. These facilitators coordinate with the Neihu Recycling Station to provide explanations and demonstrations for grassroots and government agencies interested in coming to learn about the production of Da Ai's amazing relief blankets that have spanned the globe and also about trash classification recycling, working hard to promote implementation throughout all spheres.

Da Ai Technology has designed different courses in production, management, education, and research, and each year over 300 classes are shared and extended. Moreover, to coordinate with the advancement of environmental education, Da Ai Technology is the first to create a green textile "Production Resume Flashback" and "Green Bodhisattva Touching Stories" tag, allowing consumers to understand the behind-the-scenes significance of green production and the stories of how it touches people's lives. Environmental news is updated every day, aphorisms about environmental protection and humanities concerns are posted for download every month, and the "Green Bodhisattva Tree" publication is published quarterly in both print and digital versions, with R&D on designing a kiosk app platform currently underway. The Popularity of digital applications provide a channel to promote the latest environmental protection news, and a diverse scope of environmental protection education promotional materials can be reach throughout the entire population.

4. Humanity Depends on the Nature, People Should Cherish the Earth

Life revolves around the constant process of recycling; it is an inherent law of nature. Master Cheng Yan ardently exhorts that in today's world the most important concern is "environmental protection"; it is the only way to save the planet.



Environmental protection must come from the Earth and extend into the bottom of our hearts. Giving back to nature and returning to our original pure heart; and with a heart that is clean, the soil will also

be clean. Cleaning up tangible environmental waste must begin by cleansing the intangible hearts of people.

▶▶ Civic Sustainable Development Award

● Wild Bird Society of Taipei

The Wild Bird Society of Taipei (WBST) originated as a group of local and overseas people concerned about wild birds and their habitats, and in 1973 these people formed the grassroots organization Taiwan Bird Watcher's Group. After more than ten years of efforts, in 1984 this group filed with the Taipei City Government Bureau of Social Affairs to become the Wild Bird Society of Taipei. Throughout the years, WBST has been consolidating the strength of consensus among volunteers and members to execute a variety of bird surveys, establish a basic database, publish reports, perform bird research work, train specialized interpreters, and promote a variety of bird watching activities. For 40 years now this grassroots organization has been actively promoting the appreciation of wild birds, research, and conservation.

1. Appreciation, Research, and Conservation

An appreciation of nature starts with its beauty, just as nurturing a love for wild birds starts by appreciating their beauty. From 1973 to date, the WBST has held free routine bird watching activities every Sunday, at which volunteers lead the public on bird watching adventures along the outskirts of Taipei. Also, a weekend bird watching event is held on Saturdays called the Bulbul Club (named after the Chinese Bulbul, literally translating as "White-Headed Old Man") that targets senior citizens. During the Spring and Fall migratory bird seasons, interpreter service stations are set up at the Chunggang Estuary, Guandu Nature Park, Huajiang Wild Duck Nature Park, and Taipei Daan Forest Park.

Organizing bird watching activities is the first step towards elevating public awareness about birds, stimulating dialogue that leads to research, conservation, and environmentally friendly actions in daily life. Early on WBST held the "Guandu Water Fowl Season" bird watching activity at the Guandu



Students participate in public service work to clean up the swamp.

Dike, attracting over ten thousand participants; and in 1999, this was expanded into the Taipei International Bird Watching Fair, now in its 15th year. This event attracts participants from Taiwan as well as bird watching associations from other Southeast Asian nations who come to learn about the event's organizational model. Now, WBST has formed the Asian International Fair Alliance, which has made exceptional headway in leading environmental education and promoting international exchanges on bird conservation and ecology.

Over the years, the variety of WBST bird-watching activities has left behind a valuable bird survey database for use in research and conservation efforts. Also, in recent years it has coordinated with the government to conduct avian influenza sampling surveys to effectively maintain controls on domestic epidemics.

Once WBST firmly established its interests in wild bird appreciation and research, it began focusing on conservation work and wetland management responsibilities. Since the 1980s, WBST has been pushing for designation of the Guandu wetlands as a water fowl conservation area. Following many years of promotion and lobbying efforts, finally, in January



1996, the Taipei City Council officially approved a land acquisition budget that exceeded NT\$15 billion. In 2001, the Taipei City Government held a public tender and levied a review, commissioning WBST to manage the 57-hectare Guandu Nature Park. This initiative was undertaken with the intent of expanding their nature conservation and environmental education focus into social education and recreation at Guandu Nature Park, working towards the goal of becoming the management model for Taiwan's nature parks.

In 2003, the Taipei City Government commissioned WBST to begin operating the Zhishan Cultural and Ecological Garden, making this an important site where local community, grassroots nature conservation groups, and schools join together to participate in ecological education.

2. Environmental Education Cultivating Seeds for Ecological Sustainability

The promotion of bird conservation and environmental sustainability concepts demands all various levels of operations in order to deeply touch people's hearts and make an impact. Therefore, since its founding, WBST has always maintained a focus on developing environmental education. In 2011 and 2012 respectively, the Guandu Nature Park and Zhishan Cultural and Ecological Garden received environmental education facility certification from the Environmental Protection Administration,

Executive Yuan. In 2012, it established an Environmental Education Institute with WBST's Environmental Education Committee convening monthly meetings to discuss and propose multifaceted environmental education courses that provide the general public and volunteers with training and advanced study.

Currently, WBST's environmental education promotion can be divided into two levels, one is environmental educational promotion for personnel and the other is environmental education promotion for non-personnel.

3. Promoting Environmental Sustainability Vision

WBST clearly understands that the sustainable development of the nation requires fortifying the sustainability of the environment and resources. It will continue forging ahead to consolidate the power of public and private sectors and local and overseas grassroots organizations for promoting environmental education, implementing conservation education concepts, training environmental education volunteers, engaging in conservation work to protect Taiwan's endangered birds, and effectively managing ecologically sustainable nature parks and conservation areas. The culmination of these extensive efforts will help preserve more natural resources and environment for children of the next generation.

● Renhe Care Association, Pingtung County

1. Community Operations and Care for Disadvantaged Prevail Against Adversity

The Association was founded on 21 December 2006 and is located in the Government Administrative Center of Linbian Township. Its purpose is to care for disadvantaged groups, assisting with funerals and medical and emergency relief; the elderly living alone and single-parent families; and the green beautification of the community. On 7 July 2007, it was able to establish a Community Care Center of its own.

In order to bring more features to the community, in recent years the Association has been working even more aggressively to promote the local industries of Linbian—preserved eggs, salted eggs, innocuous herbal tea, and handicrafts made by mothers in the community. Charity bazaars are

organized to sell the local goods with all the proceeds going to public welfare and emergency relief assistance, anticipating that this will spur economic development in the community. In 2012, committed to helping the community and its residents, the



↑ Charity bazaar proceeds donated for the purchase of a fire department disaster reconnaissance vehicle.



DIY salted egg workshop combines community tourism and local resources.

association used the proceeds from its charity bazaars to purchase a Disaster Reconnaissance Vehicle for the Linbian Township Fire Department.

2. Integrating the Environment and Local Economy, Pursuing Sustainable Homeland

Once the Renhe Care Association was established, it took over responsibilities for the management of two recreation parks at Kufu Cottage and the Old Barracks. The Association made an immediate impact actively engaging in the beautification of these park grounds to provide a comfortable recreational environment. Just a few days after completion, typhoon Morakot struck Taiwan and ravaged the Old Barracks, completely destroying the facilities at both parks and making it seem that all of the hard work was for naught.

However, the Association's members held their heads high and all the volunteers got together after the disaster, joining forces to refurbish the park. They used the driftwood that had been deposited by the typhoon surge to create a Kufu Cottage Park with environmental education value. For the Old Barracks, they capitalized on the local historical features and significance to construct a creative military flower garden. These efforts enlivened the community with a new bright spot and unexpectedly sparked the local tourism industry as the Association coordinated with the county government and the Dapeng Bay National Scenic Area Management Office to design the Friendly Bus community sightseeing tour route.

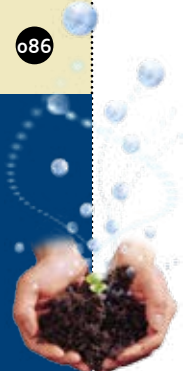
During the past two years, the Association has integrated environmental protection and the

recreational tour route, applying with the Pingtung County Environmental Protection Bureau for funding to transform the idle space at the creative military flower garden into an innocuous gardening area. The Association also organizes Organic Gardening classes and Farming Fun Experiential Camps that allow local elementary school children and elderly citizens, visitors, and tourists to realize that understanding about environmental protection is just the first step towards the goal of actually doing it.

3. From Improving the External Environment to Internal Spiritual Growth

Since 2011, the Association has had a total of 33 convicts involved in work programs participate in a variety of community labor projects. Even after serving their time and have been released from prison, they will remember the fruits of their toil going into something meaningful and that there are so many possibilities in life. This experience plants a seed in their hearts that will bloom in the future. Not only can they improve the quality of their lives but also make positive contributions to society. On 24 October 2013, the United Daily News reported that over the past three years, Renhe Care Association has donated NT\$200,000 from the proceeds of its "Care Pens" to support and assist disadvantaged groups and benefiting so many people in need. The capacity of these "irrelevant" people to offer so much to society may seem unimaginable to some. Is it really possible to call them "irrelevant"? Obviously not, because their hearts are full of love. Only if there were more of these kinds of people to create a progressive rippling effect throughout the entire society.

In the future, Renhe Care Association will continue promoting sustainable operations concepts with economic development and environmental protection moving forward hand-in-hand mutually benefiting one another. However, the key impetus of their work will focus on imbuing the "spirit of environmental protection" deep into the fabric of society. The Association believes that to do community work, one must be like a gardener, planting the seeds of love in everyone's hearts, all the painstaking efforts of tilling and cultivation will through love turn into nourishment. It anticipates these seeds will grow and bloom and the fruits will spread into every aspect of society. Only through this type of virtuous cycle can a genuinely fortuitous and fulfilling society be formed.



▶▶ Execution of Sustainable Development Action Plan Award

● Forest Bureau, Council of Agriculture—Post-Disaster Reconstruction Promotion of Tribal Villages Participation in Monitoring Protected Area Plan—Ali Tribal Village of Wutai Township

A vital function of forest ecosystem management is preserving the natural ecosystem and another is harmonizing the relationship between people and nature. Community forestry trains specialized personnel to carry out community nature conservation. These efforts help to maintain the local natural ecosystem and cultural and historical resources, which form the foundation of eco-industry. Community involvement in local public affairs will accentuate a local identity featuring distinctive characteristics of the community and propel the development of ecotourism and eco-industries.

Since the Forestry Bureau began promoting community forestry in March 2002 up until September 2013, it has assisted over 900 communities resulting in the independent execution of nearly 2,000 projects. The contents of these efforts have included natural resources, traditional knowledge, and cultural survey records; community personnel training; forest patrols and monitoring; establishing ecotourism itineraries; development of the local eco-industry; and practicing benefit sharing among indigenous peoples.

Typhoon Morakot devastated many tribal villages, confronting them with the challenges of rebuilding their culture, ecology, and industries. Ali Tribal Village in Wutai Township, Pingtung County was one of them as the disaster forced the village to relocate into the lowlands and changed their entire way of life. The move put the culture, language, and traditional habits of the mountain dwelling Rukai aboriginal group in jeopardy of gradually fading away, being lost forever. Without the tribespeople to keep watch over the mountain, the forest will be left unprotected and vulnerable to the nefarious interests of poachers and illegal logging. To protect the forest, the Forestry Bureau has implemented the execution of community forestry plans to encourage public sector and community partnerships, joining forces to promote the Ali tribe's community conservation and development of adaptive ecotourism, and providing the tribe with a post-disaster reconstruction and sustainable development model. The Ali tribes post-disaster upheaval and confusion all the way up



↑ Traditional dress and adornments of Ali people.

to the rebuilding and resurgence has been an inspirational process. Their experiences have become a post-disaster reconstruction sustainable management model for other tribes. During the plan's preliminary phase an outline of the post-disaster reconstruction environmental sustainable development initiatives was drawn up with ecological monitoring and ecotourism a part of sustainable development action. The concrete and clear development objectives designed to protect the mountain forests and peripheral environment will preserve the cultural heritage of the Rukai and invigorate the mountain village economy, creating a sustainable development tribal model incorporating three elements in one.

1. Protecting Mountain Forest and Passing Down Rukai Cultural Heritage

Double Ghost Lake is an important wildlife habitat near the Ali tribal village that occupies a strategic geographical location at the entrance of the protected area. The Forest Bureau and Ali tribe have formed public-private partnerships within the community with residents carrying out mountain forest environmental monitoring efforts, keeping a detailed recording of the surrounding flora and fauna and environmental changes. Flora and fauna monitoring have recorded more than 60 plant species, and 51 bird species, 11 mammal species, and 6 reptile and amphibian species. These monitoring results will contribute to contents for ecological interpretation and provide a basis for environmental conservation. Furthermore, a community patrol team will be



formed working together to protect Double Ghost Lake's important wildlife habitat and the Ali tribe's ecological environment to ensure continuity of conservation work.

Effective participation channels formed by community organizations will enable the Rukai cultural heritage to fuse with the Ali tribal development on projects that include assisting in the preservation and passing down of cultural heritage and folklore and the promotion of the Ali Ancient Ballads Troupe; upkeep and maintenance of ancient pathways using traditional masonry methods for ecotourism routes; and ecological humanities interpretive murals designed, sculpted, and erected by the tribespeople that feature unique tribal characteristics. During normal times the tribal village will operate ecotourism and related industries, and during severe weather and flooding they will seek refuge in lowland areas where they can develop cultural products and creative works, tribal historical collections, heritage, and promotional efforts.

2. Joining Hands with Local Government and Integrating Grassroots Resources to Promote Tribal Reconstruction and Development

The Forestry Bureau, Ali tribe, and specialized assistance groups maintain excellent communication channels. A comprehensively connected cooperation mechanism has been establishing integrating Pingtung County Government's marketing promotion of 24 ecotourism tours, Chi Mei Group's assistance in executing vegetation recovery and green beautification of landslide areas, and National Taiwan University's Urban and Rural Foundation assistance in the construction of an autonomous solar power electricity system. Central and local governments have come together and working hand-in-hand to forge ahead with the Ali tribe's rebuilding efforts, enabling many enterprises and grassroots organizations to get involved in the assistance of post-disaster reconstruction work.

This Action Plan empowers tribal participation in monitoring conservation areas and rebuilds the ecotourism service system. Public and private sectors unite to protect the environment and share in the benefits that the diversity of conservation brings. Community residents have positively supported this Action Plan in villages all along Route 24, i.e., Dewen, Shenshan, and Dawu, and the Ali tribe has become the tribal village post-disaster model. These

efforts have made Route 24 the bellwether corridor in ecotourism, enlivening tribal villages along the road and ensuring the Rukai culture is preserved and carried forward.

3. Tribal Village Evolves into Vital Sustainable Forest Management Partner

The Ali tribe is the only ancient tribe among the Rukai ethnic group that has not moved away from their traditional homeland. Backed by the assistance of the Forestry Bureau, the community can rebuild its gardens, restore ecological habitat, and revitalize local fauna to recover the tribe's ecological value. These measures will benefit the community economically, socially, and ecologically and further strengthen this successful partnership. Through environmental restoration, patrol monitoring, green energy, and a low environmental impact adaptive approach to ecotourism the tribe has effectively jump-started balanced social, cultural, economic, and institutional development and stability. The tribe is concurrently incorporating the United Nations General Assembly 2007 United Nations Declaration on the Rights of Indigenous Peoples article stipulating the "rights to retention, protection and development of indigenous people's cultural heritage and customs" into the post-disaster revitalization process.

4. Realizing Forest Benefits and Embodying a Human-Nature Symbiosis Sustainable Model

Forests assume an essential ecological role in supporting and sustaining human existence. Through the implementation and execution of benefit-sharing and social network partnerships, the community forest industry plans to develop the local green



↑ Ali tribe lifted itself back up after a disaster like a beautiful rainbow after rainfall.

economy and provide more employment opportunities that will advance social equality and achieve the objective of symbiosis between humans and nature. The Ali tribe walked through the haze of devastation from the typhoon disaster and regained their tribal vitality and being. The process of getting back on their feet again after the disaster became the tribe's post-disaster reconstruction and sustainable management model.

The Forestry Bureau's longstanding partnership remains staid and firm within tribal villages today. Indigenous people are autonomously managing eco-industries and continuing to utilize and pass down the ecological wisdom of their ancestors. Ali tribe has found its new sustainable development and is working towards a sustainable vision through the coordinated management efforts of the tribal village and Forestry Bureau.

● Construction and Planning Agency, Ministry of the Interior—the Fourth Phase Sewage System Construction Plan

The public sewage system is essential infrastructure for the ecological environment. Not only does it improve the environment for the public and residents alike, it also prevents the rivers from becoming polluted. Additionally, the effluent and sewage sludge by-product of sewage treatment plant processing should also be effectively utilized in order to ensure that resource recycling achieves sustainable development objectives. To this end, the goal of the Fourth Phase Sewage System Constructions Plan, a part of the Love Taiwan 12 Construction Project, is to increase sewage system connection availability by 3% per annum and includes sustainable concepts of recycling and reuse and energy conservation and carbon reduction. The Plan's important achievements are as follows:

1. Accelerate the processing of user connection and improve the nation's overall competitiveness

During execution of the Fourth Phase Sewage System Construction Plan from 2009 to 2012, an average annual increase in connection availability of over 3% and an annual average sewage treatment rate increase of 4.78% was recorded. Aside from having a direct impact on improving environmental quality, it also served to elevate the nation's image and competitiveness.

2. Restoring a clear water environment and revitalizing the life of rivers

Taiwan has 50 primary and secondary rivers extending a total of 3,000 km in length, while as many as one third of them have been polluted. Sewage treatment is an important river remediation technique since the sewage treatment system serves to process domestic sewage in compliance with the nation's water quality standards and then discharges



⊕ Erlin Sewage Treatment Plant: effluent water provides Erlin High School with Secondary domestic water.

it back into rivers and the ocean. This effectively abates pollution of water quality in waterways and watershed areas, restores the life of rivers, and recovers river ecology. The Tamshui River, as an example, currently has the cleanest water quality in 30 years, and the fish species has risen from 56 from 1983 to 1986 to the present amount of 109.

3. Promotion of recycling and reuse of effluent mitigating domestic water shortage

The supply and demand of Taiwan's water resource faces numerous problems. Therefore, turning recycle and reuse of sewage treatment plant effluent into a new water source can advance the sustainable development of the environment, ensure sustainable use of resources, supplement water resources, and abate the risk of water shortage. By the end of December 2012, 46 sewage treatment plants had already been completed with a total processing capacity of 3.62 million CMD, and 2.85 million CMD, roughly 78.70%, had already been processed (includes domestic sewage and intercepted water). In the future, the older existing sewage treatment plants will be transformed into municipal reservoirs. In



coordination with the Water Resources Agency, Ministry of Economic Affairs, Water Resources Plan, recycle and reuse of effluent water will be promoted for use as new water resources, and for those areas with a shortage of water resources, the implementation of recycle and reuse will be prioritized.

4. Sludge mitigation and recycle and reuse

Expansion of the sewage system to accommodate rising numbers of users has in turn increased the amount of sewage collected for treatment and significantly increased the amount of sewage sludge produced. Comprehensively planned disposal methods such as the installation of facilities for recycle and reuse of sludge treatment, assessment of reuse of resources, and subsequent disposal channels achieves the waste reduction and sustainable use of resources vision.

5. Creating pleasant back alleys and providing the public with a superior quality living environment

Engaging in ongoing advocacy about the benefits of constructing and connecting to the sewage system, the public is urged to dismantle illegally built structures and get connected to the sewage system. Once the household waste has entered the centralized sewage system and been processed, the original problems with sanitation and odor from roadside drainage ditches are resolved. This will create pleasant back alleys and provide a superior quality living environment.

6. Shaping a water-friendly city and improving waterfront land value

Incorporating sewage systems into the construction of new project developments in townships and villages is a major consideration. Comprehensive planning on river basins must be made in compliance with the Environmental Protection Administration's river pollution remediation policies and considerations for balanced development must be

made in urban and rural areas. Sewage system construction and remediation of rivers and river basins improve water quality and create a superior quality water environment that enhances the environment of sightseeing and recreation areas, spurs the development of the sightseeing industry, and increases waterfront land value.

7. Improving sewage treatment plants, operational efficiency and establishing a sustainable operations management system

With the completion of the National Public Sewage Treatment Plant Information Management System, management of monthly water quality and quantity operational data for public sewage treatment plants nationwide is conducted based on expenditures for use of water, electricity, chemicals, and personnel. This data provides an understanding of the public sewage treatment plant operational status and is used to enhance operational management of public sewage treatment plants nationwide.

8. Formulating pipe material specifications to extend the life of pipes and ensure efficient use of resources

In response to the latest revisions to the Chinese National Standards (CNS) regulations and in compliance with revised underground sewage system technical specifications, underground pipes must



📍 Tainan Canal's water-friendly waterfront.

meet the demands of rugged stretch and impact resistance able to withstand external pressures of vibration and hold up without leaking on an uneven foundation. It must also be corrosive resistant to soil and water quality that might cause pipe rust, corrosion or abrasion. Formulating pipe material related specifications that take into consideration the three functions of safety, corrosion resistance, and leakage prevention will achieve materials sustainability and the effective use of resources.

The First Phase of Sewage System Construction Development began in 1992 and has now progressed to the Fourth Phase. Early on the focus was on constructing new sewage treatment plants and laying primary and secondary sewage pipes. The successive

completion of each new sewage system has culminated in the achievement of today's new milestone .

In the future, a full life-cycle management concept will be introduced that includes planning, installation, operation, and management. In compliance with environmental protection trends, clean production sewage systems will be aggressively promoted. Through the use of environmentally friendly materials, sewage treatment plant energy-saving measures, sewage sludge reduction, and recycle and reuse processing, black water can be turned into blue gold in the pursuit of eco-efficiency and sustainable development goals that maximize the value of sewage systems.

● Health Promotion Administration, Ministry of Health and Welfare – Active Aging and Creating an Age-Friendly Healthy Environment and Services

Our nation's population is aging rapidly. By the end of 2012, the elderly population in Taiwan exceeded 11% of the total population, and in five years it is expected to reach 14%, evolving into an "aging society." In response to the impact and needs of an aging society, the Health Promotion Administration, Ministry of Health and Welfare is actively promoting the Creating an Age-Friendly Healthy Environment and Services Plan. This Plan makes efforts to advance a healthy, safe, and inclusive environment that benefits the elderly in a lifelong pursuit of learning and growth, and strives to sustainably develop "active aging" policy objectives.

Key points and achievements:

(1) Provide provisions for enlivening the mental and physical social capacities of the elderly community health promotional network

1. Promote community elderly health and activities:

The allocation of local resources and complete community support have been devoted to eight essential areas (physical fitness, fall prevention, diet, oral health, tobacco control, mental health, social participation, and preventive health care). In 2012, the health care system integrated with community care centers to organize elderly health promotion activities that have been promoted at over 80% of the care centers nationwide.

2. Organize national Grandmother and Grandfather Get Moving contests that promote health: Since 2011, city and county



① Healthy 2013 Grandmother and Grandfather Get Moving Contest—National Finals.

health bureaus nationwide have integrated with grassroots community organizations as townships and villages encourage seniors to form teams and participate in Grandfather's and Grandmother's Get Moving Contests. These contests will elevate elderly community participation, keeping spirits high and making the most of their time. In 2012, there were a total of 1905 teams with more than 74,000 elderly people participating; and in 2013, the number of elderly participating in community activities will exceed last year's number, constituting 3% of the total elderly population .

3. Diversified advocacy campaigns for chronic disease prevention that help the elderly practice healthy lifestyles: In coordination with world holidays for chronic diseases, the resources of grassroots organizations, medical groups, and city and county health bureaus, and hospitals and

clinics will be integrated to jointly organize national advocacy activities.

- 4. Establish early detection, referral, and follow-up services for chronic disease cases:** Up to September 2013, the number of elderly receiving adult preventive care services reached a total of 600,000, a total of 430,000 50-69 year olds received mammograms, and 660,000 elderly received occult blood tests.
- 5. Enhance the ability of the elderly with chronic illness, to manage healthcare affairs, along with their families, independently:** Promote a comprehensive diabetes collaborative care network, implementing a professional certification system of physicians, nurses, and nutritionists. In 2013, 194 diabetes and 145 kidney disease health promotion agencies were launched to bolster the quality of health care. Nationwide 490 diabetes support groups were established to effectively improve self-care skills.

(2) Promoting compatibility, convenience, and encouraging active elderly age-friendly cities

- 1. Formulating age-friendly city public policy:** Promoting age-friendly cities is an important policy. Cities and counties are encouraged to implement this concept as a policy priority and to actively integrate the resources of inter-departmental and grassroots and academic organizations to establish age-friendly cities. In 2010, Chiayi City became the first to run a pilot program; and in 2013, 22 cities and counties nationwide were fully promoting these policies, becoming the nation with the most extensive age-friendly city coverage in the world.
- 2. Creating an age-friendly supportive environment:** Academic organizations are commissioned to invite scholars and specialists from various fields to form promotional teams that can assist city and county governments reference WHO's eight major initiatives (respecting senior citizens and social inclusion, social participation, accessibility and security of public spaces, transportation, housing, communication and information, community and health services, and work and volunteer services). These promotional teams will review the favorability of conditions, and based on the needs of the elderly, improvements will be implemented in both the software and hardware facets of the city to

promote compatibility, convenience, and encourage active elderly age-friendly cities.

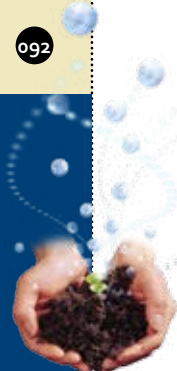
Workshops will be organized and results presentations held in order to enhance the promotional capacity of cities and counties. These teams will also encourage participation in international seminars to boost international participation and exchanges.

- 3. Conduct multifaceted age-friendly cities advocacy initiatives:** Through press conferences and media campaign events, advocate the initiatives throughout all levels of society together emphasizing respect of elderly culture and eliminating stereotypes and discrimination against the elderly.

(3) Promote the creation of age-friendly health care institutes that enhance the health, dignity, and participation of the elderly

- The Health Promotion Administration has consolidated age-friendly health care principles and health promotion of hospital standards published by WHO to develop the world's first government led promotion of Age-friendly Health Care Institute Certification.
- Since it officially began accepting applications for the Age-friendly Health Care Facility Certification in 2011 up until 23 October 2013, 42 health care institutions had received Age-friendly Health Care Facility Certification approval and it is estimated that by 2013 the number will grow to 56.
- On 22nd May 2013 at the WHO International Network of Health Promoting Hospitals & Health Services General Assembly a proposal was approved to upgrade this Assembly to the Health Promoting Hospitals and Age-friendly Health Care Committee with the R.O.C. Health Promotion Administration Director-General Dr. Shu-Ti Chiou serving as the convener of the Committee that assembled 17 members from 13 countries.

The Health Promotion Administration, Ministry of Health and Welfare is committed to promoting the Creating an Age-Friendly Healthy Environment and Services Plan that implements the policy objectives of "healthy aging" and "active aging." These policy measures will reduce the rate of elderly disability and dependency and extend the popularization of "healthy life expectancy" allowing the elderly in our nation to enjoy better health, participation and safety and make old age the golden years of life.



2013 International Forum on Sustainable Development



In order for Taiwan to keep abreast of the newest global trends on sustainable development and to learn from other nations' successful examples of policy implementation, the National Council for Sustainable Development (NCSO) and the EPA specifically conducted the "2013 International Forum on Sustainable Development," where experts and representatives from organizations associated with sustainable development in North America, Europe, and Asia, gathered together with their Taiwan counterparts on 13 September 2013 to deliver lectures on how sustainable development is being pursued worldwide and to exchange ideas with members of the public. Hopefully, the results of this Forum will serve as valuable references to Taiwan's NCSO in its future policy making.

The topics discussed by the Forum included: international follow-up to Rio+20 Resolutions, the strategy of green economy and green industry development, strategy of sustainable low-carbon cities promotion, promotion of low-carbon and sustainable homeland, etc. In the afternoon of September 13, Dr. Shin-Cheng Yeh, Deputy Minister of the EPA and Deputy CEO for the NCSO, chaired a panel discussion on "The Strategy of Sustainable Development and Green Economy," which was attended by foreign and domestic lecturers of this Forum, as well as by members of the NCSO. The dialogues exchanged among the attendees shall prove to be of substantial benefit to Taiwan's promotion of sustainable development and green economy in the future.

Dr. Chung-Ming Kuan, CEO of Taiwan's NCSO, pointed out in his opening speech that Taiwan has been actively promoting sustainable development since NCSO was founded 16 years ago. Despite the fact that lack of diplomatic relations render Taiwan unable to participate in the formulation and discussion of many international conventions, Taiwan has nevertheless abided by the rules and regulations of relevant international conventions, and its achievements in pursuing sustainable development are in keeping with the UN's spirit in promoting sustainable development on a global level.

Evidence of this was amply displayed in June 2012, when the NCSO sent a delegation to participate in the Rio+20 UN Conference. So far the Council has completed such important documents as the "Policy Guidelines" and "Action Plans" for pursuing sustainable development while complying with the UN's plea to save energy and cut carbon emissions. Amazingly, Taiwan's carbon emission volume has been showing trends of decrease since 2008. The per capita carbon emission of 2012 was 2.8 % less than that of 2007, whereas Taiwan's GDP increased by 20.6% over the same period. This fact shows signs that Taiwan's greenhouse gas emissions are becoming decoupled from economic growth, an outcome which is in line with the UN's principle of sustainable development and green economy. In addition, the central government of Taiwan has designated four counties/cities as low-carbon municipalities, and has complied with the Rio+20 Conference's plea to set up an ad hoc committee on green economy. The Forum placed special emphasis on this topic, and invited scholars, and experts from home and abroad to share experiences and to explore promotion strategies.

Four foreign speakers attended the International Forum and gave talks. They were: Vice President of the International Institute for Sustainable Development (IISD) Langston James Goree VI (aka Kimo Goree), Professor Elizabeth R. Desombre from Wellesley College, European Secretariat of the International Council for Local Environmental Initiatives (ICLEI) Mark Hidson, and academic of the Korean-China Research Institute Dr. Jin-Dong Gong. Mr. Kimo Goree first talked about "The International Follow-up to Rio+20". He said that, in matters concerning global sustainable development, the deciding power has been switched from the UN Council on Sustainable Development to a joint action by the UN General Assembly and the UNEP. This was a decision made after the Rio+20 Conference took place.

Most nations in the world, he said, were striving to integrate the important outcomes of Rio+20 so that they could occupy a new and privileged position in

the international arena and contribute to achieving the goals of the new millennium. Speaking about the outcomes of Rio+20, it is necessary to mention the outcome document, “The Future We Want.” This important document outlined three major conference outcomes: Sustainable Development Goals (SDGs), a High Level Political Forum (HLPF) on sustainable development, and the strengthening and upgrading of UNEP (United Nations Environment Program). The outcome document also mentioned the importance of participation and commitment of civil society. Last but not least, the outcome document mentioned one of the theme topics of Rio+20—Green Economy. To elevate sustainable development to a larger scale of UN developmental activities, consent from national governments and UN related agencies are needed, and more conscientious efforts are required for its achievement.

Professor Elizabeth R. DeSombre gave a talk on “Green Economy and Its Development.” She stressed that no environmental polluting incident is a pure “local” problem, and most environmental problems are global in some way. When a polluting incident happens, it cannot be confined to any national border. Hence, all polluting incidents are “global” by their nature. “No one sets out to create environmental problems.” Most pollution is not caused intentionally, she said, more often than not, industries create pollution unintentionally. In order to meet environmental standards, some industries will alter their manufacturing process. This may seem very costly in the initial stage, but over the long haul the cost is really not so exorbitant. Placing emphasis on environmental protection does not really affect economic growth, but industries need to have economic incentives to make changes. “Think globally, regulate locally” has been the motto for most international corporations, and any new measures are usually first adopted locally, then expanded to a national or global level. The key to green economy, DeSombre pointed out, is the concerted effort of world environmental protection organizations. Green economy can only be developed through the collective efforts of nations which, through information exchange and negotiations, are able to obtain subsidies from global environmental protection agencies and coordinate a combination of global trading, finance, and development entities to take proactive measures to protect the environment. In this way, national government costs for green

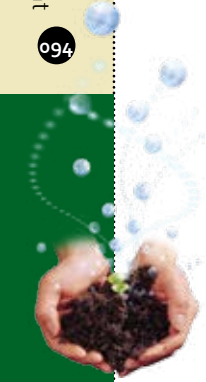
economies to be developed.

Dr. Mark Hidson helped many European regional cities deal with sustainable development issues. Relying on his past experience, he shared a talk on “The Strategy and Implementation of International Low-carbon Sustainable Cities.” Quoting from Mr. Ban KiMoon, the Secretary General of the U.N., who said: “The road to sustainability runs through the world’s towns and cities. By building sustainable towns and cities, you will build global sustainability.” Mr. Hidson pointed out. Sustainable cities refer to those cities which are dedicated to reducing the per capita consumption of natural resources, so that local or global ecological systems are not damaged. In the meantime, environmental, economic, and social systems are assured to provide good quality of life to residents. Mr. Hidson said, key factors to the successful transformation to low carbon sustainable cities include:

1. strong leadership/council in leadership role/a strong team;
2. strategy and vision;
3. incremental approach;
4. creativity substitute financial resources;
5. Risk management;
6. Effective alliances (internally and externally);
7. obtaining community understanding and support;
8. establishing mechanisms to measure progress;
9. regular and honest progress reviews.

He then shared with his audience many cases of successful sustainable cities, such as Stockholm, which has the highest clean rate (16%) in Europe; Vancouver, which aims to become the greenest city in the world by 2020, and at present has the lowest per capita carbon emission volume worldwide; and Curitiba City of Brazil, known for its successful integration of land resources and public transportation with 75% of its residents using public transportation instead of driving cars.

With “Green Growth in Korea” as his topic, Dr. Jin Dong Gong shared Korea’s experience in promoting green growth in recent years. He said that Korea was dealing with such things as increased pressures from global environmental regulations, high energy consumption and greenhouse gas emissions, the slowdown of economic growth and consumer demand for environmentally friendly products. In its effort to overcome these problems, Korea discovered that “green growth” could become a new growth engine and could bring in new financial revenues. Therefore, Korea announced in 2008 that green growth would be a national vision, came up with a five year growth plan in 2009, and



established the Green Climate Fund in 2012. In drawing his conclusions, Dr. Gong pointed out that technological transformation is the key to green growth. Korea, however, does not have a clear and definite vision for green growth at this point, so it still has a long way to go in pursuing sustainable development.

Three domestic speakers gave lectures at the International Forum. They were: Deputy Secretary General of the Ecological Project Department of the EPA, Mr. Tsan-yang Tsou, Director of the Department of Urban and Housing Development of the Council for Economic Planning and Development, Miss Fei Yu Kuo, and Vice President of the Taiwan Research Institute, Mr. Huang-Chung Huang. First, Mr. Tsan-yang Tsou, Deputy Secretary General from the EPA, talked about "Action Plans for a Low Carbon, Sustainable Homeland." He said that as of now Taiwan has established 52 low-carbon communities nationwide, and will establish four low carbon cities and 2 low carbon islands before 2014. In 2020, Taiwan plans to establish 4 low carbon lifestyle circles, and march toward being a comprehensive low carbon society before 2050, thereby substantiating the national goal of becoming a low-carbon, sustainable homeland. The EPA, on its part, has converted its 7 carbon reduction measures into 10 operational functions. Namely, "disaster relief and adjustment," "legal and economic taxation tools," and "social behavioral science and tools of evaluation" have been added to the original 7 carbon reductions measures, i.e., "ecological greening," "architectural energy saving," "equipment energy saving," "renewable energy," "green transportation," "resource recycling," and "low carbon lifestyle." With this addition, the total picture has become much more complete.

Dr. Fei-Yu Kuo, Director General of the Urban and Housing Development Department of the Council for Economic Planning and Development of the Executive Yuan, talked about "Toward a Green Economy in Taiwan." Basically, she shared Taiwan's concrete achievements in promoting green economy.

Under the leadership of the Council for Economic Planning and Development, the newly established special task force on green economy took upon itself to integrate various ministries and departments in implementing policies relevant to green economy. It strives to accomplish the following goals through 10 benchmark projects: 1. Raising the energy efficiency

rate by 2% every year for at least 8 consecutive years; 2. By 2020, the per capita carbon emission volume of Taiwan shall be reduced to that of 2005, and by 2025, the per capita carbon emission volume of Taiwan shall be reduced to that of 2000. In conclusion, Dr. Kuo pointed out that the policy structure of green economy is composed of three interlocking links: sustainable development, industrial development, and social welfare. To successfully promote green economy, major reforms need to be implemented in economic and social systems. Harmonious and common consensus among the general public (especially our next generation) is essential to its achievement.

Dr. Huang-Chung Huang, Vice Premier of Taiwan Research Institute, gave a lecture on "Problems and Solutions in Developing Green Economy and Industry." In his conclusions, he suggested that:

1. The development of new technological industries should be assured of their international competitiveness;
2. Strategic considerations should be given top considerations in cross-strait environmental, industrial, and energy cooperation;
3. in achieving the goals of energy saving and carbon reduction, both strategies and policies should insist on "cost effectiveness"
4. The uncertainty in trading costs caused by environmental impact assessment on enterprises' investment should be reduced; the sufficient supply of energy and other special resources should be assured;
6. Establishment of definite green products and services, and channels for developing green economy policies.

The final stage of the International Forum consisted of an expert panel discussion. Anchored by the EPA's Deputy Minister, Dr. Shin-Cheng Yeh, two civilian members of the NCSD, Dr. Ssu-li Chang, and Dr. Ruby Liao, were invited to speak along with four foreign speakers.

During the panel discussion, questions were also taken from an audience more than 300 people, composed of the general public, representatives from governmental agencies, delegates from county and city governments, and civilian environmental protection groups. A great number of questions were asked and experiences shared. Documents relating to the International Forum and video on-site recordings can be accessed in the Global Information Net of the National Council for Sustainable Development. Please to log onto: <http://sta.eps.gov.tw/NSDN>.



Words from Our Members

Improving Land Use to Bridge the Wealth Gap between the Rich and the Poor

By Council Member: Yi-Hou Lin (Director, Urban Regeneration R&D Foundation)

Although Taiwan is not a member of the United Nations, it still actively follows the trend of the world trends, and has participated in the 1992 Rio Earth Summit, the 2002 Johannesburg World Summit on Sustainable Development, and the 2012 Rio+20 Earth Summit. Owing to this participation, the Executive Yuan set up the ad hoc National Council for Sustainable Development to promote the long term goals of sustainable environment, sustainable economy, and sustainable society. Premier of the Executive Yuan serves as the Chairman of the Council, and is responsible for leading the various ministries and departments to implement the Action Plans formulated through the *Policy Guidelines*, and for overseeing the competent authorities assessment of the various domestic indicators for sustainable development. In addition, to encourage all facets of society to actively participate in improvement according to the indicators, the Council set up the National Sustainable Development Award to promote policy implementation, which is an act very worthy of affirmation and recommendation. Given Taiwan's particular conditions, so far the problems of population explosion and food shortages have not appeared. Therefore, if we could make good use of energy to accelerate economic growth, and enhance the use of developed land to bridge the gap of wealth between the rich and the poor, thereby lowering the misery index arising from the high cost of land and housing, our nation's strength can then be greatly enriched by an increased birth rate.

These are the issues we have to face in pursuit of future sustainable development.

Because Taiwan's natural resources are quite limited, we need to strengthen the effective use of

basic necessities for living such as oil, electricity and water in response to international carbon reduction initiatives. In addition, we need to enforce a comprehensive review of our energy subsidy programs, and set reasonable prices for oil, electricity, and water so that their usage is controlled through pricing which reflects their cost. In this way, unnecessary waste can be prevented. On top of these, we must strive to lower the per capita emission of carbons in order to reduce the impact on the environment, and to mitigate the global trend of climate change. Take the much reported case of off-shore island development, for example, if the local authorities could give prioritized considerations to the major issues facing national sustainable development, such as environmental pollution caused by fossil fuels, the domestic shortages of electrical power and the preciousness and rarity of water resources, they would be able to incorporate these considerations into their policy planning to trim back on public funding and resources. This would be more in keeping with the basic spirit of national sustainable development.

In recent years some environmental protection groups in Taiwan have vigorously promoted the implementation of the *Wetland Conservation Act*. Their intention was none other than to divide the sensitive zones on this island into "international" and "national" protection areas. Little do they know, however, that under the prevailing land use laws there are clear provisions restricting the development and use of state-owned lands; moreover, rules and regulations regarding the efficient use of public land resources, the balanced development of urban and rural areas, and the policy of "Letting every family live in a decent house" have been scattered in prevailing laws such as the *Urban Planning Act*,



Regional Planning Act, National Park Act, Wildlife Conservation Act, and the Cultural Heritage Preservation Act. So, our top priority for now should be urging the local governments and relevant competent authorities to implement the pertinent laws, rather than formulating new laws to evade the issues.

Regarding of sustainable urban and rural developments, the key issue lies in enhancing the efficiency of land use and in the formulation of fair tax measures. Take, for instance, the current “zonal expropriation” method for land development. The government has to develop what amounts to four times the surface of land required for “general expropriation”, as in the cases of constructing high speed railway stations, science parks, or the establishment of universities. And, if a piece of designated land is requisitioned by the government, 40% of the land shall belong to the land owner, 35% of the land shall be used for public facilities, whereas the remaining 25% can be used for building factories or stations. This, in essence, is tantamount to “giving two dollars to a request for 50 cents,” which not only aggravates the financial burden of our country, but also creates a large amount of idle land. Coupled with the exemption of land appreciation tax and inadequate property tax and land tax, social inequity problems such as the concentration of land ownership, the increasing housing vacancy rate, and the wealth gap between the rich and the poor becomes glaringly obvious, to the extent that we see the peculiar sight of luxurious housing looming out of large expanse of farmlands. What is more unreasonable, though, is that the owners of such luxurious housing can pay their annual land tax and property tax with their monthly high maintenance fee and still be left with some change.

The purchasing price of a home, housing down-payments, and the rental fees for an apartment usually reflect the misery index. Judging from the fact that all these prices are rising, we can see that the wealth gap between the rich and the poor in

Taiwan is widening. Let’s suppose the annual income of a family of moderate prosperity is NT\$1 million, if we multiply it by 3, we arrive at NT\$3 million, which should be the reasonable price for a standard home. However, the price of a home in the urban areas of Taiwan is far more than 3 times the annual income of a normal family, oftentimes it is 20 times higher, a very unreasonable ratio. As for housing down-payments, usually they should constitute 30 to 45% of the total housing price, tantamount to 5 to 7 years’ savings of a family of ordinary office workers. Nevertheless, due to the fact that the substantial incomes for workers has declined year by year in Taiwan, many people become “enslaved” to the house they bought---they literally have to pinch and scrape to pay their housing mortgage. In order to help the homeless find a place to stay, the United States enforced the 25% rental subsidy program, whose purpose was to ensure that a family’s rental payments would not exceed 30% of the family’s total monthly income. Conversely, in Taiwan today, the government only provides a subsidy of NT\$4,000 to specially qualified families, with the maximum length of subsidization limited to one year. This is hardly enough to solve the long existing problem of the housing shortage.

No wonder the trend toward late marriage, fewer children, and a lower birth rate has become common among the domestic population of childbearing age. In fact, the total fertility rate for Taiwan is declining year by year. Statistics show that the total fertility rate for women between the ages 15 to 49 is only 1.07 children, compared to 7 to 8 children 30 years ago. It is estimated that by 2060, the total population of Taiwan will dwindle to 17 million people, of which 39% will be senior citizens who need health care. In view of these late developments, it is incumbent upon the authorities to create fertility friendly parenting environments, to encourage young families to bear children, so that the strength of our nation will not be depleted due to declining citizenship numbers.

In Pursuing Comprehensive National Economic Sustainable Development, Increasing Revenues Is Far More Important Than Preventing Corruption

By Council Member: Romy Kung (Director, Taiwan Responsible Care Association)

The Executive Yuan's ad hoc National Council for Sustainable Development (NCSD) has been operating for more than a decade. Over this period, it has invited experts, scholars, civic groups and relevant competent authorities to participate in the delineation of the visions of sustainable development and its practical implementation, with a view toward the balanced pursuit of environmental protection, economic development and social justice, which are the three pillars that our nation is rested upon. Significant changes, however, have occurred both at home and abroad over this period, and the salient ones include: the setting up of cross-strait three links between Taiwan and Mainland China, the international financial crisis created by the bankruptcy of Lehman Brothers Holdings, the Fukushima nuclear disaster of Japan, the weak growth of the Asian-Pacific economy, the upgrading of industries in the Association of Southeast Asian Nations (ASEAN), and the norms for awarding green marks to science and technology companies in Europe and the United States, etc. Indeed, the challenges are varied and many, and Taiwan can be said to have fared quite well amid these crises. The only shortcoming, however, is that Taiwan seems to be leaning too much toward environmental protection at the expense of economic and social sustainable development. We need to be aware that economic development is the real driving force behind the progress of our society. In view of this, I sincerely urge the NCSD to attract more talent from industry.

At present our nation's policies and regulations are too much geared toward preventing corruption by increasing taxes and inflicting penalties on those who look suspicious. Our government fails to adopt a more open-minded attitude to take the whole situation into consideration, and is sluggish in finding ways to increase its revenues. Because the government fails to nurture emerging industries of strategic importance, our national coffer lacks the influx of new funding. As a result, our nation's strength is in shambles, and people lose faith in the

ruling party's ability to implement its policies. These phenomena do not bode well for our country. At this critical juncture, what the government should put on its agenda is to capitalize on Taiwan's superb geopolitical strategic position, and seek comprehensive, sustainable economic development on a national scale, while formulating industry policies, and coordinating a balanced pursuit of environmental protection and social welfare at the same time.

I am glad to learn that Premier Yi-Huah Jiang is about to launch his plan of establishing "Free Economic Demonstration Zones" in several phases. The scheme of this plan is to accelerate the liberalization and internationalization of Taiwan's economy and trade by actively promoting regional economic and trade partnerships, opening up the market, removing the barriers of trade, and greatly deregulating the relevant laws in order to facilitate the creation of a more friendly business investment environment. Notwithstanding the good intentions of the government, however, the relevant competent authorities still need to have well-rounded and forward-looking action plans to implement the general public's expectation of the government, placing more emphasis on increasing revenues than on preventing corruption, so that our citizens can actually share the sweet fruits of the sustainable economic growth of our country.

Unfortunately, as domestic enterprises face increased taxes and heavy fines, and the continual rise of wages and raw material prices, many are relocating overseas or seeking industrial restructuring. This phenomenon has resulted in a recession and negative GDP growth in Taiwan. In response to this crisis, the government must take quick steps to map out coping measures by designating the emerging industries that are suitable for development in Taiwan. Only when the government gives counseling and provides incentives to the emerging industries, can Taiwan's deficit in industrial output be removed and the so-called "glory of Taiwan" be re-established. In addition, the





emerging industries can help the world at large take a new look at Taiwan. Take for instance, tourism and gaming, these two types of non-smokestack industries are widely recognized internationally. Taiwan is the strategic hub of the Asia-Pacific region, and as such, citizens of our neighboring nations are easily attracted to come to Taiwan to spend their money. Their visits to Taiwan can bring about the growth of peripheral industries, such as travel, food and beverage catering, transportation, logistics, souvenir manufacturing, cultural and creative activities, finance and so on. In other words, we are talking about a big pie and everyone can have a share.

Furthermore, petrochemicals, plastics, and chemical engineering industries can be said to be the cornerstone of Taiwan's light and heavy industries. Not only were they the major contributors to Taiwan's economic miracle, but they also fostered Taiwan's traditional industries (steel, machinery, textile, footwear, transportation equipments), and developed new industries (green energy, optoelectronics, biotechnology, biomedical). On top of all these, they allowed Taiwan's key industries such as semi-conductor and panel manufacturing to occupy the No. 1 position in the world for many years, ahead of mainland China, Singapore, and Korea, who are our main competitors. However, due to the emergence of many unreasonable restrictions which have appeared during recent years, the expenses of our citizens and industries continue to climb, thereby greatly reducing the international competitiveness of our petrochemical and plastics industries. This, coupled with the fact the response system to toxic incidents remains insufficient, and the current vetoing power of the environmental impact assessment makes many developers wary of the EPA's role and functions, it can be foreseen that in the near future the unfolding of this situation could create a chain reaction, forming a great threat to the sustainable development of our nation.

Moreover, the competent authorities responsible

for promoting the sustainable development of our nation should have international perspectives, so that they can implement the necessary policies with vision and stamina. For example, Singapore, Hong Kong and Macau occupy the same strategic positions in the Asia Pacific region as Taiwan, but their human resource policies are far more flexible to adapt to market needs. Singapore, in particular, has a very high portion of foreign workers who are heavily concentrated in labor-intensive manufacturing industries. These workers are paid by the types of industry they work for, the types of their work, and the licenses they acquire. The disparities in their salary reflect the market situation. Hong Kong, on the other hand, opened up its labor market in June of this year to Bangladeshi citizens to solve the problem of the shortage of house helpers. Lastly, the development of the gaming industry in Macau created a large number of double income families. These families are in dire need of house helpers, so the Macau authorities opened up their labor market to immigrants from Guangdong and Fujian provinces of China. These examples show that allowing foreign workers to join the labor market is not necessarily a bad thing, as they can often contribute to the economic growth.

Conversely, let us take a look at the labor market situation in Taiwan. For a long period of time, we have been bickering over whether the basic salary for foreign workers should be decoupled from the minimum wages stipulated by the government, to the extent that we completely overlook the problem of our domestic salary structure being out of line with the international average salary. This is an issue of life and death for us, so it is truly regretful that we are caught up in it. In the future we must face the problem of the supply and demand of manpower, make the necessary adjustments to enhance industrial competitiveness, while improving the quality of vocational training to keep Taiwan's international competitiveness from falling. This is our national long term solution.

Taiwan's Biodiversity Under the Impact of Global Climate Change and the National Sustainable Development Award

By Council Member: Hsieh Chang-fu, (Director, Biodiversity Association of Taiwan)

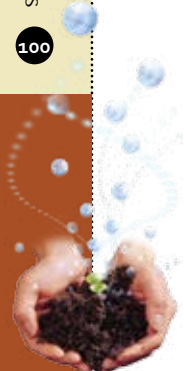
Since its inception, the National Council for Sustainable Development (NCSD) has successfully developed the *National Sustainable Development Policy Guidelines*, Sustainable Development Action Plan, and Sustainable Development Indicator System; formulated the National Land Preservation and Remediation Plan and promotional strategies for energy conservation and biomass energy; the National Sustainable Development Award is held annually as well. The overall system and framework for NCSD's operation is in place, and the results are better year by year. As sustainable development entails a myriad of issues across the economy, society and environment, progress on the implementation processes and their efficiency are hard to track by just relying on the participation of the small number of NCSD members and their meetings. This renders their effectiveness to a minimum. As other members of the Council had suggested, various ministries and agencies should collaboratively plan a singular, comprehensive, autonomous and sustainable mechanism and cross-ministerial negotiation mechanism, which will facilitate the systematic progression of sustainable development. As the issues of sustainable development become more pressing, the current centralized and localized government structures are incapable of achieving such ideals, vertical integration and comprehensive development. One of the missions of the *National Sustainable Development Policy Guidelines* is to establish a framework of sustainable development for the counties and cities, and to formulate sustainable development promotion plans. The successful operation of such plans can facilitate overall realization of sustainable development policies, synchronization with international trends, and co-building of a sustainable future. What follows are some observations and personal opinions obtained through my years as a member of the NCSD.

1. Taiwan's Biodiversity Under the Impact of Global Climate Change

The globe's changing climate and more frequent

occurrences of extreme weather severely influence mankind's livelihood and social economy. In addition to adjusting industrial and energy structures, forestation and sustainable utilization of forests through strategic operational measures can be strengthened to improve carbon sequestration and curb the accelerating CO₂ concentration in the atmosphere. During on-site investigations of secondary reviews for the Sustainable Award, most of the participants demonstrated planting of native plants and reforestation on plains as their accomplishments. However, there exist numerous factors in the consideration of forestation, whether it's on hills or plains. What is the main purpose of forestation? Beautification of the environment, sequestration, ecological preservation, advancing education, water and soil conservation, or as raw materials for timber, medicine and essential oil extracts? These factors influence the scale of forestation, types of plants used, surrounding environment, methods of plantation, mode of operation, etc. More often than not, forestation and planting are for aesthetic purposes, and certain exotic plants can also be used for such purposes, such as the *Chorisia speciosa* (Floss-silk tree), *Gliricidia sepium* (Mexican lilac), *Bauhinia variegata* (Camel's foot tree) and *Cassia fistula* (Golden shower tree), etc.

In the last decade, extreme weather conditions have become more frequent in Taiwan. In response to the impact of such climate change, the NCSD proposed the Climate Change Adjustment Policy Guidelines and Action Plan. Taiwan is rich in biodiversity, but nonetheless our current knowledge about climate change impacts on biota and ecosystems remains very limited. Therefore, it's imperative to strengthen the researches and surveillance work in such aspects. The key in assessing the impacts of climate change on biodiversity is to compare various baseline datasets collected using standardized and rigorous sampling methods, irrespective of categories. However, the lack of such historic baseline data is a major issue for all countries. It is for such reason that countries



across the world are now actively dedicated to establishing ecological monitoring stations and large-scale long-term forest dynamics plots to monitor the impact of the weather on forests. Up to now, there has been a total of 48 plots in 22 countries across the world (including Taiwan's Fushan, Lianhuachih and Nanjenshan plots) that include forests in the tropical, temperate and frigid zones, monitoring 8,500 species of trees and over 4.5 million individual stems. Contents of the monitoring programs include phenology (blossoming, fructification, germination and defoliation), growth rate, species composition, carbon sequestration, ecological functions, etc. All measurements, time interval and data formats are consistent with international standards, thereby facilitating global comparisons. Long-term monitoring results indicate that phenomena such as El Nino, La Nina, and extreme weather are already exerting their toll on biodiversity.

2. National Sustainable Development Award

The purpose of the Award is to select role models that contribute significantly in the promotion of sustainable development, which in turn encourages mass participation in sustainable development and facilitates the development locally and in a relevant manner. Sustainable development considers the society, economy and environment in its totality, thus winning the Award is no easy feat. In the past few years, through the processes of preliminary evaluation and advanced selection, we profoundly realized that Taiwan has already faced numerous challenges from Mainland China, Japan, Korea and the emerging economies. Struck by the global financial crisis, the country's small- and medium-sized enterprises face severe difficulties in their development and transition. At the same time, we are also very impressed with some of the ingenuity, flexibility, R&D capabilities, and concerns for environment and society exhibited by some of these participating enterprises. In the category of Action Plan, nominees are often projects that are active for years with remarkable achievements. However, there are still some units that failed to grasp the inherent meaning of the Sustainable Award and proposed plans that are either outsourced or incongruent with the meaning of the Award.

In the category of NGOs, the participants perform a broad range of roles and provide a wide range of services involved health and medical services, social

welfare, services for the disadvantaged, nature conservation, community sustainability, environmental education, etc. Though their vision and objectives differ greatly, their perseverance of ideals and commitment to sustainability in spite of the harsh environment they had to deal with was truly astounding. In the category of education, most participating schools had their eyes on overall planning of sustainable campus, nurturing excellent campus environment, strengthening green energy teaching, care for the disadvantaged students, care for the new residents and their families, fostering community strength, integrating public resources to promote localized teaching and environmental teaching. In the interviewing process, a fact became clearer through the years: the enrollment in the schools is dropping, with a growing percentage of new citizens and disadvantaged students. These symptoms prove to be an extra burden to the schools as they need to allocate resources to cater to the special learning environment of the new resident students, facilitate after-class counseling, and strengthen their social adaptability and communication skills. The new residents will rise to prominence in the coming years, and are in dire need of meticulous and comprehensive care, which can help alleviate their economic pressure, improve campus education resources and facilitate review of national policies. These issues all require our attention and effort to initiate change for the better.

Years of experience as a judge for the National Sustainable Development Award makes me realize that in certain years, the number of outstanding units in each category far surpass the stipulated number of award recipients, and as such, unable to win the accolades they deserve. Personally, I feel that if any unit has demonstrated outstanding results in advancing sustainable development, there should be due reward and recognition; similarly, if no unit has achieved the desired result, there can be no recipients of the Award. The publicity for the Sustainable Award also requires more efforts by encouraging schools, agencies, NGOs and enterprises to actively participate in the Award. Winners of the Award are rightfully the elite of Taiwan, serving as a beacon of light for Taiwan's sustainable development. There can also be more media publicity to inspire the general public's concern and attention for the nation's sustainable development, which impacts the environment, industry and society.



Hastening Free Trade to Create a Sustainable and Prosperous Nation

*By Council Member: Feng Cheng-Min
(Professor, Institute of Traffic and Transportation, National Chiao Tung University)*

The National Council for Sustainable Development (NCSA) established by the Executive Yuan represents the nation in attending international affairs such as the UN's Rio+20 Conference. Domestically, the NCSA provides counsel and suggestions to various competent authorities, instructs administrative departments in implementing specific action plans, and publishes the sustainable development indicators. NCSA members participate in various working groups targeted at the environmental, economic or social aspects based on their interests, specialties and division of responsibilities. The NCSA annually evaluates outstanding associations and agencies that advocate sustainable development, awards the National Sustainable Development Award, publishes bilingual annual report on work progress and accomplishments, and demonstrates the country's ideals and determination in developing sustainable development; the results are spectacular. It is a period when the authorities are overhauling regulatory reforms to promote sustainable development, accelerating the de-regulation of laws that are not conducive to investments and businesses, integrating transportation network, proliferating logistical, personal, financial, information and knowledge interactions amidst the free trade zones, thereby setting the stage for the country to enjoy lasting sustainability.

Since the 1990s, the Executive Yuan had amended a total of 55 regulations among various ministries as Taiwan applied to be part of the World Trade Organization (WTO), in an effort to expand into the international market and attract foreign investments to build the domestic economy. In particular, the 12 major service sectors under the framework of GATS (General Agreement on Trade in Services) fully demonstrate our country's strategic advantage as the transportation hub in the Asia-Pacific region. This includes: business services, communications services, construction and related engineering services, distributional services, educational services, environmental services, financial services, health

services, social services, tourism and travel-related services, transport services, and sporting services. As such, after Taiwan was accepted as a member of the WTO in 2002, it follows customary international agreements and continues to initiate bilateral or multi-lateral trade agreements with countries around the world, securing more diverse and long-term economic benefits. Meanwhile, an International Air City, free trade harbour and free economic demonstration zone were planned to align domestic infrastructure development with the flexibility and volatility of the international market.

Due to the very location of our country in the intersection of transport routes between the top three economies in the world – the USA, China and Japan, as well as connecting with the fifth largest economy to the south – ASEAN countries with rich natural resources, the transport services have the unique geographical advantage and deserve to be fully utilized. Nonetheless, under intense competition from Chek Lap Kok Airport (aka Hong Kong International Airport) and Korea's Incheon International Airport, the cargo traffic of Taoyuan International Airport stagnates at 1.5 million tonnes annually. Its international ranking dropped vertically from the 14th position in 2007 to 29th position in 2011. This calls for urgent de-regulation of pertinent air, land and maritime transport regulations in order to facilitate more free and international trading.

For instance, we can emulate the "Negative Listing" adopted by the Hong Kong customs in that besides firearms, drugs or hazardous and regulated substances, all other products should be expedited and cleared within the shortest possible timeframe. By coupling that with comprehensive trade services involving industrial supply chain, harbor and airport handling, storages, logistics, communications, finances, quarantine examinations and regulations, the overall cargo throughput can be increased. Therefore, we should radically transform the traditional "Positive Listing" adopted by domestic customs to facilitate profits that can be made from emerging industries, and to prevent any regrets





simply because the products are not listing in the arcane positive lists.

In recent years, trading activities between Taiwan and foreign countries have reached a mature stage. Further, in response to requirements of sustainable development, Taiwan has sealed ECFA with mainland China and FTA with New Zealand. Subsequently, FTA or GATS will be signed with other major trading partners, and this will stimulate related domestic industries and boost our GDP. Meanwhile, the connectivity effect can expand global market, for instance, in the future, domestic corporations can establish electronic businesses in Fujian Province and receive orders from mainland China through third-party payment method as regulated by WTO's GATS. This is a tremendous advantage. In addition, it is suggested that Taiwanese delegations negotiate for transfer rights of international fleets from Taiwan to mainland China through maritime transport agreements, and flight transfer rights from Taiwan to other countries through air transport agreements. These facilitate Taiwan as the transport hub of the Asia-Pacific region by assimilating resources from all spheres.

In light of the fact that the general public is still

ambivalent with regard to the country's sustainable development plan and the contents of the GATS that are pertinent to sustainable economic growth, I advocate more publicity for the general public so that the Annual Report on National Sustainable Development can reach a wider audience and therefore be more accessible. Through more publicity and promotion, for example by posting persuasive insights of scholars and experts on Facebook, or host activities similar to the APEC Youth Camp, we can solicit understanding and recognition on issues of national sustainable development from the younger generation of this country. In the area of sustainable transport infrastructure, we should pay attention to the fragility and restoration abilities of infrastructure, ensure that both hardware functionalities and software capacities are strengthened, so that in times of need, the disadvantaged of our society such as the elderly, disabled, and poor can be taken care of. For instance, the ability to provide life rafts during floods, or the capacity to restore traffic in the shortest possible timeframe will require effective publicity so that the information and knowledge flow of sustainable transport can reach the widest audience possible.

Enhancing Energy Independence to Maintain the Long-term Stability of Taiwan

By Council Member, Tsai-Yi Wu (Chairman of the Taiwan Research Institute)

The Executive Yuan set up the National Council for Sustainable Development (NCSO) for the purpose of telling the world about Taiwan's efforts and achievements in environmental conservation, sustainable management of industry, stable supply of energy, and the pursuit of social justices. Taking into consideration the long term interests of our country, the NCSO served as the helmsman that led the various ministries and departments of the Executive Yuan to formulate divisional action plans, assisted in the planning and implementation of short-term, mid-term, and long-term policies, and made contributions to the major issues that were of grave concern to most nations of the world, including: global climate change, energy saving and carbon reduction, clean energy, conservation of biodiversity, and recycling of resources, etc. Of these major issues, the one that is of paramount importance is

energy independence, as it is the important bridge between environmental friendliness and economic growth. For the long term stability of our country, the present administration should take curtailing energy dependence, improving energy efficiency, and ensuring energy security as the key principles of good governance.

Energy is the power source for agriculture, forestry, fishery and animal husbandry. In essence, energy can be said to be the lifeblood of economic development. However, Taiwan, due to its lack of natural resources, has to rely on imports for over 98% of its energy. Our two neighboring countries, Korea and Japan, also have to rely on imports to solve their energy shortage. Generally speaking, most industrial nations in East Asia spare no efforts in developing clean, stable, and cheap energy to cope with the needs of economic growth. Clean energy

signifies low carbon emissions, like liquefied natural gas, whereas a stable energy source means a steady supply of energy, unaffected by the forces of nature. As alternative energy sources, wind power and solar power leave a lot to be desired, as they are often at the mercy of God's whims

and their power supply is far from steady. Solar energy, on the other hand, is much cheaper, so it is closely related to the well being of the people, the prospect of industry development, and the overall competitiveness of a nation. At present, there are 31 industrial nations in the world using nuclear power to meet their domestic demands and in the near future there will be more than ten industrial nations which continue to launch nuclear power plants. In sum, the world shall have more than forty industrial nations enjoying the inexpensive nuclear power supply system.

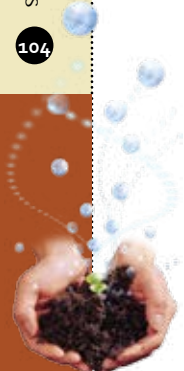
Taiwan has always professed to be a member of the global village, so it is incumbent upon Taiwan to make significant contributions in carbon reduction. In 2012, Taiwan's total carbon emission volume reached over 240 million tons. Although this volume only accounts for 1% of the global total, we must bear in mind that Taiwan is a small island where the people are densely located. The per capita carbon emission volume for Taiwan is nearly 11 tons, higher than the average of most industrial nations of the EU. Moreover, the domestic carbon emission growth rate of Taiwan also tops the world, showing the urgent need for cleaner, more stable, and more economical energy sources. Only by achieving energy independence can we hope for a smooth upgrade of our industrial structure, strive forward toward a high-tech, low power consumption, and high value added ideal vision, while retaining our green mountains and blue rivers and recycling our resources so that our future generations can enjoy them for good.

In the early 21st century, the people of Taiwan are clamoring for environmental protection, and the demand for nuclear safety requirements is also getting higher and higher. However, nuclear power only accounts for less than 18% of Taiwan's total power supply, over 70% of which still comes from oil, gas, natural gas and high-polluting coal fired power plants to supply the need of various domestic industries, including: iron and steel, petrochemical, paper, cement, chemical fibers, electrical, communications, clothing, etc. Unfortunately, alternative power sources such as wind power and solar power are still in the early stages of

development, and the potential of hydroelectric power has already reached its limit. Once we curtail nuclear power, not only will the prices of electricity skyrocket, resulting in the rising of industrial production costs, it will, over the long haul, exert tremendous pressure on investment and economic growth.

Take Taiwan's most powerful economic rival Korea as an example. Nuclear power accounts for 40% of Korea's total power supply, so the price of electricity in Korea is cheaper than that in Taiwan. Not only that, Korea even sent a special expedition to the United Arab Emirates in the Middle East to build power plants. This shows that even an oil producing country such as the United Arab Emirates dare not fall behind and is keenly involved in developing nuclear energy. If we use the total electricity output of the Fourth Nuclear Power Plant as the basis of comparison, it is tantamount to 12 Chung-Shan high-speed freeways paved with solar panels, or equivalent to install a wind power generator every 500 meters around the island of Taiwan. Needless to say, the immediate impact upon Taiwan's environment and ecology is by no means less than building a nuclear power plant.

On 11 March 2011, Japan suffered the impact of a huge earthquake and the ensuing tsunami, which triggered the Fukushima nuclear disaster. In hindsight, the improper handling of the incident by Tokyo Electrical Power Company caused the difficult situation to worsen, and the Japanese Government finally had to step up to solve the problem. Because the Japanese economy was undergoing a recession at that time, the newly elected Prime Minister Shinzo Abe had to resort to a rapid devaluation of the Japanese Yen, and, since the nuclear units were having a downtime, the government had no recourse other than using fossil energy on a short term basis, which resulted in a steep rise of the price of electricity. Nevertheless, as a nation, the Japanese were very energy conscious, which was evident from the fact that all air conditioners in department stores were fixed at 26°C. By contrast, the basic livelihood needs such as gasoline, diesel, water and electricity were supplied by state-run businesses in Taiwan, and over the long haul their prices were not genuinely reflected due to the policy burdens that these businesses had to bear. Consequently, compared to ongoing international prices, the prices for gasoline, diesel, etc in Taiwan are usually much lower, which result in the long term losses of these state-run



businesses, causing them to be unable to produce a surplus to pay the state treasury. As the state has insufficient tax income, it has to issue bonds, leaving our debts to future generations. In consideration of

inter-generational equity and justice, I strongly recommend that energy prices should reflect their costs, and energy conservation should be promoted to achieve the desired results.

This Land, This Nation: Protecting It for the Peace and Prosperity of the People

*By Council Member: Hongey Chen
(Professor, Department of Geosciences, National Taiwan University)*

Taiwan is located in the Pacific Ring of Fire, rampant with earthquakes due to colliding continental plates. For millions of years, the formation of volcanic mountains has rendered the island three-quarters mountainous, rich with forested hills and rugged topography with steep slopes and winding rivers. During typhoon or heavy rain seasons, geological events such as landslides, falling stones and mudslides are common. Within a period of two decades, characterized by Typhoon Herb in 1996, Typhoon Winnie in 1998, the 921 Earthquake in 1999, Typhoon Toraji and Typhoon Nari in 2001, Typhoon Mindulle in 2004, Typhoon Kalmaegi in 2008 and Typhoon Morakot in 2009, natural calamities have caused tremendous destruction to life and property on this island. Therefore, everyone has a desperate wish: that the people of this island would stop all improper development; as well as an all-encompassing hope that this land can be developed sustainably forever. The National Council on Sustainable Development (NCSO) seems to be the response to that expectation.

To the best of my understanding, the NCSO is not classified as a permanent organization, and is very different from the functional operations of government ministries. Members of the NCSO come from all walk of life, and colors, comprising of scholars, experts and civic members from varying fields. The NCSO will host impromptu member meetings, and during such workgroup meetings, members are keen to learn how each competent authority has implemented an “Action Plan” in practice. This calls for concrete support and practical advice, and this is where the specialties of each NCSO member comes into play. Specialized knowledge and expertise include impacts of global climate change, geographical calamities, water and land preservation, slope development, public infrastructure, national land planning, resource

exploration planning and environmental protection. Every member of the NCSO is eager to contribute and provide assistance to the government agencies, and help actualize the ideals of national sustainable development. Though participation is active, in actual fact, the practical benefits of these assistances are difficult to manifest. This is the current dilemma.

In the area of national land planning and various land development projects, current regulations, such as the Forestry Act, Water Act, Environmental Impact Assessment Act, Soil and Water Conservation Act, Geology Act and Building Act are not insufficient in terms of land development requirements, but rather taxing and tedious. How to fulfill requirements of the pertinent Acts and carry out in practice seemed to be the most pressing concern in the government sector. After Typhoon Morakot, the mountainous regions in central and southern Taiwan are peppered with grave aftermath of the typhoon’s destruction. The impact on the geographical sensitive regions is most obvious, rendering regions prone to mudslides uninhabitable. The reconstruction of the disaster region is the right place where the NCSO members can express their full capacity – to provide professional knowledge and suggestions in the routine national land planning projects of various ministries and agencies, and aid in consolidating of stable geographical locations as the only viable option for safe living. In addition, how to find geothermal energy and other alternative energy sources from the island’s limited resources to aid the general public and calm the unrest from residing such an environment is another issue for the government to ponder.

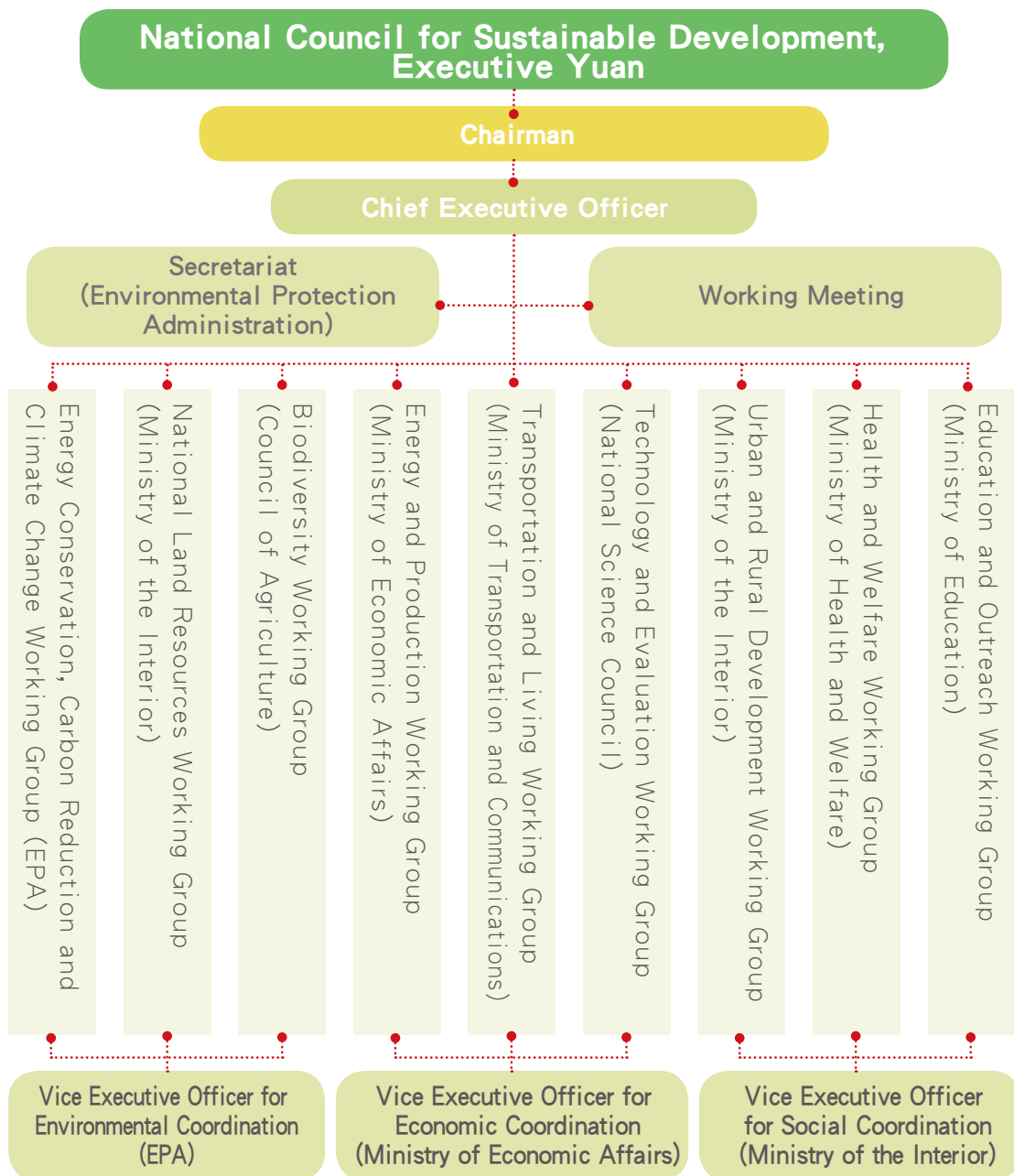
How to implement suggestions from NCSO members on a practical level leaves much room for improvement. We sincerely hope that the NCSO will become more pragmatic and continually support this society in sustainable growth and development.



Index

Appendix I

Organizational Structure of NCSD





Appendix II

The Members of NCSD

Government official members

Name	Position Organization
Jiang Yi-huah	Premier, Executive Yuan
Kuan Chung-ming	Minister of Council for Economic Planning and Development, Executive Yuan
Lee Hong-yuan	Minister, Ministry of the Interior
Chang Chia-juch	Minister, Ministry of Economic Affairs
Yeh Kuang-shih	Minister, Ministry of Transportation and Communications
Chiang Wei-ling	Minister, Ministry of Education
Chiu Wen-ta	Minister, Ministry of Health and Welfare
Chu Ching-yi	Minister, National Science Council
Chen Bao-ji	Minister, Council of Agriculture
Stephen Shu-hung Shen	Minister, Environmental Protection Administration

Expert and academic members

Name	Position Organization
Lee Ling-Ling	Professor, Graduate Institute of Ecology and Evolutionary Biology, College of Life Science, National Taiwan University
Shao Kwang-Tsao	Researcher, Research Center for Biodiversity, Academia Sinica
Wu Tsai-yi	Chairman of Taiwan Research Institute

Name	Position Organization
Chang Ssu-Li	Professor, Institute of Planning, National Taipei University
Chen Yu-Hui	Professor, Department of Agricultural and Applied Economics, National Taiwan University
Chen Hongey	Professor, Department of Geosciences, National Taiwan University
Feng Cheng-Min	Professor, Institute of Traffic and Transportation, National Chiao Tung University
Yeh Sandy Yu-lan	Associate Professor, Central Police University
Chiang Pen-Chi	Professor, Graduate Institute of Environmental Engineering, National Taiwan University
Liao Huei-chu	Professor, Department of Economics, Tamkang University

NGO representative members

Name	Position Organization
Yu Alice	President, Yu Chi-Chung Cultural and Educational Foundation
Chou Julia	President, Conservation Mothers Foundation
Lin Chun-Shin	Chairman, Archilife Research Foundation
Lin Yi-Hou	Director, Urban Regeneration R&D Foundation
Kung Romy	Director, Taiwan Responsible Care Association
Chen Shih-chang	Chairman, Formosan Society for Indigenous Sustainability
Lai Jung-hsiao	President, Society of Wilderness
Liu Vicky	Director, Cycling Life-Style Foundation
Lo Shang-Lien	Director, Taiwan Environmental Management Association
Hsieh Chang-fu	Honorary Director, Biodiversity Association of Taiwan

