

# 2013 ANNUAL REPORT ON NATIONAL SUSTAINABLE DEVELOPMENT



行政院國家永續發展委員會 編印

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101年國家永續發展年報

2013 Annual Report on National Sustainable Development

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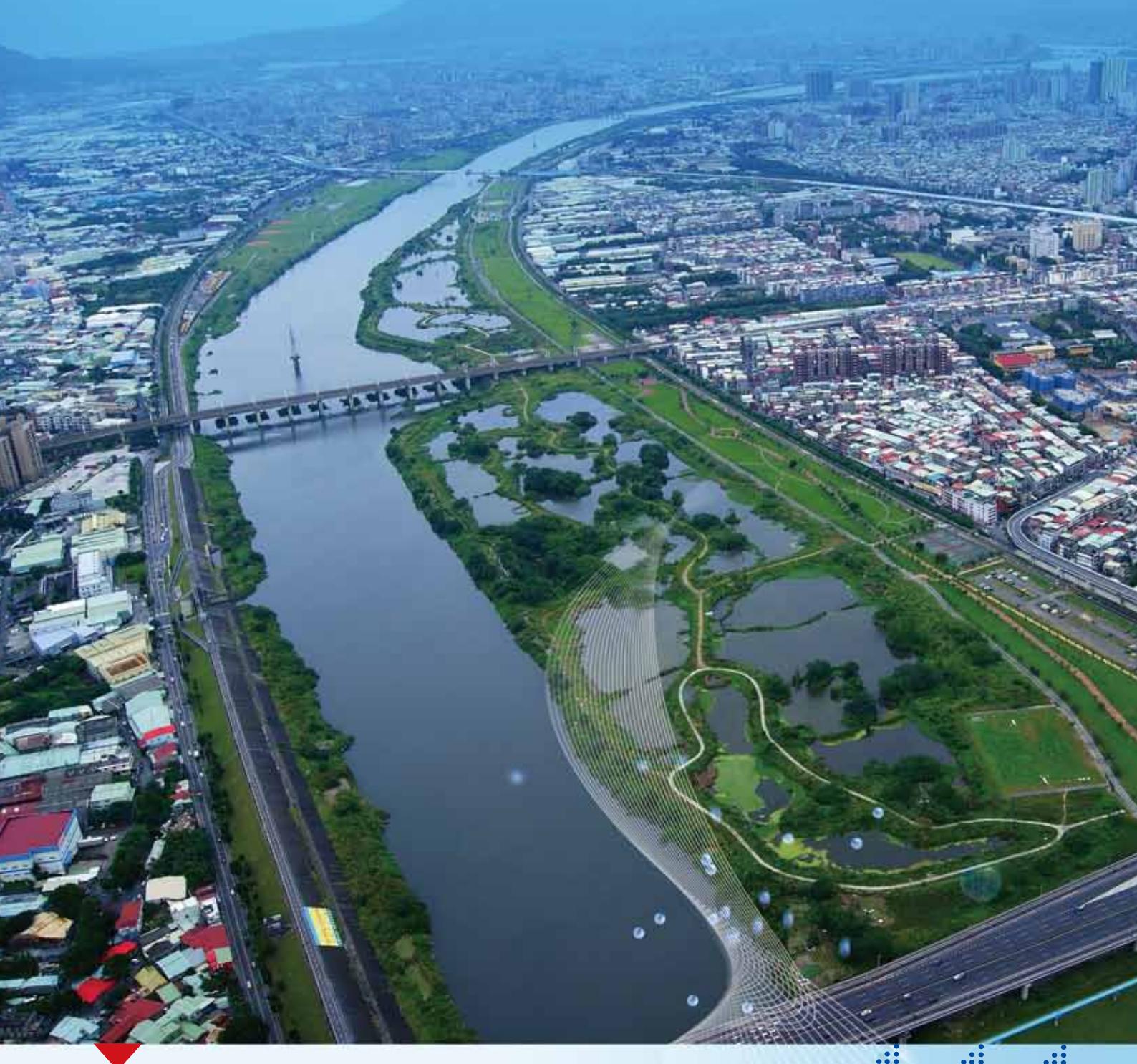
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# 102年國家永續發展年報

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## 前言

**台** 灣因地狹人稠、自然資源有限、天然災害頻繁、國際地位特殊等因素，致對永續發展的追求，比其他國家更有迫切性。為因應全球永續發展趨勢，行政院於86年8月以台八十六環字第33137號函核定成立「行政院國家永續發展委員會」（以下簡稱永續會）；91年12月總統頒布實施「環境基本法」，該法第29條賦予永續會法定位階。

本年報彙整永續會及民間102年推動永續發展的重要成果，包括永續會102年工作概況（第一章）、永續會各工作分組年度工作概況（第二章）、2012永續發展指標之評量結果（第三章）、102年國家永續發展獎（第四章）、2013永續發展國際論壇（第五章）及永續會民間委員專訪（第六章）等。永續會組織架構及委員名單，詳列於年報附錄。

永續發展貴在共同參與，藉由「國家永續發展年報」之發行，期望國人及國際人士能更了解我國推動永續發展的過程及成果，並希望能藉此提升全民對永續發展的認知，進而共同參與國家的永續發展工作。

## 第一章

# 國家永續發展委員會 年度工作概況



行政院國家永續發展委員會第37次工作會議

### 壹、召開工作會議

本年度行政院國家永續發展委員會（以下簡稱永續會）分別於102年5月28日及11月6日召開兩次工作會議，研商永續發展相關議題。

#### 一、召開第36次工作會議

本次會議由永續會管執行長中閔主持，議程包括二項報告案：（一）綠色經濟專案小組推動情形；（二）我國參與「聯合國永續發展知識平台」自願性承諾事宜。

報告案一「綠色經濟專案小組推動情形」之決議：請經建會參考委員所提的意見，重新修正計畫內容，於下次會議時作完整報告。

報告案二「我國參與『聯合國永續發展知識平台』自願性承諾事宜」之決議：

（一）請各部會參考委員意見再行檢視主管業務，修正或新增可登錄於聯合國永續發展知識平台之自願性承諾。

（二）原則以永續會名義進行登錄。

（三）自願性承諾執行地點原則為Taiwan。

#### 二、召開第37次工作會議

本次會議由永續會管執行長中閔主持，議程包括報告案：（一）「聯合國永續發展大會（Rio+20）」產出文件之本會因應；（二）「聯合國永續發展知識平台」之本會自願性承諾提報與呈現；及討論案：「永續發展政策行銷推廣規劃構想書」。

報告案一及二之決議：

（一）請各工作分組參照「聯合國大會（Rio+20）」產出文件進行「永續發展行動計畫」等相關事項之修正，並請儘速完成。

（二）本會已於「聯合國永續發展知識平台」登錄「自願性承諾」之單位請確實執行，俾對全球展示我國永續發展推動成果。

討論案「永續發展政策行銷推廣規劃構想

書」之決議：

- (一) 政策行銷規劃構想可讓國人進一步了解永續發展三面向的內涵，帶動地方政府及民眾積極參與永續發展工作，值得肯定。
- (二) 有關本案後續細部規劃、分工、經費分攤及執行，未來由本會環境面、經濟面及社會面3位副執行長共同協調經費分攤之原則和結果，並請執行長召開會議討論後，邀集各工作分組及相關部會進行協商。

## 貳、修正及執行永續發展行動計畫

為將Rio+20的產出文件「我們想要的未來」內容納入永續會推動工作中，永續會秘書處於102年2月1日，邀請永續會各工作分組及相關單位召開「聯合國永續發展大會（Rio+20）產出文件與我國現行永續發展相關文件之應用研商會議」，針對「我們想要的未來」之6章節283條文進行分工，據以修正各工作分組之行動計畫，包括策略及具體工作之增刪。

修正後之各工作分組行動計畫執行情形，詳如「行政院國家永續發展委員會全球資訊網（<http://nsdn.epa.gov.tw/>）」。

## 參、修正永續指標系統及評量年度結果

有關「永續發展指標」系統之年度修正，除於102年2月1日辦理「聯合國永續發展大會（Rio+20）產出文件與我國現行永續發展相關文件之應用研商會議」，請各分組參考「我們想要的來」之條文內容據以增刪修正外，另於9月9日邀請永續會民間委員召開「2012永續發展指標系統修正及填報會議」，確認2012年永續發展指標系統之面向、議題及指標。基於「我們想要的未來」內容修正後之2012年永續發展指標系統與2011年相較，增加2項議題（永續旅遊、能力建置）及4項指標（失業率、國家風景區旅遊人數、發明專利公告發證數、碩士級以上研發人員數）。2012年永續

發展指標評量結果已於102年12月底公布於永續會全球資訊網站，周知社會各界。

指標系統內容及評量過程，請參考本年報第三章。

## 肆、辦理年度國家永續發展獎評選及表揚

2002年聯合國「永續發展世界高峰會」通過「聯合國永續發展行動計畫」，鼓勵各國以行動落實人類的永續發展。永續會為順應全球永續發展趨勢，鼓勵國內各界參與永續發展行動，自93起辦理「國家永續發展獎」評選作業，選拔各類永續發展推動績效卓著單位，並藉由得獎單位的經驗分享，將永續發展擴展至社會各層面。

「國家永續發展獎」舉辦的宗旨，係鼓勵全民以行動參與永續發展的工作。藉由經驗分享與學習，將永續發展精神深植於社會層面，並落實於日常工作及生活中。

102年係舉辦第10次「國家永續發展獎」的選拔，評選過程經「書面初審」、「實地複審」及「決選」等3階段，分別自教育類、企業類、社團類及永續發展行動計畫等4大類，選出11個獲獎單位。並於102年12月6日，於行政院大禮堂舉行頒獎典禮，由江宜樺院長親自頒獎，表揚永續發展績效推動卓著單位。

永續發展獎獲獎單位之介紹，詳見本年報第四章。

## 伍、舉辦2013永續發展國際論壇

為掌握全球最新趨勢，做為我國推動永續發展工作之參考，永續會於102年9月13日假國家圖書館舉辦「2013永續發展國際論壇」，邀請北美洲、歐洲、亞洲等國際永續發展相關組織代表或專家及國內永續發展專家主講，將全球永續發展最新資訊周知國內各界，並與永續會民間委員及社會大眾交換意見，做為永續會日後政策擬訂之參考。

有關永續發展國際論壇舉辦之內容及成果，請參考本年報第五章。



## 第二章

# 永續會各工作分組 年度工作簡介



● 澎湖低碳島上的風力發電

## ● 節能減碳與氣候變遷分組

### 一、建構溫室氣體管理基礎（環保署）

- (一) 持續推動「溫室氣體減量法（草案）」立法工作。
- (二) 通過24件先期專案減量額度申請，核發減量額度361.5萬公噸CO<sub>2</sub>e，同意5件抵換專案註冊申請，預估減量269萬公噸CO<sub>2</sub>e。
- (三) 落實溫室氣體認證查驗管理，認可1家認證機構、11家查驗機構；累計487家廠商自願提報盤查資料，掌握國內工業及能源部門約7成以上燃料燃燒排放量。

### 二、整合政府部會作為

（經建會、經濟部能源局、衛生福利部、國科會）

- (一) 協調推動各部會研提8大領域之行動方

案，據以彙整完成「國家氣候變遷調適行動計畫」（草案）。

- (二) 補助11個地方政府辦理氣候變遷調適計畫。
- (三) 完成人性化燈具開發，採用直插式崁燈，可應用於辦公室走道或醫院病房，斷電時自動調整輸出為1/4功率；開發LED照明系統，並參與多項展覽與發表會，積極推廣新世代LED照明系統。
- (四) 持續推動能源國家型科技計畫，包含智慧電網與先進讀表、離岸風力、天然氣水合物、太陽光電、儲能技術、生質能源、氫能技術、照明與電器技術及工業節能技術等主軸。
- (五) 完成39家醫院節能減碳輔導，達成



2020年減碳排放量13%的目標；辦理2013年「國際低碳醫院團隊合作最佳案例獎」，邀請國內外健康促進醫院（Health Promoting Hospital, HPH）會員醫院及健康促進醫院與環境友善委員會（TF）會員醫院參加。

### 三、推動實質國際參與 (環保署、交通部中央氣象局)

赴波蘭華沙參加聯合國氣候變化綱要公約第19次締約國大會暨京都議定書第9次締約國會議（UNFCCC COP19/CMP9）；「亞太地區氣候變遷調適與氣候應用國際氣象交流」，邀請吉里巴斯氣象局長和索羅門群島環境部長、氣象局長來臺；舉辦「2050臺灣長期減碳路徑論壇」，邀請德、澳、日等外國專家學者討論交流。



↑ 我國行政院參與COP19全球氣候變遷會議代表團，於波蘭華沙與各國重要組織進行交流，我代表團團長葉欣誠（前中）應邀參加周邊會議。

### 四、擴大公民參與（環保署）

5月18日以世界公民咖啡館型態辦理「臺灣2050年零碳及再生能源百分百之可行性與必要性全民論壇」，共30桌討論議題，建立政府與民間之溝通平台與夥伴關係。

### 五、輔導產業低碳綠化 (經濟部工業局、能源局)

(一) 102年度參與產業室氣體自願減量協議之11行業計245家廠商共執行1,065件減量措施，減碳131萬公噸，衍生效益約

66.5億。

- (二) 製造業節能減碳服務團完成1,800件次諮詢服務，臨廠輔導359家工廠，提供1,100項建議改善方案，預估減量16.6萬公噸CO<sub>2</sub>e。
- (三) 推動產業執行抵換專案，開發10項本土化減量方法之應用工具表單，輔導5家抵換專案示範廠商撰寫溫室氣體抵換專案計畫書，單一年度可申請減量額度1.77萬公噸CO<sub>2</sub>e。
- (四) 總計42家醫院、旅館企業參與自願性節能，累計參與之企業用電量已達國內全體醫院、旅館業總耗電量之59.5%。
- (五) 總計便利商店、量販店等15類行業、151個集團企業響應自願性節能，累計已節省12億度電，減少66萬公噸碳排放量。
- (六) 截至102年9月底通過470案綠建築標章及候選綠建築證書，約可省電1億2,814萬度、省水735萬噸及減碳7.41萬噸。
- (七) 補助兩家業者分於新北市及高雄市設置至少30站之電動機車電池交換系統；102年10月底公告電動機車共通電池規格；補助電動蔬果運輸車營運商及使用者，提供設置電動車營運設施、購車成本及電池租金等補助。

### 六、宣導綠色樂活 推動低碳運輸 (環保署、經濟部能源局、交通部觀光局)

- (一) 截至102年10月底，通過2,387款節能標章產品，計推動44項節能標章產品認證，使用枚數累計1.6億枚。
- (二) 推動能源效率分級標示與產品登錄管理，共核准登錄14,795款型號。
- (三) 公布車輛新耗能標準，提升較現行車輛能源效率15%。
- (四) 102年度稽查3000輛以上車輛，落實廠商依規定張貼或檢附能源效率標示。
- (五) 擴大辦理自行車節活動，活動由1個月延伸至全年；新建的羅山管理站、馬祖



國家風景區管理處南竿遊客中心並獲內政部頒「綠建築銀級標章」認證。

- (六) 建立環保低碳活動網路平台，累計8,494件活動登錄。
- (七) 輔導、協助52個示範社區推動低碳家園；補助各縣市成立及運作低碳永續家園推動體系；擇選100個優先行動項目，撰寫成認證專案，登載「低碳永續

## ● 國土資源分組

### 一、水資源開發、利用、管理及保育

(環保署、台北市翡翠水庫管理局、經濟部水利署)

- (一) 推動全國11條重點河川汙染整治，辦理6條都會型河川污染整治有效改善水質。同時推動水質淨化現地處理，截至102年9月止，完成110處，處理場址面積為542公頃，每日處理水量約88萬7,500 CMD，BOD污染削減量每日約2萬4,700公斤。
- (二) 102年上半年執行碳中和計畫，辦理各項節能措施以減少水庫溫室氣體排放；劃定1259.93公頃面積之「翡翠水庫食蛇龜野生動物保護區」，以落實生物保育，並積極推動環境教育，成立「翡翠水庫環境學習中心」，規畫多元教學方案及辦理環境教育學習，至102年10月底總計34梯次2,139人至學習中心參加



國小學童參加翡翠水庫學生導覽

家園資訊網」(<http://lcss.epa.gov.tw>)。

- (八) 輔導縣市層級溫室氣體盤查，編撰盤查操作手冊及強化「碳揭露服務平台」。
- (九) 與德國在臺協會合辦2場次「2013臺德低碳城市論壇--低碳智慧城市之建築概念與科技」；與「英國貿易文化辦事處」合辦理「2013年臺英低碳永續城市論壇」。

環教課程或學生導覽。

- (三) 辦理中庄調整池工程、曾文南化烏山頭水庫治理及穩定南部地區供水計畫，俟完工後可以有效達成水庫集水區山坡地保育、減少水庫淤積量，發揮穩定供水之功能。

### 二、地下水資源之保育與管理

(環保署、農委會漁業署、經濟部水利署)

- (一) 持續監測全國431口區域性地下水質監測工作：截至102年9月底，監測結果低於地下水污染監測標準的總比率為90.3%，低於地下水污染管制標準比率為100%。
- (二) 推動「地下水保育管理計畫」、完成雲林縣下崙養殖漁業生產區海水統籌供應系統改善工程等，估計每年可減抽50萬噸地下水。
- (三) 辦理濁水溪河槽地下水補助簡易設施，抬升枯水期河水水位，增加地下水補注量，復育地下水環境：102年度截至7月中，累積入滲量約2,136萬噸。

### 三、海洋資源之永續經營（內政部營建署）

- (一) 持續推動「永續海岸整體發展方案」，監控海岸線變異點，即時處理因應，維持自然海岸線比例不再降低，回復海岸自然風貌。
- (二) 持續辦理「海岸復育及景觀改善示範計



畫」：102年度核定補助6直轄市、縣（市）9項計畫，改善海岸景觀，促進海岸土地管理合理化，復育劣化海岸。

#### 四、國土規劃與管理 (內政部營建署、農委會)

- (一) 研擬完成「國土計畫法（草案）」，並於102年9月16日報行政院核議，俟行政院完成審查後轉送立法院審議。
- (二) 劃設環境敏感地區及訂定管制辦法，包括：劃設土石流潛勢溪流、嚴重崩塌或其他高危險地區等20項環境敏感地區第1級，及嚴重地層下陷等21項環境敏感地區第2級條件發展地區，並訂定管制原則。
- (三) 辦理「國土利用監測計畫」，利用遙測衛星影像、土地利用變遷偵測管理系統與變異點網路通報查報等系統，進行土地利用變異監測，遏止土地違法開發使用。102年度辦理3期變異點通報作業，變異點計有1,124筆，回報比率97%。違規發現率36%。
- (四) 推動農地資源空間規劃並建立農地合理利用機制，協助15個直轄市或縣政府進行特殊地區及重要農業生產地區等資料建置及標繪，完成農地資源分類分級檢核，以掌握轄區內農地資源分布相關資料。

#### 五、國土保育 (農委會水保局、經濟部水利署)

- (一) 辦理整體性治山防災計畫，102年度辦

理30件崩塌地復育工程，已完成復育崩塌地面積約15公頃。

- (二) 辦理土石流警戒基準值及參考雨量站檢討、調整與更新，檢討南投、雲林與嘉義共3縣11鄉鎮之土石流警戒基準值。
- (三) 執行「易淹水地區水患治理計畫」，已改善淹水面積約455平方公里。

#### 六、濕地生態復育（內政部營建署）

- (一) 「濕地保育法」於102年7月3日公布施行，全文共計8章42條。
- (二) 補助17個縣市政府執行「國家重要濕地保育計畫」46項子計畫，以維護復育濕地。
- (三) 6月參加明尼蘇達州杜魯斯市年會，並於會中報告我國推動濕地保育之成果。8月邀請SWS 總會會長史帝芬福克納博士（Stephen Faulkner）、羅伊加德納博士（Dr. Royal C. Gardner）來台參加國際濕地工作坊，促與國際濕地保育行動接軌。



▲ 臺東鹿野新良人工濕地

### ● 生物多樣性分組

#### 一、陸域及海域生物多樣性可能之熱點調查與確認（國科會、農委會）

- (一) 完成粉枝藻科在台灣沿海多樣性及分佈之調查。臺灣產粉枝藻科過去記錄的種類有10屬15種，目前發表有來自台灣

粉枝藻科的4個新屬以及3個世界新種，以及3個台灣新紀錄種以及5-10種有待發表疑是世界新種；宜蘭龜山島海域海洋生物多樣性很高，經研究調查，此海域的甲殼十足類共有420種。



① 2013臺灣繁殖鳥類大調查初階訓練班：台北場

(二) 於花蓮縣及台東縣新增121筆臺灣陸域有鱗目調查資料；新增2個麝香貓分布樣點，發現機率為15.4%；合歡山高海拔試驗站設置4個調查樣點並完成2次蝶形網調查，共記錄11科18種；西部地區完成82個淡水螺貝類樣點採集，共得29種512個樣本；完成5縣市維管束植物資源調查。

## 二、2020年前，至少將領海範圍內20% 海域劃設為海洋保護區，並落實管理 (農委會)

修正8處漁業資源保育區公告，新增伸港及王功2處蟳姑蝦繁殖保育區。將我國海洋保護區等級分類系統納入漁業資源保育區告示牌之設置，總計共11處漁業資源保育區完成設置。

## 三、生物多樣性資料庫之建置與整合， 並定期增修（國科會、農委會）

(一) 建置與維護及整合臺灣生物多樣性資訊入口網（TaiBIF），目前共有8個資料提供者、32個資料集及251萬筆資料；臺灣電子版生物誌」（<http://biota.taibif.org.tw/>）「誌」類書籍累積至今29本，其中23本資料已上載『生物誌內容管理平台』；「台灣生命大百科（TaiEOL）」102年貢獻台灣魚類資料庫2,827種魚類解說與2,850張魚類照片給美國EOL。

(二) 臺灣野生動物資料庫累積物種2,608種，照片3,725張，資料筆數215,175

筆；臺灣野生植物資料庫累積物種9,298種，資料筆數86,711筆；持續運作臺灣生物多樣性網絡，累積照片10,304張，資料311,202筆。

## 四、建構國家生物種原庫（農委會）

- (一) 金門與澎湖兩地鱉的棲息繁衍，經多年培育後，成功脫殼成為13齡鱉。
- (二) 鹿港水產生物種原庫保存水產生物種原有22種及保存種類約50種；東部水產生物種原庫保存24種水產生物種。

## 五、陸域、濕地與海洋生物多樣性監測系統 之規劃（國科會）

- (一) 國科會本年度發現臺灣新紀錄的甲殼十足類7種及2種世界新種中齒游龍蝦（*Puerulus mesodontus*）和差異彷刺鎧蝦（*Munidopsis dissimilis*），並發表四篇學術論文。
- (二) 「臺灣繁殖鳥類大調查」共318位志工認養370個樣區，並確認各樣區之樣點設置。

## 六、強化漁業永續利用， 收集資料與監測資源變化（農委會）

- (一) 針對鯖鯉、鰻魚及蟳蟹等特定漁業公告漁業管理措施，及公告漁獲通報管制措施。
- (二) 利用鏢旗魚漁法進行洄游魚類資源及其習性之調查，總計調查天數長達360天。
- (三) 進行底棲魚類資源監測，完成台灣西南海域大眼鯛、花斑蛇鯰之生物生態研究、台灣周邊海域資源調查與研究及周邊海域環境調查等，累計溫鹽資料195,600筆，葉綠素資料930筆，營養鹽資料3,720筆，浮游動物資料5,580筆。

## 七、實施減船及休漁，管制漁獲， 實施漁業管理（農委會）

- (一) 辦理漁船筏收購，102年核定收購數共



8艘漁船，442.05噸及60艘漁筏。

(二) 102年9月底，已核發符合獎勵休漁漁船計7,835艘，獎勵金共計1.3億元。

(三) 針對拖網、刺網、燈火、魴鱈、珊瑚、飛魚卵、鯊魚等特定漁業訂管理規範，包括禁漁區、禁漁期、漁具漁法限制、漁獲體長限制、漁獲量限制及漁獲回報等措施，並請海巡署協助查核違法作業漁船，102年經主管機關處分達121件。

## 八、入侵種生物防治及建立名錄 (環保署、農委會)

(一) 研擬新入侵生物緊急撲滅計畫，並聯合地方政府定期演習。

(二) 建立已入侵生物長期防治計畫，將入侵種造成之經濟損失及生態衝擊降至最小，包括督導縣市環保局依標準作業程序進行防治，辦理居家周圍紅火蟻危害案件之防治，迅速施以藥劑進行防治及持續監測等。

(三) 建立國內外來及入侵生物清單，研析生態、經濟危害及管理策略；建立國際高風險入侵種生物清單，研析入侵管道及預防入侵措施。參與中華鳥會鳥類

紀錄委員會，發布「2013臺灣鳥類名錄」。

## 九、完成原住民族傳統生物多樣性 知識調查整理 (原民會、客委會)

(一) 辦理原住民族傳統生物多樣性知識調查整理，核定補助8族16個部落協會參與「輔導及補助部落調查傳統生物多樣性知識實施計畫」，102年度約完成1,600筆調查資料上傳。

(二) 補助客家出版品，以喚起各界對客庄風土人情及自然風貌的認識與珍視。



配合「臺灣『礁』點・東沙環礁」特展，辦理海洋狂想曲-歡樂派對親子活動。

## ● 能源與生產分組

### 一、推動綠色工廠與能資源整合 (經濟部工業局)

(一) 推動綠色工廠：包括提供3家綠色工廠示範輔導、6家清潔生產診斷輔導，協助工廠符合綠色工廠標章所要求之綠建築及清潔生產標準；辦理3廠次綠色工廠參訪，共70家廠112人參與；核發13張綠色工廠標章及28家廠商通過清潔生產評估系統符合性判定，獲證廠商共可減碳21.9萬噸，節省12.1億。

(二) 能資源整合：完成重點產業園區內包括蒸汽、氫氣、廢切削油、廢保溫材、廢溶劑等累計190項能資源鏈結規劃，達

成每年約82.3萬公噸鏈結量，及每年減碳29.3萬公噸。

### 二、鼓勵節能減碳、開發再生能源 (經濟部能源局)

(一) 補助澎湖縣設置太陽光電總計20案，總容量1560Kw，另補助太陽能熱水器166件。

(二) 截至102年10月總計補助節能冷氣機與冰箱，補助8,024臺；同時裝設5,041盞LED路燈。

(三) 100年8月至102年8月電動機車掛牌總計3,346輛，另補助71處591座充電柱。



(四) 公告「風力發電離岸系統示範獎勵辦法」，三家獲選業者需於104年底前各完成4座示範機組，109年前完成100-200 MW示範風場。

(五) 102年太陽光電目標量已由100MW提高為130MW，因安裝需求旺盛，再次將提高至175MW，將創造175億元產值。

(六) 補助沼氣發電系統，計有屏東縣麟洛鄉中央畜牧場及彰化縣漢寶畜牧場兩案通過申請審查，發電裝置容量皆為195kW，總計390kW，每年發電可達252萬度以上。

(七) 「綠色能源產業旭升方案」98至102年第3季累積投資2,129億；102年至第3季產值達3,134億，就業人數61,700人。

(八) 製造業主要耗能設備能源效率管理：水泥製造業者每半年須定期申報，廠商皆完成申報；鋼鐵製造業、造紙廠年底前需各完成30家、15家的能源效率實地查驗。

(九) 節能績效保證專案示範推廣補助，計有14個受補助單位執行，將創造產值3.25億、節省能源用量約為3,999 KLOE/年。



◎ 經濟部結合地方政府進行沼氣發電

### 三、振興農業措施（農委會）

(一) 劃定74處休閒農業區，推動食材旅行、自然旅行等遊程，輔導成立料理班，開發在地農產伴手禮，鼓勵農業旅遊，已吸引1,100萬人次。

(二) 鼓勵終身學習，辦理農民學院培育在職及新進農民，實施系統性培育及傳承，推動專業能力檢核及認證，強化專業知



◎ 農民學院-有機班傳授種植方式



◎ 農業旅遊-「鮮享在地嚐鮮大使」

能。

(三) 維持家禽產業產銷平衡：輔導家禽產業團體產銷資訊建置，落實產銷預警機制及產業自主調節；維持國產禽品於國內消費市場占有率達80%以上。

(四) 推動優良農產品標章：經農委會認證之優良農產品驗證機構共4家，辦理16項之產品驗證業務，一年追查生產廠超過900場次，抽驗產品逾3,000件。迄102年9月止，計有337家生產廠之6,550項產品通過CAS驗證，年產值超過516億。

(五) 推動農業經營專區，使農地有效利用：建置16處農業經營專區，約4,142公頃；建立三星蔥之安全生產基地，培育青年農民；新社專區與農民契作產銷履歷香菇，吸引40位青年農民。

(六) 輔導農民團體以特色產業為核心，跨域整合產業加值平台；東勢區農會設置優質農產品整合行銷中心，以高接梨為主；魚池鄉農會以優於市價10%與農民契作收購茶菁，設專業製茶場。

(七) 灌溉用水水質監測與管理，完善灌溉水質監測網，提升灌溉水質合格率；每年於農田水利會38萬公頃灌區重要圳路設置灌溉水質監視點，定期每2個月進行檢驗。

- (八) 持續農產品共同及多元化行銷之策劃、輔導及監督，至102年9月底蔬果交易量179萬公噸、花卉交易量約5,445萬把，蔬果共同行銷約43萬公噸。
- (九) 辦理休耕地復耕優先種植飼料玉米及雜糧作物，輔導農民契作進口替代作物，102年推廣種植硬質玉米（飼料玉米）及雜糧等作物合計約11萬公頃。
- (十) 鼓勵農友使用禽畜糞為原料及回收當地農牧廢棄資源物自製自用堆肥：今年預估可推廣使用有機肥料約26,000公頃、產量約104,000公噸。

## ● 交通與生活分組

### 一、提昇公路公共運輸效能（交通部）

- (一) 辦理市區客運與公路客運之偏遠服務路線營運補貼，總計1,126條路線，金額11.22億元。
- (二) 補助369輛公車汰換，有效降低全國公路公共運輸車齡，強化具無障礙通用設計及綠能概念之運輸服務。
- (三) 完成全臺客運業者電子票證系統建置。
- (四) 補助臺北市等7縣市共計345輛無障礙計程車，提供身心障礙者就醫、就學等行的基本需求。

### 二、建設軌道運輸及提升服務效能（交通部）

持續推動都會鐵路立體化及捷運化工程，「臺鐵高雄-屏東潮州捷運化建設計畫」已於102年6月25日完成西正線切換及啟用歸來等5個高架車站，其他重要工作包括：建構環島鐵路電氣化路網、加速推動高鐵在苗栗、彰化及雲林設站、機場捷運延伸至中壢火車站等。

### 三、國道1號五股至楊梅段拓寬工程（交通部）

國道1號五股至楊梅段拓寬工程，已於102年4月20日全線通車，工程北銜汐止五股高架橋，南止於楊梅收費站北端，總長約40公

### 四、鼓勵漁業轉型，遏止違法漁業

#### （農委會漁業署）

- (一) 102年搭乘娛樂漁業漁船出海從事海釣、遊賞、生態等活動達85萬人次；另辦理娛樂漁業漁船公共安全抽查及宣導計畫，共抽查5縣市8漁港45艘娛樂漁業漁船。
- (二) 落實漁船安裝船位回報器（VMS），派遣觀察員及查報員隨船觀察漁獲及查核漁撈日誌，機動於海上臨檢，遏止違法漁業及掌握漁業資源；積極參與相關區域性漁業管理組織會議。



#### ↑ 屏潮計畫高架鐵路西正線通車典禮

里，於路線選定時即迴避環境敏感區，並針對沿線生態環境採取衝擊減輕與補償替代之保護對策，如施設施工棧橋降低對現地環境干擾、擾動區樹木移植及表土再利用、設置動物逃生坡道、營造草澤棲地及濱溪生態棲地復育等措施。

### 四、進行離島地區港埠建設及船舶購建計畫（交通部）

為提升本離島間的運輸服務，並配合小三通帶動觀光及遊憩服務產業，推動離島地區港埠建設及船舶購建計畫。在金門地區港埠建設部分，料羅港區整建第1至3號碼頭，自98年施工，目前整建完成。

### 五、宣導道路交通安全教育

#### （交通部道路交通安全督導委員會）

研訂102年度「機車事故防制」、「高齡者



國道1號五股至楊梅段拓寬工程

事故防制」及「酒後開車事故防制」等三大宣導主題，結合中央部會署及地方政府投入，經統計102年1~9月道路交通事故死亡人數較去年同期減少81人。

## 六、推廣生態旅遊、環境教育及友善旅遊環境（內政部營建署）

各國家公園管理處、都會公園管理站，以及交通部觀光局各風景區管理處，除規劃自然景觀、人文史蹟等友善旅遊空間場域供遊憩外，並依各旅遊區環境特性，配合推動環境教育；推廣生態旅遊，辦理多場次生態旅遊解說培訓課程，在旅遊中心設計上亦採用綠建築工法；於國家風景區福隆、白沙灣、日月潭、谷關、大鵬灣規劃5條無障礙旅遊路線。

## 七、提升氣象預報及地震測報能力 (交通部氣象局)

- (一) 執行「強化災害性即時天氣預報」，發展系集預報氣象資訊應用技術，完成定量降雨預報之作業化流程，發布縣市災害性天氣預報及颱風複合式防災資訊播報機制。提供生活氣象客製化服務包括媽祖遶境、客庄氣象、天氣報馬仔。
- (二) 執行「災害性天氣監測與預報作業建置計畫」，設置氣象資訊QR code人型立牌與海報，推廣與便利民眾查詢氣象局的氣象資訊。
- (三) 執行「強震與地球物理觀測系統效能提升計畫」，102年度更新自由場強地動觀測系統105站、結構物強震監測系

統2座，以及全球衛星定位觀測系統20站。

## 八、強化公路、橋梁防災系統（交通部）

- (一) 執行公路防災預警機制：持續精進防災預警機制，將公路易淹水及水瀑區域47處納入預警系統。
- (二) 提升高速公路橋梁耐震補強標準：橋梁耐震安全為國家永續發展之國家防災計畫重要的課題，已於102年2月完成國道1號58座橋耐震補強工作。

## 九、推動我國航空業站導入環境管理系統及節能減碳設備（交通部）

- (一) 臺北國際航空站每位旅客航站用電產生之CO<sub>2</sub>較前一年度降低4%，旅客產生廢棄物產生量240g，少於指標250g，且在採購環保標章產品上，達成率達94.88%，並力行資源回收。高雄國際航空站亦於102年9月28日取得ISO14001：2004證書。
- (二) 臺北國際航空站增設國際線空橋「機艙空調機（PC AIR）及400HZ飛機供電設備」已於102年7月20日竣工，將較使用飛機燃油供應減少排碳量85%，以該附屬設備取代電源車、氣源車，更能達成節能減碳。

## 十、推動全民綠色消費（環保署）

- (一) 建立具公信力之綠色產品驗證制度：至102年9月止，環保標章已開放124項產

品規格標準之申請，共有9,566件產品獲准使用。

(二) 健全環保產品銷售通路，便利消費者購買綠色產品。

(三) 輔導傳統市場閒置空間規劃二手/創意市集，培育相關經營管理人才，發展普及化通路，推動活化市場閒置空間，帶動商機。

## ● 科技與評估分組

### 一、建置臺灣氣候變遷推估與資訊平台 (國科會、環保署、交通部氣象局、觀光局、中央研究院生物多樣性中心、農委會林務局、特生中心、漁業署)

(一) 完成臺灣地區網格資料庫資料初步驗證。

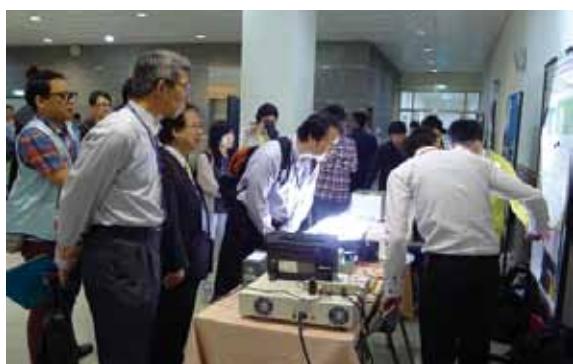
(二) 完成基隆（北）、塭港（中）、高雄（南）、花蓮（東）四個測站均一化後之海平面變遷趨勢分析。

(三) 完成MRI-WRF颱風事件時雨量之偏差校正，並改善平均延時與總降雨量之低估問題。

(四) 完成251場動力降尺度颱風暴雨模擬及每場颱風之最大暴雨高度計算。

### 二、維護整合臺灣生物多樣性資訊國家入口網（TaiBIF）及與GBIF接軌 (國科會)

(一) 進行「臺灣生物多樣性資訊網（TaiBIF）」、「臺灣物種名錄（TaiBNET）」以及「臺灣生命大百科（TaiEOL）」等建置工作。



國科會工程處電力學門與聖約翰科技大學共同主辦的「國科會工程處電力學門102年度2專題研究計畫成果發表會」

(二) 進行野生動物資料庫、野生植物資料庫、生物多樣性資料分享平台「臺灣生物多樣性網絡」（Taiwan Biodiversity Network, TBN）和「臺灣繁殖鳥類大調查（BBS Taiwan）」。

(三) 進行臺灣周邊海域的人工魚礁區、漁業資源保育區及北方三島海域之生物多樣性調查，並將資料彙整後納入「臺灣週邊海域海洋生物多樣性資料庫」。

(四) 辦理「第四階段電子化政府計畫-環境資源資料庫整合計畫」。

(五) 於大鵬灣、西拉雅與日月潭國家風景區分別建置小琉球植物及潮間帶生物多樣性資料庫、調查兩棲爬蟲類與鳥類資源與進行自然生態資源監測。

### 三、推動「氣候變遷調適科技整合研究計畫」(國科會)

(一) 總計畫：(1) 完成科學報告第二冊討論文件與撰寫流程、知識平台測試、調適策略支援決策檢核評量系統架構，(2) 確立示範計畫推動地點、議題與步驟，(3) 建立科技路徑研擬方法、歐盟CLIMSAVE與聯合國UNESCO-IHE國際網絡及調適策略支援決策系統。

(二) 環境組：(1) 建立氣候變遷下兩兩領域之暴露度關鍵面向，(2) 確認區域性關建議題與氣候影響因子，(3) 完成極端環境與緩慢環境變遷的初步關鍵指標與潛勢等級及GIS環境（詮釋）資料庫與資料加值初步原型、(4) 分析國際間環境系統分析領域最新調適科技發展報告。



(三)評估組：(1)彙整跨領域重要研究議題與知識，(2)建立各領域脆弱度標準評估流程及脆弱度與回復力指標系統，(3)發展氣候調適跨領域評估研究方法，(4)開發跨領域系統動力模式原型，(5)提出跨領域資訊流格式分析與研究推動建議，(6)分析國際間脆弱度評估領域最新調適科技發展報

告。

(四)治理組：(1)建立氣候變遷下兩兩領域之調適力關鍵面向，(2)建立氣候變遷調適潛能指標架構，(3)完成氣候變遷調適潛能評估矩陣原型，(4)提出調適科技多準則決策分析流程，(5)分析國際間調適治理領域最新調適科技發展報告。

## ●城鄉與發展分組



◆ 基隆市和平島污水處理廠

### 一、城鄉永續發展（內政部營建署、農委會水保局、經濟部水利署、臺灣自來水公司）

- (一)為強化政府主導辦理都市更新，維護更新過程中各方權益之平衡及解決實務執行爭議，進行全面修法，建置完備之都市更新法令。
- (二)推動『污水下水道第四期建設計畫』，以政府自辦及由民間機構以BOT方式參與建設二方式同時進行，以加速推動污水下水道建設，提升污水下水道普及率。102年度編列106億餘元，由營建署及各縣市政府積極推動中。
- (三)推動公共污水處理廠放流水回收再利用，既有污水處理廠擴建時納入回收水再利用之相關配套，已優先選定鳳山溪

污水處理廠辦理可行性評估及先期計畫，供為其他案例參考。

- (四)加速辦理降低自來水漏水率及穩定供水計畫，自98年迄今至少已汰換老舊管線3,664公里，建置完成614個分區計量管網。
- (五)輔導民間辦理都市更新案：自87年都市更新條例發布實施以來，民間申辦更新案件計1,255案，其中400案已核定公布實施；至102年底止至少已輔導115案都市更新事業計畫（含權利變換計畫）核定實施，其中有24案為維護整建計畫。
- (六)推動政府為主都市更新案：自民國94年起已勘選215處都市更新示範地區，



○ 學童參訪台中市福田污水處理廠

54處尚在先期規劃，76處評估暫不可行；計有53處都市更新示範計畫地區進行都市更新招商及前置作業，其中已招商實施計有8處，由政府自行實施計有10處，3處招商中。

(七) 補助辦理「全縣（市）或鄉鎮市型市區道路景觀與人本環境改善綱要計畫」、「人行道、自行車道及無障礙環境改善計畫」、「學區或區域內通學步道、自行車道改善計畫」、「植栽綠美化增設、連續性綠帶設置計畫」等項目，自98年已編列56.46億元，種植喬木共計76,964株，增加綠地面積483,853平方公尺，減碳量達到111.8萬噸。

(八) 推動農村人力培育計畫，截至102年底至少培訓農村社區2,127個、參與人數108,439人；並已有458個社區完成四階段培訓，340個社區提出農村再生計畫。

## ● 健康與福祉分組

### 一、婦女及兒少保護與服務（衛生福利部）

(一) 提供兒少保護相關服務，102年總受理通報案量約為2萬8千餘人，提供相關保護安置、家庭處遇、強制性親職教育等服務，全年服務77萬人次。

(二) 建置113保護專線，提供民眾便捷且單一求助通報窗口，落實被害人保護扶助工作，加強家庭暴力相對人預防輔導，確保婦女人身安全。

(九) 營造自然生態景觀海岸：自98年至102年已辦理海岸環境改善約387公頃及81,000公尺，回復近自然海岸5,400公尺。

(十) 營造自然親水河川：自98年至102年26條重要河川已辦理環境景觀改善工程約83.4公里。

### 二、生態城市綠建築（內政部建築研究所）

(一) 綠建材標章評定：截至102年10月完成105件綠建材標章評定，包括79件健康、5件再生、19件高性能與2件生態建材。

(二) 綠建築更新診斷與改造計畫：102年度完成44件改善案例。

### 三、提升居住環境（內政部營建署）

(一) 辦理新北市板橋浮洲合宜住宅招商投資興建計畫：規劃興建4,455戶合宜住宅（包括446戶出租住宅），4,009戶合宜住宅已全數完銷，預計104年3月底完工交屋；本案於102年4月取得「鑽石級」之社區類候選綠建築證書，102年8月取得「鑽石級」候選綠建築證書。

(二) 積極推動社會住宅：與臺北市及新北市共同推動第1階段5處社會住宅試辦基地，預估規劃約可提供1,661戶。

(三) 推動家庭暴力被害人多元處遇服務，訂定各項被害人補助標準，102年預計可提供家庭暴力被害人保護扶助服務計90萬人次、扶助金額3億5千萬元。

### 二、急難民眾紓困與社會救助（衛生福利部）

建置「馬上關懷」專案加強照顧弱勢；截至102年9月30日止，累計已有15萬3,778個家庭受益，核發救助金23億4,993萬餘元。





### 三、打造高齡友善城市 增進老人社會參與 (衛福部國民健康署)

- (一) 辦理老人健康促進競賽，結合社區民間團體，鼓勵組隊參加阿公阿嬤動起來競賽。
- (二) 聯合國人口基金會 (UNFPA) 越南辦事處與越南衛生部人口家庭計畫總局 (GOPFP) 合作，在越南河內舉辦「Responding to Rapid Ageing: Workshop to Exchange International Experiences」，邀請邱淑媞署長與會，分享台灣面臨人口老化之現況，及因應老化健康照顧措施，並接受當地電視台訪問。
- (三) 至102年9月底，22縣市轄內衛生所及347家醫療院所，已結合1,179個社區照顧關懷據點，醫衛體系結合比率約佔全國關懷據點70%，年底將超過80%。
- (四) 提供65歲以上長者每年利用1次成人預防保健服務，接受該項服務之65歲以上長者已逾60萬人。
- (五) 自100年推動高齡友善健康照護架構及認證制度，至102年10月，42家醫院通過認證。



「健康102阿公阿嬤動起來-全國總決賽」第二名



衛生福利部國民健康署推動健康九九之全民減重

- (六) 國際合作：(1) 5月22日於WHO健康促進醫院國際網絡會員大會提案並獲准升格為「Task Force on HPH and Age-friendly Health Care」，由國民健康署邱淑媞署長擔任委員會召集人，成員來自13個國家，共17位委員。(2) 與加拿大ISHN及美國ASCD共同主辦第21屆IUHPE世界健康促進研討會之會前會--「學校健康研討會」，由超過20國60名與會者共同進行討論。

### 四、掌握疫情、促進疫苗自製產業發展 (衛生福利部疾病管制署)

- (一) 召開「國家人用疫苗政策指導會報」，決議包括：確認人用疫苗自製產業之發展方向；針對推動NRA認證，研訂短期與長期目標；討論疫苗自製之優先發展項目；確立新型流感疫苗研發策略，以推動完成新型流感模擬疫苗 (mock-up vaccine) 查驗登記為原則。
- (二) 逐年導入新疫苗常規接種項目：推動2-5歲幼童接種結合型肺炎鏈球菌疫苗 (PCV)，降低幼童因感染而致併發症。至102年8月底，PCV疫苗接種約18.2萬劑。
- (三) 分別成立狂犬病與H7N9流感中央流行疫情指揮中心，跨部會動員、掌握疫情。

### 五、藥品審查與安全管理 (衛生福利部)

成立整合藥品審查辦公室 (iMPRO)，合理化藥物上市前審查流程與效率；成立內部品質稽核小組，強化案件追縱管考及確保審查品質之一致性；推動廠商電子化送件，建立藥品查驗登記電子化系統，預定今年底運作；公告「新藥查驗登記加速核准機制」，可縮短臨床試驗時間，加速新藥上市。

### 六、環境污染品質風險評估與管制 (環保署)

- (一) 與國民健康署合辦電磁波教育宣傳會



議；完成非游離輻射兒童網站，讓兒童學習正確的電磁波資訊。

(二) 督導各環保局執行自來水系統直接供水水質抽驗，合格率達99%以上。

(三) 對污染物質、持久性有機污染物(POPs)進行環境監測、風險評估及管理，建立環境中POPs之背景值資料庫，供風險評估之參考。

## 七、推廣優良農產品（農委會）

(一) 推廣有產銷履歷與產地證明標章之茶

品，行銷及宣導消費者茶葉消費資訊。

(二) 導入專家輔導，建構優質水果內、外銷供應鏈，102年輔導14項果品、26專區，辦理整合性病蟲害防治及監測、農藥殘留檢測、土壤肥力診斷及合理化施肥、健康安全管理模式等。

(三) 輔導推動禽畜產品產銷履歷制度，通過驗證計416家；加強家畜禽生產廠（場）追蹤查驗與產品檢驗，本年預計抽驗畜禽產品545件以上，動物用藥檢驗合格率達99%。

## ● 教育與宣導分組

### 一、增進永續發展知識與認知、提升環境素養（教育部、衛生福利部、環保署、國科會、經濟部工業局、農委會林務局）

(一) 補助大專校院辦理永續發展與氣候變遷調適通識課程及學分學程，本年共補助64堂通識課程及7門學分學程；辦理大專校院及高中職以下氣候變遷調適種子師資培訓研習營；辦理「教育部綠色學校伙伴網絡計畫」，建置資訊平臺，本年度有6,207筆提報。

(二) 補助辦理長青學苑460案，課程傳達永續發展與環保意識，79,583人受益；於國際身心障礙者日（12月3日）補助宣導活動762案。

(三) 建置環境教育圖書館；推廣個人學習護照，鼓勵環境教育及終身學習。今年內設71處環境教育設施場所、13所環教機構、1,662位環教人員通過認證。

(四) 發行台灣CSR報告書優質案例彙編及CSR報告書宣導摺頁、辦理CSR報告書宣導說明會，及提供CSR諮詢服務，158家廠商參與說明會。

(五) 製作植樹月宣導短片與拍攝微電影，呼籲參加植樹活動。截至102年9月底已辦理戶外教學590班、主題活動121場、專業研習117場、環境解說1,076



環保署與社區大學合作，在28所社區大學開設氣候變遷環境教育系列課程與活動。

場，共提供超過7萬8千人次的優質森林遊憩與環境學習機會。

### 二、整合政府、學校與民間，推動永續發展（教育部、環保署、農委會水保局、特生中心）

(一) 補助22縣市政府設「環境教育輔導小組」，鼓勵縣市整合資源，規劃兼具國際性及在地性之環境教育執行計畫與策略。

(二) 辦理第1屆國家環境教育獎，對推動環境教育績優之學校、團體、機關（構）、民營機構、社區及人員、進行表揚，計有35個單位（人）獲獎；辦理中華民國企業環保獎評選，20家企業獲獎。



- (三) 建置環境教育旅遊地圖，結合環教設施場所及資源之旅遊系統。
- (四) 5月10~13日舉辦「臺北國際素食暨有機產品博覽會」，約5萬人參加；9月27~29日舉辦「台灣米博覽會」，宣導糧食安全及珍愛糧食理念，約3萬人參加。
- (五) 特生中心與玉山國家公園管理處等9個單位，共組「中區環境學習中心夥伴聯盟」，6月2日簽訂合作備忘錄。
- (六) 辦理水土保持宣導140場及土石流防災宣導176場，強化「水土保持人人有責」觀念。

### 三、強化社教館所與媒體，宣導永續與環保 (教育部、環保署、經濟部能源局、國科會、農委會)

- (一) 透過各類展覽及活動，宣導永續發展與環保議題；另結合社福團體辦理關懷弱勢族群參訪海生館活動計33場次1,540人次。
- (二) 補助製作科普影視節目，讓環境教育深



● 小小原勇士整理生態池（新北市吉慶國小）



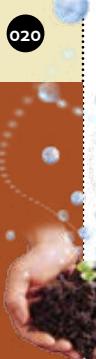
● 濕地生態課程（臺南市永安國小）

入年輕族群；製作3支微電影、8支生活環保小撇步宣傳短片（30秒）於全國性媒體、捷運LCD及戶外LED等進行託播。

- (三) 與荒野保護協會進行節能志工培訓，共完成4場次，培訓109位節能志工；與國立科學工藝博物館進行節能減碳志工培訓，1至9月底，共計427場37,800人次參與。
- (四) 建構農業虛擬博物館網站，於102年度新增上載農業影音超過1,000集，提

### 四、推動永續發展教育研究與國際合作 (教育部、環保署、國科會)

- (一) 補助辦理「Hydrobiologia全球編輯委員會議暨水生科學面臨的挑戰國際研討會」、「2013年社會環境教育與生態文明發展國際學術研討會」與「第9屆東海海洋生物多樣性與漁業環境科學國際暨兩岸研討會」等國際研討會。
- (二) 補助環境教育與永續發展相關研討（習）活動計畫、與環教議題相關之專題研究計畫14件，與環教相關400梯次環境學習中心校外教學推廣計畫；辦理「2013年環境教育國際學術研討會—與文創、產業、防災與傳播的初相見」。
- (三) 受理學校之環教人員認證申請，截至9月30日累計共350餘人通過認證。



### 第三章

# 2012永續發展指標評量結果

行政院國家永續發展委員會全球資訊網  
National Council for Sustainable Development Network

中文 | EN

選單

- 不需介紹
- 本會相關會議決議
- 永續發展指標
- 本會工作分組彙報
- 國家永續發展獎
- 國家永續委員會
- 永續發展政策調研
- 永續發展行動計畫
- 本會完成文件
- 其他成果
- 永續發展小百科
- 文革發委
- 國內外永續發展新聞

永續發展指標系統年度評量結果

2011年 2010年 2009年 2008年 2007年

2006年 2005年 2004年 2003年

永續發展指標資訊管理系統網頁

#### 我國永續發展指標系統簡介

永續發展是世界各國追求的共同目標，也是我國基本的國策，為讓各界能夠客觀檢視我國永續發展推動成效，永續會參照聯合國1996年公布的第一版永續發展指標系統，於92年5月完成我國永續指標系統之建置，之後並每年公布前一年度指標系統評量之結果。

為與國際永續發展最新趨勢接軌，永續會於97年12月第25次工作會議決議，參考聯合國2007年10月公布之第三版永續發展指標系統及國際永續發展相關指標，研擬我國第二版永續發展指標系統，並於98年12月31日之第29次工作會議中討論通過。永續會第二版永續發展指標系統包含12個面向、41個議題及86項指標，較第一版指標系統範疇更為廣泛。

參考聯合國永續發展大會（Rio+20）產出文件「我們想要的未來」內容，於102年再進行

永續發展指標系統之修正，修正後之面向及指標如下：

**一、環境面向：**包括PSI平均值、空氣污染物年均濃度、水庫品質、海域環境水質合格率、受輕度以下污染河川比率、河川中生化需氧量濃度、垃圾回收率、平均每人每日垃圾產生量、環境影響評估監督合格比率、公告列管毒性化學物質數量、中央政府環保生態預算比率及政府鼓勵防治污染及資源回收財務措施等12項指標。

**二、節能減碳面向：**包括燃料燃燒二氧化碳人均排放量、燃料燃燒二氧化碳排放量年增率、每人每日耗電量、能源密集度、資源耗用型產業產值占製造業產值比率、再生能源裝置容量百分比、每年新增綠建築之節能量及平均每萬人所擁有之自行車道長度等8項指標。

**三、國土資源面向：**包括山坡地變異比率、地



層持續下陷面積比率、開發用地面積比率、森林覆蓋之土地面積比率、天然海岸比率、天然海岸線損失比率、有效水資源、製造業用水量占製造業生產價值比率、地下水觀測井水位回升口數、全國檳榔種植面積總和及因天然災害導致傷亡人數等11項指標。

**四、生物多樣性面向：**包括生物多樣性遺傳資源及種原保存、特定外來植物覆蓋面積、特定外來入侵種種數、生態敏感地比、保護區占總陸域面積百分比以及海洋保護區等6項指標。

**五、生產面向：**包括事業廢棄物妥善再利用率、有害事業廢棄物再利用率、低放射性固化廢棄物減量率、耕地總面積比率、有機耕種面積、每公頃農地肥料使用量、每公頃農地農藥使用量、勞動生產力與單位產出勞動成本、非農業部門支薪女性比率、失業率、每人國內生產毛額、國內資本形成毛額占GDP比率、消費者物價指數年增率及各級政府舉借之1年以上非自償債務未償餘額占GNP比率等14項指標。

**六、生活面向：**包括自來水供應人口比率、污水處理率、每人每日用水量、公共運輸乘客人次、運輸部門國內能源消耗量、每年來臺旅客人次、每萬輛機動車輛死亡人數（公路）、公路養護管理效率、公私部門綠色採購金額、獲頒環保標章適用量及國家風景區旅遊人次等11項指標。

**七、科技面向：**包括國內研究與發展之花費占GDP的百分比、本國人發明專利公告發證數、每千人口碩士級以上研發人員數、經常上網人口比率及每百人中使用行動型電話線路的人數等5項指標。

**八、城鄉文化面向：**包括符合環境衛生永續指標村里數、都市化面積擴張率及都市內每人享有公園綠地面積等3項指標。

**九、健康面向：**包括可獲得基本保健設施之人口百分比率、兒童疾病的感染免疫措施、

65歲以上民眾接受成人預防保健服務利用率、癌症標準化死亡率、傳染病感染率、18歲以上吸菸率及18歲以上男性嚼檳榔率等7項指標。

**十、福祉面向：**包括低收入戶的人口比率、房價所得比、戶數五等位所得差距倍數、國民年金保險投保率、老人社會參與及自殺死亡率等6項指標。

**十一、治理面向：**包括定罪人口率、尚輟人數及成人教育參與比例等3項指標。

**十二、參與面向：**包括官方開發援助比率、社會福利社區化參與2項指標。

### 2012年永續發展指標之評量

為了研修永續指標系統，同時協調2012年指標評量工作，永續會秘書處於本（102）年9月9日邀請各指標的主政單位及永續會民間委員，召開「2012永續發展指標檢討及填報說明會議」，會議中，除了研商確認指標系統內容的增刪及修訂外，也協調各機關之年度數據上傳作業。其後各指標主政單位即透過指標之資訊系統，進行年度數據及資料之填報。

在各部會完成填報後，秘書處於10月底完成評量結果初稿後，其後再經相關機關確認並對評量結果說明後，於本年底，將「2012年永續發展指標評量結果」公布於永續會全球資訊網站，供各界參考。

2012年永續指標評量結果，詳如「行政院國家永續發展委員會全球資訊網」，網址：<http://nsdn.epa.gov.tw/CH/DEVELOPMENT/INDEX.HTM>



永續發展指標檢討及填報說明會議

# 102年國家永續發展獎



委員們親身經歷屏東霧台阿禮部落的森林步道

## ►教育永續發展獎

### ● 新北市瑞芳區吉慶國民小學

基隆河通過吉慶國小學校大門，滴水山等多個山頭環繞學校四周，這一段的基隆河更孕育有其它河段所沒有的原生溪魚大眼華鯿、圓吻和台灣鮑。吉慶國小有得天厚的生態環境，故而結合環境特色，於98年底開始，著手積極打造永續環境生態學校。

#### (一) 多元參與的永續環境教學

吉慶國小永續環境教學的推動，是以環教教師專業社群為核心，並以原生生態九區為半徑，為吉慶畫出生態的課程美學巨大能量。該校自101學年度起，由校長親自帶領每2週固定於校史室召開「環教教師專業社群會議」，除定期報告學校在生態教育軟硬體環境的打造

與努力外，並請社群老師設計建構環教特色自編課程，並將教學成果作專題報告，並引進專家學者的協助。



生態志工除了學習知識外，也讓學生更加肯定自我。



在此同時，該校也把力量帶入社區，辦理山林教育和在地的里長和協會共同努力發展山林教育，經過大家的努力，無論在課程、教學的質與量上都有卓越的表現，並將課程配合打造出來的生態環境，加以整合為「九大環教課程」，101學年即發展出20餘篇環境教育課程，並出刊環境教育專輯。

## （二）創新用心的生活環保及健康實務

吉慶為孩子健康把關，處處用心，「85210—睡滿8小時、天天5蔬果、4電少於2、天天運動30分鐘、0含糖飲料」的宣導，吉慶孩子都已朗朗上口，並身體力行，故在多項健康促進的比賽中，均獲得極高的榮譽。而為了把關學童健康，本學年更用心策劃「吉慶健促8招」，推動各項健康創意妙點子（詳下表）。

此外，吉慶國小也在節能省電上加強努力，除組訓省電小志工、午間關燈等法外，並推出「吉水桶」的創意點子，發揮節水再利用

的效果。

## （三）全方位的人文關懷及社區參與

### 1. 帶領社區認識環境教育：

辦理山林教育，引導社區構環境教育理念，保育愛地球的觀念與態度。

### 2. 關懷弱勢辦理照活動：

用心辦理夜光天使班、高關懷班、原勇士志工團隊、假日藝術校，讓弱勢的孩子也有自己的舞台。



结合媒體，分享吉慶的成功經驗。

## 吉慶健促8招

|     |                                                      |
|-----|------------------------------------------------------|
| 第一招 | 推出「健促行動宣導車」，請小市長利用課間活動時間，推著自製的「健促行動宣導車」到各班宣導並辦理有獎徵答。 |
| 第二招 | 搭配廚房阿姨，每日統計「班級青菜剩餘量」，青菜吃光光的班級，公開表揚。                  |
| 第三招 | 辦理「健康瘦瘦拳」，課間活動全校快樂跳健康瘦瘦拳，減重又健康。                      |
| 第四招 | 推動「健康護眼操」，週五課間活動，全校健康護眼動一動。                          |
| 第五招 | 規劃「85210」健促教學，組織健促團隊，邀請專家學者以創新教學成效。                  |
| 第六招 | 「以鮮奶代替飲料」當獎品，鼓勵多喝白開水，宣導0含糖飲料。                        |
| 第七招 | 推出「健促魔法集點卡」，透過集點養成健促好習慣。                             |
| 第八招 | 倡導「異業結盟」與董氏基金會、忠誠扶輪社合作，共同宣導健促觀念。                     |

## ●臺南市後壁區永安國民小學

### （一）夢想緣起

永安國小成立於民國50年，位處後壁米鄉綠水環抱之福地，學區內不僅有「傳統農村產業」，「土溝社區」近年結合大專學校專業師

資，在推動社區總體營造方面獲得多方的讚賞與肯定，此外再加上茄苳米鄉的人文與環境條件，造就了該校與稻米、水環境的深厚關係。

在這樣的環境資源下，永安國小將學區內

環境（水）資源導入與規劃，賦予教育與體驗機能，不斷擴大學生學習場域，更藉由遊學地圖的建立，串聯學區各項資源，以「境教」多元課程強化環境教育的深度與廣度，學校特色與環境教育核心能力亦逐步形塑。

該校於96年向教育申請競爭型計畫，建置「能（資）源教育中心」—「綠精靈的家」，此三年計畫分別於96年打造了靜態性質的「綠能夢想屋」與97年操作體驗性質的「綠能實驗室」動態空間，讓閒置空間找到新的定位，創造新的教育功能與價值，98年計畫更強化能資源中心的角色，揉合「綠能夢想屋」與「綠能實驗室」動與靜，加入再生能源與能源監控教學系統，成為「綠精靈的家」，成功打造永安成為區域能（資）源教育中心。



製作遊學地圖，將教學與在地資源及生態結合。

## （二）環境起飛

永安國小在校長主持下，成立整合行政、教師、學生、社區家長及專家等成員，成立跨領域永續教育事務推動小組。由環境教育推展小組組成考核委員會，定期或不定期考核執行成效，改進缺失，持續推展。透過檢視校園內外優劣勢，引進外界資源，改善校園環境與強化師資，營造軟硬兼備的“綠校園”。

五年來，在學校的努力之下，利用資源美化圍牆，透過閒置空間改造、教室補強、校舍拆除重建等過程，融入在地環境特性、綠色永續及美感概念，將四周景色拉入於校園內，深耕環境教育，榮獲綠色學校金牌獎，用心耕耘校舍，也獲得建築園冶獎。

## （三）教學起飛

該校主動申請多種教育部競爭型計畫，並發展出環境教育、藝術人文、能源課程、社區踏查為該校特色課程發展重點，此外，永安國小也以米鄉面臨的環境問題—水汙染為起點，帶領學生實地踏查水質汙染情形，並以各種主題式課程讓學生反思各類環境問題，進而改變自身行為與家庭成員。並藉由定期辦理代令全校師生進行社區踏查環境教學活動，讓學生深入了解社區環境現況與人文資源，進而愛護家鄉與環境。在樸門基金會的人力師資協助下，帶領學生在校內裸露地進行然農耕厚土種植法，讓學生更貼近大地，也讓學生講此農耕法帶回家中，散播至社區。

為了要深化延伸能源教育，永安也從成功建置能資源教育中心—綠精靈的家，以此為素材發展出能源教育繪本—精靈守護者，再跨入藝文領域，改編繪本成為該校偶戲隊劇本，並榮獲特優獎，最後整合成果榮獲行政院100年度推動能源績優學校傑出獎。

因應全球氣候變遷所帶來的衝擊，永安師生思索未來，主動申辦教育部102年度國民中小學校未來想像與創意人才培育計畫—2030小南海理想國，以「低碳環境」議題為主，包含「低碳生活」與「環境保護」兩個部份，教師透過教學先讓學生思考未來環境、未來社會所將面臨的衝擊與轉變，導引科技對未來生活的影響，培養並刺激學生對未來的想像能力。

## （四）生活環保起飛

除了推動教科書、制服及學用品回收再利用，並落實校園垃圾減量、資源回收之外，融入保留荒野生態理念廣設自然落葉堆肥區，有

結合地方特色，讓學生親生體驗種稻。





效減輕學生清潔環境負擔，讓堆肥效應回歸自然，更進一步利用廚餘與落葉堆肥進行自然農耕活動，結合課程來傳達有機堆肥的益處。

### （五）社區起飛

多管齊下、用心推動弱勢照顧是永安國小永續發展的主軸之一，該校藉由補救教學提升雙低學生學習表現；課後照顧與夜光天使計畫，幫助弱勢家庭照護學子生活與學習；教育優先區協助偏鄉與弱勢家庭學生發展特色與提升學習效能；午餐費補助、代收代辦費補助、緊急紓困助學金各項助學金的申請，以有效減輕弱勢家庭的負擔，讓學生上學無後顧之憂；申辦新移民子女華語補救教學、火炬計畫協助新移民家庭融入我國社會，並讓該校師生與社

區居民能認識與體驗多元文化價值，進而豐富本土文化的內涵。

此外，永安國小也透過推廣學區學遊課程，讓在地農村相關產業搖身一變成最佳的遊學體驗課程的場域，上水米、永興白曝蔭油都是傳統農村文化的代表產業，透過產學合作，把工廠變身為課堂，老闆化身為講師，學生參與興趣高，也藉由遊學計畫行銷產業，產學互利。

### （六）國際交流

在國際交流方面，為了促進台日友好關係，提升雙方交流，由NPO主辦APCC日本福岡亞太兒童會議，該校也獲選為臺南市代表，與日本的老師及學生進行文化與環境教育交流。

## ●臺南市仁德區虎山國民小學

### （一）虎光山色、童夢森林

虎山國小創校於民國6年，今年已經九十六歲。學校方圓一公里內無社區住家，四周種植面積達百公頃以上的多重樹木林相，是一所相當美麗的生態小學。學校週邊更有百年歷史的仁德糖廠、古蹟保安車站、台南都會公園以及即將開館的新奇美博物館。

該校結合了豐富的森林生態積極發展「Eco School 生態小學」本位特色課程，推動成果受到肯定。2012年更邀請到聯合國和平使者珍古德，蒞校種樹並為小朋友們說故事，成為推動永續發展教育的重大事件。此外，虎山國小也於2012年榮獲教育部全國百大優良環境教育計畫學校，且主動提出了「魅色台灣」環境美學改造計畫，進入全國前三名，成為全台第一所學校入選魅色台灣的案例。

### （二）Eco School 生態小學、孩子的探索樂園

現代的小孩與大自然的連結陷入斷裂關係，即所謂的「大自然缺失症」，虎山國小為了能修補這種缺失的關鍵，故整合學校週



● 學童打扮成小青蛙，喚起大家對自然生態的關懷。

邊豐富的自然生態及森林資源，積極發展 Eco School生態小學森林課程，由虎山教師、社區、多位荒野保護協會的家長、綠手指及高雄橋糖白屋的共同努力與協助下，發展了低年級「樹的倫理」、中年級「森林備料庫」及高年級「蓋亞料理」三大主軸的課程，建構成「像磐石一樣穩固」、「像鑽石一樣永恆」、「用真心愛天與地」，以環境教育志業、永續發展教育為目標的森林課程。

### （三）展現在地特色的「走讀虎山、徜徉萬年」

虎山國小在社區、鄰近大學、奇美博物

館、十鼓文化村等共同協助下，發展了展現在地特色的「走讀虎山・徜徉萬年」課程。以虎山國小為核心，整合臺南市東南區邊陲的虎山區域，共同進行「綠活。藝術。人文。產業」四個面向之課程發展，以促進孩子全腦發展、增加接觸大自然及在地特色融入「探索教學 Inquiry Teaching」、「戶外教學 Outdoor Teaching」、「體驗教學 Experiential Teaching」、「動手做教學 Doing Teaching」與「媒體教學 Media Teaching」的創新教學模式來進行規劃與發展。該計畫並分短中長期發展，短期首要提昇學校競爭力，中期結合社區營造，促進虎山地區人文資產維護保存與在地產業特色發展，長期則將永續發展課程轉化、行銷為「特色遊學中心」，透過高鐵結合臺鐵，新的交通動線開啟臺南遊學新窗口，讓「虎山國小」從臺南市的後院變成前門。

#### （四）校園生態多樣性，教學與環保多元化

虎山團隊透過與親師生、社區對話，依學校、社區、生態環境等特色而訂定的短中長期在地性永續發展計畫，採行與環境共生共利的綠建築概念。具體做法如透水鋪面、紅磚步道、廢物再利用之圓木長椅、草地跑道、綠籬、水耕蔬菜的在地食材、建立有機樂活的開心農場、魅色台灣的空間美學營造等，使得全校透水性達85%、綠覆率逾78%。在生活環保實務方面，落實垃圾減量、推動回收再利用、製作落葉堆肥、安排每週一日「蔬食午餐」、珍惜水資源及參與水質監測、並進而落實 Reduce 減量、Reuse 再利用及 Recycle 循環再生的3R減量精神。



↑ 師生一起採收開心農場的蔬菜

同時，透過多元的教學活動與環境行動，培養永續發展概念，例如親師生一起植樹、師生一人一樹、師生合作完成水生池，引進NGO民間組織與資源，共同舉辦環境活動，並組成社區、退休人員環保志工團，進行水資源保護之旅、環保小騎兵、辦理減碳達人網路競賽、參與環境教育研究計畫及推動 Eco School 生態學校，營造多層次生態環境，使物種越加豐盈，也讓校園成為孩子的探索樂園，並成為社區的永續發展教育中心。

#### （五）未來展望

虎山國小多年來致力營造「生態小學。孩子的探索樂園」特色，因此獲得家長們的認同，故在一片減班的聲浪中，102學年一年級新生創記錄增班，為即將百年的校史寫下新猷。未來該校將繼續努力，結合在地森林的自然生態、以及社區豐富的人文環境，營造虎山國小成為永續發展教育基地，讓孩子們從生活與大自然取材做具體實踐，持續培養孩子們的環境行動力。

### ►企業永續發展獎

#### ●台灣積體電路製造股份有限公司（三廠）

台灣積體電路製造股份有限公司首創專業積體電路製造服務的商業模式，促成全球半導體設計公司的興起茁壯，以誠

信正直(Integrity)、承諾(Commitment)、創新(Innovation)、客戶導向(Customer orientation)，ICIC，作為四大核心價值，展現追求永續經營



的決心與企圖，更於2010、2012、2013 獲選道瓊永續指數(DJSI)半導體業領導者。

台積電晶圓三廠為全球最先進的半導體八吋晶圓代工廠之一。從1995年迄今，從不間斷的創新研發動能，近年來更致力於尖端且穩定的製程技術開發，因而創造許多亮眼的成果，如MCU(eFlash)、HV(BCD)、MEMS 等技術領域，居世界領導地位。企業責任作為方面，除早期已通過之工安環保及產品危害性驗證，如ISO14001、OHSAS18000、AAA災害防阻及QC 080000等，2013年更通過水足跡盤查，為永續企業做更進一步的把關。

為體現企業永續發展，台積公司在環境、經營、社會回饋及創新研發等面向實績如下：

### (一) 世界級的永續標準企業

#### ■ DJSI半導體業領導者：

道瓊永續指數(DJSI)每年邀請全球市值前2500家公司參加企業永續績效評比，2010、2012年台積公司獲選為半導體產業永續發展的領導者；今年(2013)，該公司更首次在半導體及半導體設備產業組榮膺領導企業雙料殊榮。

#### ■ 成熟廠區完成水足跡認證：

台積電晶圓三廠為台積公司八吋廠率先通過水足跡盤查，並由第三方驗證單位查驗認證通過。

#### ■ 「人」是台積公司最大的資產：

依照該公司社會責任「不只提供工作機會，更要提供好的待遇及工作環境」的原則，三廠為落實職安管理，更獲得職業安全衛生系

統績效認可10年之最高年限，並於2013年唯一獲得科學園區勞工安全衛生特優單位。

#### ■ 推動承攬商OHSAS二方稽核：

除企業自身工安環保認證之落實外，三廠更延伸至承攬商OHSAS二方稽核，迄今已協助100家協力廠商通過OHSAS認證，期與承攬商一起達成零事故目標。

#### ■ 企業界的環保標準：

台積公司關注全球環保趨勢，各廠區皆導入ISO14001 /QC080000 /ISO50001等環境、能源管理認證並於新建廠區推動綠建築認證，於2012年台積公司已有三個廠房率先取得綠色工廠標章，台南、台中廠另有三個廠房持續申請中。

而在三廠部分，雖為成熟廠區，但單位用水、用電量及溫室氣體排放量逐年降低。2013年單位用水量及單位用電量皆較2011年降低18.1%與11.37%，溫室氣體減排部分2012年單位晶圓全氟化物較2008年減量47.2%。

### (二) 深植永續經營的理念

#### ■ 穩穩定且持續成長的企業

2013年，台積公司所擁有的產能達到1,645萬片八吋約當晶圓。合併營收表現截至今年第三季營收為4,512億元，較2012年同期年增率約20.2%。而三廠身為台積公司產能最大之八吋廠，2010至2012年三年毛利率皆名列前茅，同時成本減量相關專案達成率亦為八吋廠最高之155.7%。

#### ■ 創造就業機會、積極回饋地方

在就業機會方面，台積電晶圓三廠男女員



每年舉辦台積電導覽志工訓練營

工比例接近1:1 (46%:54%)，落實兩性平等及勞工照顧，提供優於同業薪酬水準之待遇；另外積極扶植國內產業，在原物料供應及物料維修兩方面，積極扶植國內供應商的產業競爭力，使其與世界接軌，達成國內整體半導體產業雙贏的局面。積極落實產業生根，進一步提升國民所得，創造就業機會。

另一方面，透過員工自發參與的志工服務，投入生態、節能、教育、環保等多項公益活動，包括永續家園教學、校園環境修繕及節能服務隊、台灣燈會環保志工、家扶中心親子聯誼活動及愛心物資募集等，遍及社會各階層各角落。

### （三）創新技術與服務發展

#### ■ 成熟廠區的創新與傳承

台積電晶圓三廠累積了近20年的經驗及技術，在環境永續的部分無私分享成功關鍵，包括辦理園區同業節水節能技術觀摩、紡織及電路板等傳統產業的跨業分享；同時在國內外的技術論壇論文分享；擔任產業界及政府間的溝通橋樑，協助政府制定相關法令。

#### ■ 透明化的永續經營方針

台積公司入口網站，誠實且完整的揭露永續發展的相關訊息，接受外界的公評及檢驗。

每年公佈的企業社會責任報告已連續四年獲得台灣企業永續報告獎。

並於2011年成立「企業社會責任委員會」，在志工社社長張淑芬女士與何麗梅資深副總的督導下，每季定期召開工作會議，來推動企業社會責任及環保相關活動。

最後，台積公司除了在本業中謀求最大的成就，以優異的營運績效持續創造價值外，同時也在日常業務中，與員工、客戶、股東、投資人、社區、供應商、政府等利害關係者建立良好互動，攜手深耕「道德、商業水準、經濟、法治、關懷地球與下一代、平衡生活與公益」七大領域，期許為社會及新世代創造更美好的未來。



↑ 無私的經驗分享：節水節能觀摩活動

## ● 台灣立凱綠能移動股份有限公司

在桃園縣龜山工業區的興華路上，有一片牆面與四週的環境特別不同，怎會有大象、獅子、貓熊成雙成對駐立在牆上呢？仔細一看才發現，原來是一座方舟上載滿了動物。而這樣的安排也是台灣立凱綠能移動股份有限公司（立凱電）特別的設計，希望傳達該公司尊重生命，熱愛生態的公司文化。

#### （一）人類安全與環境友好的經營理念

立凱公司秉持著「人類安全與環境友好」的理念，致力於減少空氣污染，降低致癌風險，努力發展全方位的替代能源解決方案。希



↑ 藉由電動公車的發展，改變孩子的未來。

望能減少對石油的依賴，減緩全球暖化，從「關鍵動力鋰電池材料製造商」跨入終端的「電動巴士充換電服務供應商」，不斷地創新



研發，為我們與下一代創造更美好的環境。

自2005年成立以來，該公司即專注研發磷酸鐵鋰材料，憑藉專利核心技術”LFP-NCO-TEC”佈局全球。2008年起，連續三年全球市占第一，逐步實踐「綠色能源新境界」。為落實節能減碳回饋友善環境，於2009年成立立凱綠能，致力發展電動巴士與創新營運換電系統，打造低碳運輸交通，共創綠色宜居城市！

立凱電公司藉由鋰鐵材料與電池設計能力的優勢，與上下游的夥伴共同努力，打造國際級電動巴士，創新營運模式，提供整體綠能服務系統，降低電動車初期推廣的困難，提供社會大眾低碳環保、經濟實惠的大眾運輸系統整體解決方案。

該公司結合電獨創的「智能化電動巴士營控中心」，遠端掌握電動巴士運營及換電站效能，充電時間全面平準化，減少對電網衝擊，達到能源充分運用，不僅如此更有效減少碳排放，降低國民外部醫療成本，引領全球綠能運輸新境界，逐步實現低碳與綠色的城市遠景。



電動車充換電站3D圖

## （二）零排放電動公車為國人健康把關

機動車輛的污染排放是各國都在面對的嚴重問題，立凱電動巴士零污染、零排放，從巴士的材質、設計至充換電營運系統的架構，皆效法大自然生生不息的循環再利用，減少資源浪費、環境污染，達到”零廢棄 全回收”的生態循環。該公司估算，每輛電動巴士一年減少128噸二氧化碳排放，46,980公升柴油消耗，立凱電藉由創新研發改變孩子的未來。

立凱電公司協同各縣市政府、客運業者，

串聯綠色交通路網，營運「桃園縣府線」、「假日大溪線」、「中壢環狀線」、「台北246路」、「金門觀光公車」、「新竹世博線」及「新竹竹塹小巴」電動巴士免費接駁服務，電動巴士低底盤無障礙服務的友善環境，滿意度更高達97%，廣受民眾迴響，立凱電電動巴士配合桃園縣政府裝設自動心臟電擊器，提供搭乘免費接駁電動巴士乘客緊急救援使用，實現綠色運輸。

## （三）落實環境保護邁向永續發展

立凱電陸續通過ISO9001、ISO14001、ISO14064、ISO／TS 16949認證，訂定環境管理程序書，據以提出溫室氣體減量可行方案，確實執行減量工作。累計自2009年起至今，已減少136,400公噸二氧化碳排放，未來將導入碳足跡計算，推動自主性「綠色工廠改造計畫」，提升能源效率、改進設備功能、廢棄物資源化、清潔生產改善等，整合上下游廠商，邁向綠色供應鏈發展，實踐企業對社會責任。

## （四）電動巴士把愛傳出去

立凱電公司的全低底盤電動巴士，讓長者一個跨步就能走上公車，結合車身傾斜功能及輪椅專用坡道，貼心設計讓身障人士上下車方便自在。此外，該公司也定期前往地方上的育幼院服務，協助身心殘障的憨寶貝們出遊的夢想。不僅如此，2011年立凱電首次舉行「立凱忘年會」慈善活動，邀請桃園地區數個育幼院的孩童參與音樂會，並發起「一人一捐」等活動，員工們自由樂捐表達對弱勢團體的關心。

2013年舉辦「立凱電愛相連溫馨感恩會」，鼓勵更多公司同仁，接觸公益活動體會志工服務的喜悅。該公司用慈善感恩會取代年終尾牙活動，邀請育幼院喜憨兒來演出，伴隨身障音樂家的演奏，添加公益活動的幸福及感動，年關節慶送禮選用喜憨麵包食品，將送禮與公益做結合，送愛心到遠方。

## ● 大愛感恩科技股份有限公司

### (一) 品人文 傳大愛 涵福慧

大愛感恩科技股份有限公司為證嚴法師所命名，取名看似簡潔，涵意卻是深遠；人生的宗旨即是「大愛」，生活的教育即是「感恩」。對「大愛感恩科技」的每一份子，對「環保人文、愛心接力、完全回饋」的核心價值都極為熟悉，同時其也烙印在胸前識別證織帶上，時時提醒著大家入心且落實。

大愛感恩科技原料採購自全省慈濟環保站，匯聚了近20萬個環保菩薩的無私奉獻，再透過大愛感恩團隊、合作夥伴以及護持大眾建立的愛心接力平台，並將盈餘全數回饋慈濟基金會，經由慈濟基金會慈善的手完成愛的循環。大愛感恩科技是台灣與全球第一家完全以「環保、公益」為宗旨，以人文、感恩的情懷，落實心靈與環境教育的公司，其最終目標是能成為國際綠色企業的典範。

### (二) 向天地自然學習妙法 搖籃到搖籃<sup>®</sup>的心願

大愛感恩科技從成立以來，即走在環保紡織業的最前端，致力於開發推廣環保再生材質產品，於製程中嚴格落實環境保護，減少資源消耗，避免環境汙染。大愛感恩環保紡織品內再生聚酯的成分，是直接使用回收的寶特瓶經物理法製作成酯粒、環保紗、織布，再製作成產品，比起原生聚酯紡織品，可以節省能源84%以及減碳77%。而大愛紡織品以堅持不後染為原則，更可以省去後染製程中所需要的大量用水，以及避免化學染劑的使用，進而達到顯著的節能減碳、環境保護及省水效益。

大愛感恩科技是臺灣搖籃到搖籃策略聯盟的會員之一，灰色環保毛毯由美國搖籃到搖籃產品創新研究所審核通過，於去年12月獲得全亞洲再生聚酯產品第一張「搖籃到搖籃」銀級認證CM，為100%回收寶特瓶製程之環保再生毛毯，織品純淨輕柔、溫暖舒適、易洗快乾、水洗不褪色。除了用回收寶特瓶製作，未



最強的後盾—20多萬名環保志工菩薩，回收寶特瓶共約3億多支。

來更積極研發利用回收剩餘布料，以及回收紡織品再利用，重新生產製造，讓資源發揮工業循環的永續價值。

### (三) 一分環保一份愛 教育承擔信願行

「資源變黃金・黃金變愛心・愛心化清流・清流繞全球」，大愛感恩科技藉著推廣可以看的到，摸的到的回收寶特瓶再製環保紡織品給消費者，以「垃圾只是放錯地方的資源」概念，積極傳遞與推廣回收再利用、節能減碳的環保觀念以及友善大地、關懷地球的環境教育理念給普羅大眾、紡織業界的合作夥伴，以及每一個願意來了解「DA.AI」環保愛心品牌的國內外機關、政府與學校團體。

長久以來大愛感恩科技不只以生產製造，寶特瓶資源回收的環保紡織自限，更積極朝環保人文企業而努力，成為推廣環境教育的平台。大愛感恩於成立短短4年多的時間，即通過了ISO14001環境管理與ISO9001品質管理系統認證，於兩年內更舉辦了共94場環保、人文與專業主題教育訓練，其中與環保相關即佔了27場。而為因應外部日漸增多的環保教育分享邀約，更培養了超過10位的中英文專業環保講師，平時則結合內湖環保站，自發性承擔民間與政府機構的環保課程參訪，從參觀製作環繞全球的綠色大愛奇蹟 - 賑災毛毯、回收分類實作開始，積極且落實地向不同層面的對





象推廣。

大愛感恩科技針對產/官/學/研等設計不同的課程，每年300場以上的推廣與分享。此外為配合推廣環境教育，大愛感恩科技更首創環保紡織「生產履歷表的回溯」與「環保菩薩感人的故事」吊牌，讓消費者了解環保產品背後的意義與感人的故事。每日也會於官網每日更新環保「心聞」露出，每月提供結合靜思語的環保人文主題桌布下載，每季出版「綠菩提」刊物紙本/電子書，也積極研發設計KIOSK/APP平台，於數位化潮流中提供推廣最新的環保資訊，經由多元化環保教育推廣教材，落實全民環境教育。

#### （四）人類依止大地 應為地球盡份心力

自然生命是無時無刻都在被回收利用，這

是自然的法則，天生天養的服務精神。證嚴法師殷切叮嚀，當今最重要的大事，就是「環保」，這也是拯救地球的唯一方式。環保要從大地到心地，回歸本源清淨心，心淨，土就淨，消除有形的環境垃圾，要從淨化無形的人心做起。



大愛感恩吉祥物握緊雙手傳祝福

## ►►社團永續發展獎

### ● 社團法人台北市野鳥學會

社團法人台北市野鳥學會，緣起於一群關心野生鳥類及其棲地環境的國內外人士在1973年所組成的民間社團「台北賞鳥會」（Taiwan Bird Watcher's Group）。歷經十餘年努力之後，於1984年向台北市政府社會局立案為「社團法人台北市野鳥學會」（Wild Bird Society of Taipei）。歷年來台北鳥會凝聚義工與會員們的共識與力量，進行各項鳥類調查，建立基本資料庫，編印報告，執行鳥類研究工作，研訓專業解說人才，推展各類賞鳥活動，為推展野生鳥類欣賞、研究、保育之民間社團，至今已有四十年發展歷程。

#### （一）欣賞、研究與保育三合一

欣賞大自然由美開始，愛護野鳥之心的培養，由欣賞牠們的美著手。從1973年起迄今，台北鳥會固定於每週日免費舉辦「例行賞鳥」活動，由義工帶領民眾到台北近郊賞鳥，另外又發展出週六的週末派賞鳥活動，和針對

銀髮族的「白頭翁俱樂部」。並於春、秋候鳥遷移季節，在中港河口、關渡自然公園、華江雁鴨公園、台北市大安森林公園設立定點解說服務站。

賞鳥活動的辦理，是引領社會大眾認識鳥類的第一步，進而再談論到研究、保育及生活層面的環境友善舉動，將會容易且能感同身受。早期台北鳥會在關渡堤防舉辦『關渡水鳥季』賞鳥活動，吸引上萬民眾參與，1999年擴大為『台北國際賞鳥博覽會』，迄今已15屆，不僅僅吸引大台北民眾前來，也讓東南亞各國野鳥學會前來取經活動辦理模式，目前業已形成亞洲國際博覽會聯盟組織，對於帶動保護鳥類及生態環境的環境教育工作和推動國際交流，頗有成效。

多年來，台北鳥會的各種賞鳥活動，留下珍貴的鳥類調查資料庫，作為研究保育之用。並且近幾年來，並配合政府進行禽流感採樣調查，為國內防疫把關。



↑ 小小導覽員用捷運逛台北綠公園活動，於植物園帶領學員觀察自然。



↑ 學生公共服務活動，協助清理濕地。

濕地經營管理之責的擔負，是台北鳥會在野鳥欣賞、研究之後，保育工作的提昇。從1980年代台北鳥會開始推動關渡濕地劃為水鳥保護區，歷經多年推動、遊說，終於在1996年1月台北市議會正式通過150億4630萬之土地徵收預算案。2001年台北市政府透過公開投標及徵選審查之下，委託台北鳥會經營管理57公頃『關渡自然公園』，希望能從自然關懷及環境教育的角度出發，擴大關渡自然公園之社會教育與休閒遊憩功能，進而成為台灣自然公園管理的示範指標。

2003年台北市政府的委託下，台北鳥會開始經營芝山文化綠園，其也成為當地社區、民間自然保育社團、學校等團體共同參與自然生態教育的一個重要場域。

## （二）環境教育培養生態永續的種子

對於保育野鳥、環境永續的理念，必須從各種層面的環境教育著手，才能深入人心，產生影響力。因此台北市野鳥學會從成立以來，

一直著重於環境教育的發展，所管理的關渡自然公園、芝山文化綠園，也分別於民國100年和101年，通過行政院環保署的環境教育場所認證，並於101年成立「環境教育學院」，由台北市野鳥學會環境教育委員會每月定期召開會議，研擬、推出多元化之環境教育課程，囊括社會大眾、義工訓練與進階研習等。

目前環境教育推動主要可分為兩個層面，一個是人員環境教育推動，另一個層面是非人員環境教育推動，其內容詳如下表。

## （三）推動環境永續的展望

台北市野鳥學會深知，國家的永續發展，必須紮根在環境和資源的永續，因此該會也將秉持理念繼續堅持努力，繼續結合政府、企業、國內外民間團體力量，持續推展環境教育、落實保育教育的理念、培訓環境教育志工、為台灣瀕危鳥類進行保護工作、經營管理生態永續的自然公園及保護區，為下一代的子孫保存更多的自然資源與環境。

### 野鳥協會環境教育推動面向及內容

| 人員環境教育                                                                                                                                                                                                       | 非人員教育                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>● 國際性民間組織交流活動。</li> <li>● 一般大眾環境教育活動。</li> <li>● 學校環境教育活動。</li> <li>● 民間企業合作之環境教育活動。</li> <li>● 政府組織合作之環境教育活動。</li> <li>● 弱勢關懷環境教育活動。</li> <li>● 環境解說志工培力。</li> </ul> | <ul style="list-style-type: none"> <li>● 定期環境教育資訊刊物。</li> <li>● 主題性環境教育出版品。</li> <li>● 解說設施或展覽規劃。</li> <li>● 大眾媒體宣傳報導。</li> </ul> |



## ● 屏東縣仁和關懷協進會

### （一）社區經營與關懷弱勢不因挫折而中止

屏東縣仁和關懷協進會於95年12月21日成立，位於林邊鄉的行政中心，該會以關懷弱勢團體，喪葬、醫療急難救助，關懷獨居老人、單親家庭，以及社區綠美化為主旨，並在96年7月7日設立社區照顧關懷據點。

為了使社區更具特色，協進會近來更是積極推廣林邊在地產業—皮蛋、鹹蛋、無毒青草茶及社區媽媽手工藝品，並將義賣所得全數作為急難救助公益使用，期盼能帶動社區的經濟發展。101年度，該會也利用義賣所得特別捐贈一輛災情勘查車給林邊消防分隊，該會希望藉此能進一步幫助社區及居民。

### （二）結合環保及在地經濟 追求永續家園

仁和關懷協進會成立後，即接管認養維護苦佚寮及舊兵營兩座休閒公園，欲提供舒適的遊憩環境，因此積極地美化公園。就在舊兵營規劃完成的隔幾日，就面臨莫拉克颱風的肆虐，將兩座公園建設破壞殆盡，過去投注所有心力也在此刻化為烏有。

但協進會的成員並不氣餒，反而在災後集結所有志工的力量，將公園重新整理，利用風災遺留下的漂流木，創造出具有環保教育意義的苦佚寮公園，並將具有地方特色歷史的舊兵營打造成創意大兵花園。透過這樣的方式，竟開創出社區的新亮點，也帶動社區觀光產業，配合參與縣政府及大鵬灣國家風景管理處設計

「真情巴士」社區觀光的導覽行程。

近兩年，該會為有效達到環境保護與導覽遊憩行程的結合，向屏東縣環保局申請經費將創意大兵花園中閒置空地改造成無毒栽種園區，並開辦無毒栽種課程及農趣體驗營讓社區內國小學童、耆老或是參訪社區之民眾體驗，使他們了解除了環境保護外，身體亦需要做環保之重要性。

### （三）從外在環境改善到內在心靈成長

該會從民國100年起至今共有33名易服勞役者在該會的運作下，參與了各項社會勞作。對於這些參與者，其雖因許勞役期滿而離開，但是經由參與這些有意義的工作，反而認知了人生有許多的可能，進而在他們的心靈種下愛的種子，未來可因此開花結果，不但能更提升自己的生活，也能對社會更有貢獻。

聯合報102年10月24日報導，仁和關懷協進會從製作愛心筆至今，3年來銷售金額已達20萬元並全數捐作扶助弱勢之用，其愛心所得已嘉惠眾多需要救助的人，這樣默默無聞的小人物所發揮的功能是我們難以想像的，而這真的是一位小人物嗎？顯然不是的，因為她們心中充滿了愛心，也希望社會上多一些這樣的人，由點連成線再進而影響到全面的社會。

### （四）未來願景

未來，仁和關懷協進會除了持續推動永續

◎ 結合在社區觀光及在地資源提供鹹蛋 DIY 教學



◎ 義賣所得捐贈勘災車給消防隊，以服務社區及居民。



經營的理念，使經濟發展與環境保護能並行不悖並且互惠互利之外，更主要的是將「心靈的環保」也列入協會重要的工作項目。他們相信，社會工作如同園丁一般，在每一個人心中

種下愛的種子，辛勤耕耘並且將愛化為滋潤的養分，期待這顆種子成長茁壯、開花結果，之後散播到社會的每一個角落，如此良性循環才能造就祥和美滿的社會。

## ►►永續發展行動計畫執行績優獎

### ● 災後重建推動原鄉部落參與保護區監測行動計畫—— 以霧台鄉阿禮部落為例 (行政院農業委員會林務局)

**森**林生態系經營內容除著重維護自然生態系統功能外，也在協調人與自然的關係，社區林業由培養社區自然保育之專業人才，投入在地自然保育工作，累積並維護在地生自然生態與人文史蹟資源，作為生態產業之礎石，並藉由社區民眾投入社區公眾事務，帶動發展具地方特色生態旅遊或生態產業。

林務局自91年3月推動社區林業，至102年9月底止輔導超過900個社區，自主執行近2,000個計畫，內容包括：自然資源、傳統知識、文化價值的調查記錄；社區人才培力；森林巡護、監測；生態旅遊遊程建置；在地生態產業發展；踐行原住民族惠益分享等等。

莫拉克風災重創許多原鄉部落，部落因而面臨文化、生態及產業等重建工作。其中屏東縣霧台鄉阿禮部落災後受創而須遷居到平地，改變生活型態，山居的魯凱族生活文化、語言、傳統習慣等，可能會因此而漸漸流失。而沒有族人看守的山林失去保護，也可能受到盜獵、盜伐者的覬覦。因此，林務局為保育山林及落實執行社區林業計畫，透過相關公部門與社區的夥伴關係，一起合作推動阿禮部落社區保育與發展調適性的生態旅遊，藉此建立部落災後重建與永續發展的模式。

阿禮部落自災後的茫然無助到重新再起的動人歷程，成為其他部落災後重建並邁向永續經營的典範。計畫推動之初，即勾勒災後重建環境永續發展之方向，以生態監測搭配生態旅遊，做為永續發展的行動，在具體清晰的發展目標下，透過守護山林及周遭環境，傳承魯凱

族文化，活絡山村經濟，建構三生一體的永續發展部落之典範。



↑ 著傳統服飾的阿禮族人

#### (一) 透過守護山林、傳承魯凱文化

阿禮部落鄰近雙鬼湖野生動物重要棲息環境，位居扼守保護區入口之重要地理位置。林務局與阿禮部落間之公私協力，由社區居民執行山林環境監測，詳實記錄周遭動植物及環境變化；監測動物計有51種鳥類、11種哺乳類、兩棲爬蟲類6種；植物監測超過60種，監測結果回饋成為生態解說的內容及環境保育的基礎。並建立社區巡守隊，共同守護「雙鬼湖野生動物重要棲息環境」、及阿禮部落生態環境，讓保育工作不中斷。

透過社區協會組織有效的參與管道，將魯凱文化傳承充分融入阿禮部落發展，諸如：協助創立阿禮風古謠樂團，保存、傳承、發揚古謠；生態旅遊遊程路線以傳統自然工法維護路基；由部落設計、雕刻及架設具部落特色的生態人文解說牌。平時於原鄉經營生態旅遊及相關產業；汛期則於平地避災，發展文創商品創





作及部落文史採集、傳承與推廣工作。

## （二）攜手地方政府與結合民間資源，推動部落重建與發展

林務局、阿禮部落與專業輔導團隊三方保持良好的溝通管道，透過全面性連結的合作機制，結合屏東縣政府投入台24線生態旅遊行銷、奇美集團協助進行崩塌地植生恢復及生態綠美化、台大城鄉基金會協助建置太陽能自主發電系統等，中央與地方政府攜手，奠定阿禮部落重建基礎，使得許多企業與民間團體亦投入協助部落災後重建工作。

本行動計畫培力部落參與保護區監測能力，重建生態旅遊服務體系，公私協力守護環境，並分享生物多樣性保育所帶來的惠益，連帶著影響台24線沿線達來、德文、神山、大武等社區民眾的響應，讓阿禮部落成為部落災後重建典範，並成為台24線生態旅遊廊道的領頭羊，鼓舞沿線許多原鄉部落，魯凱文化得以保存、發揚。

## （三）原鄉部落轉為森林永續經營重要夥伴

阿禮部落是魯凱族唯一未遷村的古老部落，由林務局提供協助，讓社區重建家園、復舊生態棲地、營造民俗植物，找回部落的生態價值，為社區帶來經濟、社會及生態環境效益，更形成了良好的夥伴關係。部落透過環境修復、監測巡守、綠能、低環境衝擊的調適性生態旅遊方式，啟動社會、文化、經濟、制度等均衡發展及穩定的功能，同時踐行聯合國

大會2007年「聯合國原住民族權利宣言」中「原住民族文化傳統與習俗的保留、保護和發展」，災後躍升為兼具生產、生態、生活的永續社區。

## （四）發揮森林公益，踐行人地和諧共生的永續典範

森林是支持人類福祉的生態服務功能的重要組成，社區林業計畫透過惠益分享以及社群的夥伴關係等二項的具體操作與實踐，藉此發展在地綠色經濟，並提供更多的就業機會，促進社會公平，達到人地和諧共生之目標。阿禮部落走出風災受創的陰霾，重新找回部落的活力與樣貌，災後重新再起的動人歷程，成為其他部落災後重建並邁向永續經營的典範。

在林務局的長期陪伴之下，仍然穩健佇立在原鄉，族人在此自力經營生態產業，繼續傳承先人的生態智慧。阿禮部落已找到永續發展的新目標，實踐原鄉與林務局協同經營的永續願景。



◎ 阿禮部落的災後再起，正如雨後彩虹般的美麗。

## ● 污水下水道第四期建設計畫 (內政部營建署)

公 共污水下水道是生態環境保護的必要設施，不僅可以改善民眾居住環境，並可防止河川污染。此外，將污水處理廠處理後之放流水及污泥，亦應有效予以利用，以使資源循環達到永續發展目標。依此，污水下水道第四期建設計畫即以「愛台12建設」污水下水道用戶接管普及率每年提昇3%為目標，並納

入循環再利用、節能減碳等永續理念，該計畫重要成果摘述如下：

## （一）加速辦理用戶接管，提升國家整體競爭力

「污水下水道第四期建設計畫」自98年執行至101年，每年均達成用戶接管率3%以上，

污水處理率年平均增加4.78%。此成果除了直接改善環境品質外，亦有助於提升國家形象與競爭力。

## （二）恢復清澈水環境，河川生機再現

臺灣地區五十條主要河川總長約三千公里，遭受污染河段高達三分之一。污水處理為河川整治重要手法，污水下水道系統將生活污水處理成符合國家標準之水質後再排入河川或海洋，藉由有效減輕水域水質污染，進而恢復河川生機，復育流域生態。以淡水河為例，係為30年來最清澈之水質，魚種自72至75年間約56種，成長至目前的109種。

## （三）推動放流水回收再利用，紓解國內缺水危機

臺灣水資源供需面臨諸多問題，故將污水處理廠放流水回收再利用作為新興水源，可促進環境永續發展、資源永續利用，補充水資源、降低缺水風險。

截至101年12月底止，已完成46座污水處理廠之總處理能量約362萬CMD，已處理水量（含生活污水及截流水）約285萬CMD，佔約78.70%。未來將以已建設完成之污水處理廠轉型為都市水庫，配合經濟部水利署水資源規劃，推動放流水回收再利用作為新興水源，並優先推動水資源缺乏地區回收水再利用計畫。

## （四）污泥減量與回收再利用

因應用戶接管普及率上升，污水收集處理量增加，下水污泥將大幅產出。故污泥再生利用之處理設施設置、資源化再利用之評估及後續去化管道等處置方式皆予以完善規劃，藉以達成廢棄物減量及資源永續利用之願景。

## （五）創造後巷春天，提供民眾優質居住環境

藉由持續宣導污水下水道建設效益，鼓勵民眾自拆違建以施作用戶接管工程，將家庭污水納入污水下水道集中處理後，原先污水排放



↑ 二林污水處理廠放流水供二林高中生活雜用水小型模廠



↑ 臺北市用戶接管後巷美化

至側溝或排水路所造成環境衛生和臭味問題皆獲得改善，創造難得一見之後巷春天景色，提供優質居住環境。

## （六）塑造親水性都市，提升水岸土地價值

鄉鎮市新市鎮開發建設，將污水下水道系統列入考量，並配合環保署河川污染整治政策或考量城鄉均衡發展，作河川流域的綜合性規劃，藉由污水下水道建設整治河川使水質淨化，營造優質的水域環境，促使觀光休閒區域環境獲得升級，提升觀光產業發展，並間接提升水岸土地價值。

## （七）提升污水處理廠營管績效，建立永續營運管理體系

藉由建置完成之「全國公共污水處理廠資料管理系統」，管理全國公共污水處理廠之每月水質水量等操作營運資料，透過用水、用電、用藥量、人事等費用瞭解公共污水處理廠





營運狀況，以提升全國公共污水處理廠營運管理績效。

### （八）訂定管材選用相關規範，促進管材延壽，資源有效化利用

因應中國國家標準CNS最新修訂之規定，配合編修污水下水道相關專業技術規範，考量下水道管材需符合堅固耐拉壓、耐撞擊性，使承受外壓而震動、基礎不均勻時不易受損及滲水；並需有良好之耐蝕性，不因土質或水質影響管體鏽蝕、腐蝕或磨蝕，訂定選用管材相關規範以考量安全性、防蝕性、止漏性等三個項目達材料永續化，資源有效化利用。

綜觀污水下水道建設由81年第一期建設發展至今已至第四期，早期建設重點在於新建污水處理廠及污水主次幹管之埋設，隨著各污水下水道系統逐步建設完成，至今已達一新里程碑。展望未來，將導入全生命週期管理觀念，從規劃、建置、營運與管理等整體生命週期進行考量，並配合世界環保趨勢，積極推動

污水下水道清潔生產，藉由環保材料、污水處理廠節能措施、污泥減量、處理水回收再利用使黑水變藍金，以追求「生態效益」及「永續發展」為目標，創造下水道最大價值，期能藉此水與綠的循環，達到整體社會生活的環境進化，以及促進經濟面向的發展及繁榮。



○ 污水下水道建設可改善河川水質提升河岸土地價值  
(台南運河的親水河岸)

## ● 活躍老化—營造高齡友善健康環境與服務計畫（衛生福利部國民健康署）

我國人口老化快速，至民國101年底，臺灣老年人口超過總人口的11%，預計5年後達到14%，進入「高齡社會」。為因應高齡社會之衝擊與需求，衛生福利部國民健康署積極推動「營造高齡友善健康環境與服務計畫」，為建構有利於高齡者健康、安全、參與及終身學習之友善環境而努力，希望能永續發展「活躍老化」之政策目標。計畫重點與成果：

### （一）佈建活化長者身心社會功能的社區健康促進網絡

1. **推動社區老人健康促進活動**：以影響老人健康、預防失能最重要的八個項目(健康體能、防跌、飲食、口腔保健、菸害防制、心理健康、社會參與、預防保健等)為重點，透過地方資源，於社區全面推動。101年醫

療衛生體系結合社區關懷據點辦理老人健康促進活動比率，已佔全國關懷據點的80%以上。

#### 2. 辦理全國「阿公阿嬤動起來」健康促進競賽

**活動**：自100年度起，發動全國各縣市衛生局所，結合社區民間團體，以鄉鎮為單位鼓勵長輩組隊參加阿公阿嬤動起來競賽活動，增進老人社會參與，讓高齡者保有愉快心情，延緩身體老化。101年全國共組1905隊，7萬4千餘名長輩參加。本(102)年度參與社區活動的長輩將超越去年人數，占全部老年人口3%。

#### 3. 多元化行銷慢性病防治，導引老人建立健康生活型態

**生活型態**：配合世界慢性病等節日，結合民間團體、醫學團體、縣市衛生局與醫療院所，共同舉辦全國性宣導活動。

**4. 建立慢性病個案之早期發現、轉介及追蹤服務：**102年度截至9月止，老人接受成人預防保健服務累計達60萬人，50-69歲乳房攝影檢查累計有43萬人、糞便潛血檢查累計有66萬人。

**5. 提升老人慢性病個案及其家屬自我健康管理的能力：**全面推動糖尿病共同照護網，推行醫師、護理、營養等專業人員認證制度，102年推展194家糖尿病及145家腎臟病健康促進機構，強化照護品質；全國成立490個糖尿病支持團體，提升個案自我照護能力。

## （二）推動兼容、無礙、促進長者活躍的高齡友善城市

**1. 訂定高齡友善城市公共政策：**將推動高齡友善城市列為重要政策，鼓勵各縣市納入施政重點，並協助各縣市整合跨局處及民間、學術團體資源，成立高齡友善城市推動委員。99年首於嘉義市試辦，102年全國22縣市全面推動，成為推動高齡友善城市涵蓋率最高的國家。

**2. 建構高齡友善支持性環境：**委託學術團體邀請各領域專家學者組成推廣團隊，協助縣市政府參照WHO八大面向（敬老與社會融入、社會參與、無障礙與安全的公共空間、交通運輸、住宅、通訊與資訊、社區及健康服務、工作與志願服務），檢視對老年生活有利與不利的條件，依高齡者的需求，改善城市的軟硬體構面，推動兼容、無礙、促進

長者活躍的高齡友善城市。並辦理工作坊、成果發表會，以增進縣市推動之權能與經驗，另鼓勵參與國際研討會，促進國際參與及交流。

**3. 進行多元高齡友善城市宣導倡議：**透過記者會及活動等媒體宣導，倡議各界共同重視敬老文化，摒除對長輩的刻板印象和歧視。

## （三）營造增進長者健康、尊嚴、參與的高齡友善健康照護機構

**1. 國民健康署綜整WHO出版之高齡友善健康照護原則及健康促進醫院標準，開發國際第一個由政府帶頭推動的「高齡友善健康照護機構認證」。**

**2. 從100年起正式受理申請「高齡友善健康照護機構認證」，至102年10月23日已有42家醫療機構通過高齡友善健康照護機構認證訪查，預計102年底達到56家。**

**3. 102年5月22日於WHO健康促進醫院國際網絡會員大會提案並獲准升格為「健康促進醫院與高齡友善健康照護委員會」，由國民健康署邱淑媞署長擔任委員會召集人，成員來自13個國家，共17位委員。**

衛生福利部國民健康署致力推動「營造高齡友善健康環境與服務」計畫，落實「健康老化」、「活躍老化」之政策目標，降低高齡長者失能率、依賴率，延長並普及「健康餘命」，讓我国長者更能享有健康、參與及安全，並創造金色老年。



健康102阿公阿嬤動起來-全國總決賽」由臺東縣聖母醫院泰源健康活力站獲得金牌



各縣市推動高齡友善特色計畫

## 第五章

# 2013永續發展國際論壇



◎ 行政院國家永續發展委員會管中閔執行長開幕致詞

行政院國家永續發展委員會（以下簡稱永續會）與行政院環境保護署（以下簡稱環保署）為掌握全球永續發展最新趨勢，做為我國推動工作之參考，102年9月13日於國家圖書館國際會議廳共同舉辦「2013永續發展國際論壇」。本次論壇邀請北美洲、歐洲、亞洲等國際永續發展相關組織專家代表及國內永續發展專家主講，將全球永續發展最新資訊周知國內各界，此外，並與永續會民間委員及社會大眾交換意見，做為永續會日後政策擬訂之參考。

本次論壇討論議題包括：「2012聯合國永續發展大會（Rio+20）」決議事項之國際後續因應情形、綠色經濟及綠色產業發展策略、國際永續低碳城市推動策略與現況、「低碳永續

家園方案」之推動等。同時亦由環保署副署長兼永續會副執行長葉欣誠主持「專家座談」，邀請國內外主講人及永續會委員，針對「永續發展及綠色經濟推動策略」進行對談，對我國未來推動永續發展及綠色經濟提出意見。

永續會管中閔執行長於開幕致詞中表示，永續會成立16年以來，我國積極推動永續發展，雖然無法參與國際公約制定及討論，但仍積極實踐相關公約規定，並於2012年6月由行政院組團至巴西參加Rio+20大會，足證我國以行動支持永續發展之決心。永續會至今已完成「永續發展政策綱領」、「永續發展行動計畫」等重要文件；同時亦遵循聯合國呼籲，致力節能減碳，我國碳排放量自2008年起呈現下降趨勢，於2012年的人均碳排放量較2007

年減少2.8%，而GDP則同期成長20.6%，足見環境保護與經濟成長已呈脫鉤現象，符合聯合國永續發展及綠色經濟原則。此外，我國已擇定四縣市為低碳城市，並遵循Rio+20的呼籲成立綠色經濟專案小組，本次論壇特別重視此議題，邀集國內外的專家學者分享經驗及探討推動策略。

本次論壇邀請的國外主講人包括國際永續發展協會（IISD）副會長Mr. Langston James Goree VI（Kimo Goree）、美國衛斯理大學教授Prof. Elizabeth R. Desombre、國際地方政府永續發展協會（ICLEI）歐洲區主任Mr. Mark Hidson、韓國韓華研究院Dr. Jin-Dong Gong博士等4人。Mr. Kimo Goree首先以「Rio+20決議事項之國際後續因應情形」為題進行演講，Mr. Kimo表示在永續發展事務上，已由原先的聯合國永續發展大會轉變為聯合國大會及聯合國環境規劃署所共同決策的時刻，這皆是在Rio+20之後所產出的決定，並對千禧年發展目標有所助益。另Rio+20最重要之成果為「我們想要的未來」產出文件，在這份文件中，有三項重要產出：1. 永續發展目標（SDGs）；2. 永續發展高階政治論壇（HLPF）；3. 聯合國環境規劃署的強化（UNEP）；文件同時也提到要加強公民社會的參與及承諾及發展「綠色經濟」。為將永續發展納入到聯合國更大的發展活動，需要各國政府及聯合國行為者的同意，且需要更多的努力，才能達成。

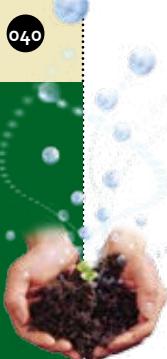
Prof. Elizabeth R. Desombre以「綠色經濟及綠色產業發展」為題，Prof. Elizabeth強調沒有任何環境污染事件是單純「在地」的問題，因為污染無法僅限於一國國界或邊界，所以都是全球性的污染問題。因此，她首先假設「沒有人會刻意破壞環境」，而產業是因無心的作為而造成環境污染。為達到環保標準而改變生產製程，剛開始的投入成本看似高昂，但長久來看其實代價並不高，著重環保實則不會影響經濟，惟前提是必須先有經濟誘因來吸引企業配合改變。「全球思考，在地行動」，新措施通常先在某地採行，再逐步擴展至全國及全球。

當現有機構已經有所作為時，且具共同改善全球解決環境問題的能力時，透過集體行動，由各種資訊及談判中，獲得全球環境機構援助，並且協調全球貿易、金融及開發機構的組合，採取積極的行動以保護環境，而毋須承擔額外的成本，這即可發展出綠色經濟。

Mr. Mark Hidson以曾協助許多區域或城市制定永續發展議題的經驗，分享「國際永續低碳城市推動策略與現況」。Mr. Mark首先引用聯合國秘書長潘基文的話：「城鎮是最適合推動永續發展的單位」，永續城市係指一城市致力於減少自然資源人均耗損量，到不危害本地或全球生態系統的程度；同時能確保環境、經濟與社會系統都能提供人民好的生活品質。Mr. Mark指出，成功轉型低碳城市的關鍵要素有：1. 強勢領導及團隊；2. 策略與願景；3. 成本考量；4. 富創意的替代財源；5. 風險管理；6. 有效結盟（內部與外部）；7. 社區居民的了解與支持。8. 建立考核機制；9. 定期且誠實的自我檢視。他同時分享許多成功案例，如斯德哥爾摩是目前歐洲清淨車輛比例最高（16%）的城市；溫哥華自許2020年前成為世界最綠的城市，屆時人均碳排放為全球最低；巴西的Curitiba則整合土地利用與交通工具等資源，讓75%人口使用大眾運輸。

Dr. Jin-Dong Gong以「韓國的綠色成長」為題，分享韓國近年來的推動經驗。Dr. Gong提到韓國在面臨全球化環保法規與壓力升溫、溫室氣體高排放與高耗能、經濟成長趨緩與環境友善產品刺激消費等因素下，發現「綠色成長」是新的成長引擎，並可望成為新的財源，故於2008年宣布綠色成長是國家願景，於2009年提出5年成長計畫，2012年成立綠色氣候基金。最後他指出，科技能否成功轉型是綠色成長的核心，而韓國目前的願景還不夠明確，在推動永續發展上，未來有很長的路要走。

國內主講人包括環保署生態方案室鄒燦陽副執行秘書、行政院經濟建設委員會郭翡翠處長及臺灣綜合研究院黃宗煌副院長等3位。環





保署鄒燦陽副執行秘書以「低碳永續家園推動方案」為題，介紹我國推動「低碳永續家園」概況與成果。目前國內已成立52個低碳社區，2014年以前將建立4個低碳城市與2個低碳島，2020年建立4個低碳生活圈，並於2050年邁向全面低碳社會，落實低碳家園目標。目前環保署推動的面向，由「生態綠化」、「建築節能」、「設備節能」、「再生能源」、「綠色運輸」、「資源循環」與「低碳生活」等7大減碳面向，增加「防救災與調適」、「法律與經濟財稅工具」及「社會行為科學與評比工具」等為10大低碳運作機能，建構面將更完整。

經建會郭翡翠處長以「邁向綠色經濟的臺灣」為題，分享我國在推動綠色經濟上的具體成果，並介紹經建會所成立之綠色經濟專案小組，如何整合各部會力量落實執行「綠色經濟」的相關政策，並期待透過十個標竿計畫，致力達到下列目標：1. 年提高能源效率2%，至少8年。2. 2020年碳排放減至2005年水準，2025年前達到2000年水準。最後郭處長指出，綠色經濟政策架構包括永續發展、產業發展與社會福利三個環節，要成功推動綠色經

濟，需要經濟與社會系統的重大改革，尤其需要全民，與未來世代，達成和諧一致的共識。

臺灣綜合研究院黃宗煌副院長以「發展綠色經濟與產業問題與對策」為題，提出幾項建議：1. 國內新興科技產業發展應確保國際競爭力。2. 加強兩岸環保、產業及能源策略性。3. 節能減碳目標、策略與政策需堅持「成本有效性」。4. 降低環評對企業投資的交易成本與不確定性。5. 確保能源及其他特殊資源的供應安全無虞。6. 建立马明確的綠色產品與服務，以及7. 綠色經濟管制政策的發展途徑。

本次論壇最後進行「永續發展與綠色經濟推動策略」專家座談，由葉欣誠副執行長擔任主持人，邀集永續會張四立、廖惠珠兩位民間委員以及4位國外講者共同與談，並接受現場提問，直接互動交流。本次論壇包括政府機關、縣市政府代表、民間團體及一般民眾等約300人與會。相關會議資料及論壇現場實錄置於行政院國家永續發展委員會全球資訊網（<http://nsdn.epa.gov.tw/>），歡迎各界上網參閱。



↑「2013永續發展國際論壇」之「專家座談」對談情形

# 永續會民間委員專訪

林益厚委員（都市更新研究發展基金會董事）

## 提高土地利用 縮短貧富差距

我國雖非屬聯合國會員，仍積極遵循世界潮流，前後參與1992年里約地球高峰會、2002年約翰尼斯堡永續發展世界高峰會以及2012年里約廿年地球高峰會，準此行政院特設國家永續發展委員會推動永續環境、永續經濟、永續社會等長程目標，並由行政院長擔任主委帶領各部會落實政策綱領所擬訂的行動計畫，責成主管機關評量國內各項永續發展指標，同時透過永續獎推廣永續會的遠大理想，值得肯定。

台灣國情特殊，至今尚未出現人口爆炸、糧食短缺的發展困境，因此，善用能源加速經濟成長，提高國內已開發土地的有效利用，縮短因土地住屋需求所衍生的貧富差距，降低民生痛苦指數，以鼓勵生育充實國力，正是我們未來首要積極面對的永續發展議題。

由於台灣境內天然資源有限，因應國際節能減碳行動，即應加強民生基本必需品如石油、電力、水的有效利用，全面檢討能源補貼政策，針對油品、電費、水費的供需成本而訂定合理價格，以價制量，避免浪費，務求個人碳排放量不再高漲，藉以降低對環境生態的衝擊，緩和全球氣候變遷趨勢。

如曾經喧騰一時的離島開發案，地方政府若能優先考量國家永續發展所面臨的重大議題，含括石化能源造成環境污染、國內電力來源短缺以及水資源的珍貴稀有等事項，一併納入施政建設規劃，撙節資源公帑，就更符合國家永續發展政策的基本精神。

近年國內有環保團體大力推動「濕地保育

法」，意將島內環境敏感地帶區分為國際級、國家級保護區，殊不知在現有土地利用法令中早已明訂各項規定，嚴格限制國有地的開發利用，而攸關國土資源有效利用、城鄉平衡發展、住者適其屋的相關法規，也已散見於「都市計畫法」、「區域計畫法」、「國家公園法」、「野生動物保護法」、「文化資產保存法」等現行法，故當務之急首應敦促地方政府及主管機關落實相關法令，而非另立新法迴避問題。

說起永續城鄉建設，關鍵問題在於提升土地利用成效，並制訂公平租稅辦法，即以現行以「區段徵收」為土地開發方式為例，政府必須開發相當於「一般徵收」四倍需求量的土地，例如興建高鐵廠站、科學園區或大學等，而向地主徵收預定地，其中40%歸地主享有，35%轉為公共設施，剩下25%才是廠站等所需用地，也就是所謂『要五毛給兩塊』。這除了加重國家財政支出，也造成大量閒置土地，再加上免徵土地增值稅以及偏低的房屋稅、地價稅，形成土地所有權大量集中、空屋率偏高等不平等問題，貧富差距日益明顯，甚至出現大片農田裡冒出豪宅的奇景，而以都會區豪宅單月的天價管理費來支付全年地價稅、房屋稅都還綽綽有餘等不合理現象。

若以房價、購屋頭款、租屋支出等反映民生痛苦指數高攀的現象為例，亦可發現國民貧富差距擴大的趨勢：試將小康家庭的年收入100萬元乘以3倍得300萬元，即為合理的房價。然而，現在台灣都會區的房價卻遠遠高於





一般家庭年收入的3倍，甚至還有高達廿倍的懸殊比例；至於購屋頭款應佔房價總額的30%至45%，即相當薪水階級工作5至7年的儲蓄才合理。

然而，由於國內勞工實質所得逐年下滑，為了償還鉅額房貸而變成『屋奴』更是大有人在；再者，為扶助無住屋者享有一方容身之處，美國施行25%房租補貼政策，務使租屋支出不超過家庭總收入的30%為宜，然國內現行房租補貼僅針對特殊家庭每月補助台幣四千

元，最高補助並以一年為限，似仍不足解決長年的屋荒問題。

無怪乎當前國內適婚生育年齡的人口普遍盛行晚婚、少子、不育，生育率逐年下降，據統計，年齡介於15歲到49歲之間的婦女總生育率僅1.07人，30年前的台灣總生育率約7至8人，預估到2060年，台灣只剩下1700萬人，其中39%是需要長期照顧的老人。由此可見，當局應大力創建生育友善的育兒環境，鼓勵增產報國、充實國力為上策。

宮榮敏委員（中華民國化學工業責任照顧協會 常務理事）

## 興利重於防弊 全面推動國家永續經貿發展

行政院永續發展委員會推動至今已十餘年，鑾於「環境保護、經濟發展與社會正義」三大立國基礎應平衡並進，廣邀學者專家及社會團體與主管機關共同參與國家永續發展願景與策略綱領的實際運作，期間歷經國內外重大局勢變化，如兩岸三通、連動債金融風暴、福島核災、亞太經濟區成長疲弱、東協產業升級、歐美訂定科技業綠色標章規範…等嚴峻挑戰，雖獲致相當的成效，但仍感覺偏重環保，對於經濟社會的永續發展政策並不明確，特別是經濟發展是帶動社會進步的動力，建議永續會應多加入產業界的人才。

目前國家的政令法規一昧偏向以增稅重罰的懲處手段防止弊端，卻未以更開放的心胸顧全大局，疏於積極另闢財源，諉於加強培植新興產業，以致興利不足，斲傷國本，動搖執政信心，這並非國人所樂見。當務之急，即應善加發揮台灣地緣戰略位置的絕佳優勢，全面推動國家永續經貿發展，擬訂產業政策，同時協調環境保護及社會福祉平衡發展。

欣聞江揆即將分階段推動「自由經濟示範

區」，加速台灣經貿走向自由化、國際化，積極拓展區域經貿夥伴關係，開放市場、掃除貿易壁壘，並大幅鬆綁相關法令，以利打造更友善的經商投資環境。然而，政策立意雖美，仍需主管機關以宏觀前瞻的周全做法，具體落實人民對政府寄予「興利重於防弊」的深切期許，讓國民得以實際分享國家經濟永續成長的甜美果實。

可惜，國內產業面臨增稅重罰、工資及原料價格節節上漲等不利營運條件，均紛紛外移或轉型，造成產業衰退、GDP負成長的局面，政府即應提早因應規劃出適合台灣發展的產業，獎勵輔導新興產業，以彌補產能缺口，並重新打造「台灣之光」，透過新興產業讓世人重新認識台灣，如觀光、博奕等無煙囪工業，在國際上普遍獲得認可，加上台灣位居亞太戰略樞紐位置，即可吸引鄰國友邦來台消費，同時帶動周邊產業成長，旅遊、餐飲、交通、物流、土產紀念品加工製造、文創、金融等，各行各業共享雨露均霑。

進一步來說，石化、塑膠、化工業乃台灣



輕重工業之母，締造台灣經濟奇蹟的重大功臣，不僅培植國內傳統產業（鋼鐵機械、紡織製鞋、運輸工具），發達新興產業（綠色能源、光電、生技、生醫），更讓台灣的重點產業如半導體、面板等，長年雄踞產能世界第一的寶座，傲視中國大陸、新加坡、南韓等競爭對手國。

然而，近年來各項不合理管制，企業與國民支出逐年攀升，大幅削弱國內僅存的石化、塑化業者的國際競爭力，再加上毒化物事故應變體系至今仍未臻健全，現行環評否決制則讓開發業者對環保署的功能角色產生疑慮，未來勢將對國內整體產業造成連鎖效應，形成國家永續發展的一大隱憂。

再者，肩負推動國家永續發展的主管機關更應具備放眼天下的國際觀，以宏觀全局的遠見帶頭落實相關政策，例如，同樣位居亞太戰

略樞紐的新加坡、香港、澳門，在人力資源調度上就更見彈性，來適應市場變動所需。

以新加坡為例，外勞比重相當高，大量集中在勞力密集的製造服務業，依產業、工種、證照而給予差別薪資，差距懸殊適正反映市場價格，而香港為了因應外籍家傭短缺，甫於2013年六月開放孟加拉家傭入境，至於澳門在博弈觀光業創造大量雙薪家庭之後，也於2013年上半年開放廣東、福建兩省家傭入境，共創經濟成長。

反觀國內長年為了外勞應否與基本工資脫鉤而爭論不休，卻不願正視國內薪資結構與國際平均工資嚴重脫節的現實生存問題，令人遺憾，未來我們首應調整人力供需、提升產業競爭力、提高職訓素質，以維繫國家競爭力於不墜，這才是國家長遠之計。

謝長富委員（台灣生物多樣性保育學會 理事長）

## 全球氣候變遷下的 台灣生物多樣性與國家永續發展獎

**永**續會成立以來，已完成國家永續發展策略綱領、永續發展行動計畫、永續發展指標系統；研擬國土保安及復育計畫、節約能源及生質能源推動策略等；每年定期辦理國家永續發展獎的評選。整體的運作系統及架構大致成形，成效逐漸彰顯。由於永續發展涵蓋經濟、社會及環境，涉及層面及議題甚多，僅賴每年召開委員會及少數委員的參與，實難掌握及追蹤各議題實施過程及成效，委員會功能無法充分發揮。

如同其他委員所建議，應讓各部會共同規劃一完備的自主永續機制及跨部會之協商機制，使得永續發展能有系統地自行運作。且永續發展是國家整體要務，在現行中央及地方分

治架構下，理念及實際的上下整合及全面拓展目標殊難達成。永續發展政策綱領任務之一即是協助縣市建置永續發展架構與制定永續發展推動計畫，其有效的運作將可使永續議題相關政策全面落實，也能適時掌握國際潮流，共同構建永續未來。以下僅就這幾年擔任永續會委員之見聞及個人意見略述一二。

### 一、全球的氣候變遷之下的台灣生物多樣性

目前全球氣候變遷劇烈，極端氣候頻繁，嚴重影響到人類生活與社會經濟。欲減緩二氧化碳濃度之增長，除調整產業及能源結構，亦可加強造林與森林永續利用的經營策略以提高大氣中二氧化碳之吸存量。每年永續獎複審的



現場查訪，各組別參賽單位多以推廣原生樹種栽植及平地造林為執行成效之一。不論山坡造林或平地造林，須考慮諸多因素。

首先是造林目的為何？景觀美化、碳吸存、生態保育、推廣教育、水土保持，或為生產木材、藥物精油等副產品提取？這涉及造林規模、樹木種類、立地環境、栽植方式、經營管理等條件。造林植樹是為景觀美化，則部分外來的栽植美化樹種亦可採用，如美人櫻、南洋櫻、羊蹄甲、阿勃勒等。

近十餘年，台灣極端氣候事件頻繁，為因應氣候變遷衝擊，永續會有「規劃推動氣候變遷調適政策綱領及行動計畫」之研議。台灣的生物多樣性豐富，但對生物相及生態系在氣候變遷下的反應所知極為有限，因此強化此方面之研究與監測工作極為重要。探討氣候變遷對生物多樣性的影響，最重要的是與所建置的各類型基準資料比對，但過去的基準資料之欠缺是目前各國面臨的共同問題，故近年來各國莫不全力推動長期生態監測站及大型永久樣區的建置，以監測氣候對森林的影響。

包括全球熱帶、溫帶、乃至寒帶森林，截至目前計有22個國家建置48個樣區（包括台灣的福山、蓮花池及南仁山樣區），共監測8,500樹種及4500,000棵樹木。監測內容包括物候（開花、結實、發芽、落葉）、林木生長率、物種組成、碳吸存、生態系功能等，全部採用相同的調查內容、方法、時程及資料格式，以便於跨全球比較。長期監測結果，如聖嬰反聖嬰現象、極端氣候對生物多樣性之衝擊影響等各種成果已逐步呈現。

## 二、國家永續發展獎

該獎項設置目的在選出推動永續發展績效卓越的楷模，鼓勵全民參與永續發展推動，以落實永續發展之在地化、生活化。永續發展須兼顧社會、經濟及環境，故獲獎不易。在過去幾年的初選及複評過程裡，我們體會到面臨中國大陸、日韓及新興國家的激烈競爭，以及金

融風暴導致全球景氣衰退下，我國大中小型企所面臨之嚴重發展及轉型困境。我們也對參選之企業表現出的創造性、可塑性與研發能力、以及對環境、社會之關懷印象深刻。在行動計畫類，通常係提出執行多年成果績優的計畫來參選，但也有單位未充份了解永續發展獎的內涵，即提出一委外執行、或與永續獎內涵不相符的計畫。

社團類之參獎單位屬性極廣，如健康醫療、社會福利、弱勢族群服務、自然保育、社區永續、環境教育等，其願景及目標差異雖大，面臨困境亦不同，但對理念的信守堅持及永續責任的秉持，均令人讚賞。

教育類之參與評選的學校，目標多朝向永續校園的整體規劃、營造優質校園、加強綠能資源教學、照顧弱勢學童、關注新住民及其家庭、匯聚社區力量、結合公家資源共同推廣鄉土教學及環境教育。訪查過程中發現，幾乎各學校均面臨學生日益減少、新住民及弱勢學生的比率相對增長的現象，使得提供新住民學生特殊學習環境、設置課後成人輔導課程，以加強其社會適應及語言溝通的能力等，成為學校額外負擔。

新住民勢將成為台灣人口的主力之一，亟需提供更周詳妥善的照顧，減輕新住民家庭經濟壓力、增加學校教育資源、檢討現行國家政策，以共同積極嚴肅面對此課題。

個人參與數年永續獎評選經驗觀察，部分年度之參賽組別，表現優異單位數較多，惟礙於限額規定無法獲選，而有遺珠之憾。個人認為，只要推動永續之績效優良表現卓越者，即放寬名額並予獎勵，若該年度參與單位表現未臻水準，亦可從缺。永續獎的宣傳也需加強，鼓勵學校、機關、社會團體及企業踴躍參與，獲獎者皆為各界精英，亦為台灣永續發展的指引曙光，儘可能透過媒體廣泛宣傳，以激發民眾對兼顧環境、產業、社會之國家永續發展的關注與了解。

馮正民委員（交通大學交通運輸研究所 教授）

## 加速貿易自由化 締造國家永續榮景

行政院特設永續會，代表我國對外參與國際事務如聯合國永續發展大會，對內為各部會主管機關在執行政策上提供諮詢建言，指導行政部門推動具體的行動計畫，並發表永續發展指標等報告。委員會成員則係根據興趣、專長、職務分別參與環境面、經濟面、社會面等工作分組。永續會每年評選永續發展推動績優團體機關，頒發國家永續發展獎，並將每年工作概況與成果加以匯整編撰為中英文年報，宣揚致力永續發展的理念與決心，成就斐然。時值當局為創建永續經濟成長而大力推動法制改革，不利投資經商的過時法規即應儘速鬆綁，改以全球運籌為未來發展藍圖，整建交通運輸網絡，加速自由貿易區對內對外物流、人流、金流、資訊流、知識流的往來互通，締造國家永續榮景。

自民國80年代起，我國為申請加入WTO以開拓國際市場、引進外資培植國本，行政院特別針對各部會共55項相關法案進行修訂。其中，以WTO轄設「服務貿易總協定」（GATS）所規範的12大服貿部門，最能凸顯我國位居亞太戰略交通樞紐的競爭優勢，涵括：商業、通訊、建築工程、物流、文教影視、環境、金融、健康醫療、社福、觀光旅遊、運輸、體育活動等。準此，我國亦在民國91年正式成為WTO會員國之後，仍遵循國際協定慣例，對外持續與世界各貿易夥伴國進行雙邊、多邊貿易談判，以期爭取更廣泛、更長遠的互惠經貿利益，同時，對內先後籌設國際航空城、自由貿易港區、自由經濟示範區，務使國內基礎建設的進展也能機動配合國際市場的波動。

由於我國地處美、中、日前三大經濟體的航運要道交會據點，南面又有天然資源豐富的世界第五大經濟體東協各國，故轉運服務業占

有得天獨厚的地理位置，理應善加發揮優勢，可惜，在香港赤鱲角機場、南韓仁川機場等強勁競爭對手環伺夾攻下，桃園國際機場過去十年的貨櫃量始終停留在每年150萬公噸左右，國際排名從2007年的第14名下滑至2011年的第29名，可見國內海空陸運的相關法規應儘速鬆綁，以利貿易更自由化、國際化。

例如：應仿效香港海關採行「負面表列制」，除了軍火、毒品或危害健康等管制違禁品之外，其餘產品一律在最短時間內迅速通關放行，並搭配產業供應鏈、港埠機場裝卸、倉儲、物流、通訊、金融、疫檢、法規等完善的貿易服務為後盾，以提升全境貨運吞吐量。是以，應改革國內海關長年沿襲的「正面表列制」，以避免高獲利的新興產業因未獲舊表選列而成遺珠之憾，坐失大好生意上門。

近年我國對外經貿往來已趨成熟，因應國家永續經濟發展所需，已與大陸簽訂ECFA及與紐西蘭簽訂自由貿易協議，並將陸續與其他重要貿易夥伴國家簽訂自由貿易或服貿協議，有助於壯大國內相關產業，提高GDP。同時，也發揮跨國串聯效應，擴大海外市場，例如未來國內業者可透過WTO服貿總協定所規範的「第三方支付」方式，在福建投資電子商務，直接承接大陸訂單，誠屬一大利多。此外，建議我方談判代表可透過海運協商，爭取外籍船從台灣轉運大陸，並透過空運協商，讓大陸人士也可由台灣中轉至其他國家，俾讓台灣躍身為亞太海空運的中轉樞紐，廣納各方資源。

鑑於一般民眾對於國家永續發展計畫，以至攸關永續經濟成長的服貿協議內涵，似仍一知半解，建議從擴大行銷的觀點，讓永續發展年報更普及、更親民，藉以加強宣導溝通，例如在臉書上摘錄永續會學者專家的精闢見解，或比照「青年APEC研習營」活動辦理，公開



爭取國家新生代對國家永續議題的了解與認同。

以永續交通建設為例，應注意基礎建設的脆弱度及恢復力，務求強化硬體功能並兼顧軟體機能，以幫助老殘貧困等社會弱勢獲得即時

照顧，譬如在遭逢洪災之後能迅速提供救生筏等運輸工具，或在最短期限內恢復正常通車，這就有賴更有效的宣導，讓永續交通的資訊流、知識流得以廣布流傳。

吳再益委員（台灣綜合研究院院長）

## 提昇能源自主 維繫國家長治久安

行政院特設國家永續發展委員會，藉以告訴全世界我們在環境保育、產業永續、能源穩定供應、社會公平正義等方面所做的努力與成果，永續會基於國家整體長遠利益考量，以掌舵者的角色，帶領行政院各部會推動小組行動計畫，協助短中長期施政規劃與執行，持續對世界各國所共同關注的重大議題做出貢獻，涵括：全球氣候變遷、節能減碳、乾淨能源、生物多樣性保育、資源循環利用等等，其中，能源自主則是聯通環境友善與經濟成長的重要橋樑，為了國家人民的長治久安，降低能源依賴，提高能源效率，確保能源安全，將是未來施政建設的重點方針。

能源是農林漁牧工商業之動力來源，堪稱經濟發展的命脈之一，然而，國內能源98%以上仰賴進口，鄰近的日本、南韓也因礦產資源有限，必須仰賴進口解決能源短缺，東亞工業國家莫不積極開發乾淨、穩定、價格低廉的能源，以因應經濟成長所需；所謂乾淨的能源意謂碳排放量較低，例如液化天然氣，而穩定的能源係指供應平穩，不受自然天候影響；風力、太陽能等替代能源，得看老天爺的臉色，供電量並不穩定。至於價格低廉的能源如核能發電，攸關人民生活福祉、產業發展前景，及國家總體競爭力，是故全球現有31個工業國使用核電供應內需，未來還有10餘個工業國將陸續啟用核能發電廠，屆時全世界共有40幾個工業國享受低廉的核能供電系統。

台灣自許為地球村一份子，當在節能減碳

上多貢獻，以去（101）年度台灣在二氧化碳的總排放量約達2億4,000餘萬噸來說，雖僅占全世界的1%，但國內地狹人稠，平均個人排放量接近11噸左右，甚至高於歐盟工業國水準，而國內碳排放成長率也是舉世屬一屬二，可見我們勢要積極尋求更乾淨、更穩定、經濟效益更高的能源，藉以協助產業結構順利升級，朝向高科技、低耗能、高附加價值的理想願景邁進，同時，也要為子孫留得青山綠水，資源再生循環，以供世世代代永久保用。

進入21世紀，國內環保聲浪高漲，對核能安全要求也愈來愈高，然而，核能發電在台灣尚不及總供電量的18%，實際上超過七成的供電量仍需仰賴石油、天然氣、燃煤等高汙染的化石能源，供應國內輕重工業所需，包括：鋼鐵、石化、造紙、水泥、化纖、機電、通訊、製衣…等基礎工業以厚植國本，不幸的是國內替代能源如風力、太陽能仍處於開發初期，而水力發電潛能則已達開發上限，一旦緊縮核能，不僅國內電價飛漲，引發產業生產成本上揚，長期對投資及經濟成長將帶來莫大壓力。

經貿競爭對手南韓為例，核能發電占全國總電量40%，故電價比我們還便宜，此外，南韓甚至遠赴中東阿聯大公國興建核電廠，可見核能的長期經濟效益，連原油大國也不落人後、積極開發。論及核能的經濟優勢，試以核四廠的發電量為基準，相當於要在12條中山高速公路上佈滿太陽能面板，也相當於每隔500公尺即矗立一支風力發電機並環繞台灣全

島，這對環境生態的立即衝擊，絕不亞於興建一座核能電廠。

2011年3月11日，日本遭逢地震海嘯侵襲，引發福島核災，事後檢討東京電力不當處置，導致災情擴大，最終只能仰賴國家出面解決，現任首相安倍晉三在經濟低迷下，只得祭出日圓急貶，且因核能機組停機檢修，短期內利用化石能源發電，使得電價應聲上漲，日本舉國上下莫不節約能源，從百貨公司空調定溫

26°C可見一斑。反觀國內汽柴油、水電等民生基本所需，仍大多由國營企業掌管供應，長期以來並未合理反映成本，且背負很多政策包袱，相對價格較國際水準低廉，導致國營企業長期虧損，最終無法產生盈餘繳交國庫，甚至國家稅收不足，亦要透過發行公債，最終將債留子孫。基於世代公平、正義，建議價格應要合理反映成本，配合宣導節約能源，以達成預期成效。

陳宏宇委員（台灣大學地質科學系教授）

## 守護斯土斯民 安居樂業

台灣位處太平洋火環帶，板塊擠壓，地震頻繁。因為受到數百萬年來造山運動的影響，島內四分之三面積的山坡地上，高山林立、地層破碎、坡度陡峭，處處河道蜿蜒曲折，每逢颱風大雨，都會不期然的出現山崩、落石及土石流等地質災害。從1996年的賀伯颱風，1997年的溫妮颱風，1999年的921地震，2001年的桃芝、納莉颱風，2004年的敏督利颱風，2008年的卡玫基颱風，以及2009年的莫拉克颱風，不到20年的時間，天然災害所觸動的破壞，已經在這個島內造成了許多生命、財產的重大損失。因此，大家都有一個迫切的期望，希望這塊土地可以停止不當的開發；一個廣深的期許，希望這一塊土地可以永遠的永續經營。國家永續發展委員會(簡稱永續會)，似乎就是大家所期望的那一把助力。

就個人所知，永續會並非屬於常態性的組織，與政府各部會間的功能性運作截然不同。永續會的委員來自於各不同領域的學者、專家及民間人士，永續會不定期的召開委員會期間，大家都非常期待能從各分組工作會議中，了解該部會主管機關在實際推動的「行動計畫」上，所需要具體支援或實質協助的建議，以便貢獻每個委員的專長。這些包括了，全球氣候變遷衝擊、地質災害、水土保持、山坡地

開發、民生公共建設、國土規劃、資源探勘規劃、以及環境保育等各方面的議題，大家都願意竭盡所能的幫助政府單位，具體落實國家永續發展的理想。雖然有人參與，但是實質的助益，卻很難張顯，這是目前的困境。

其實在國土的規畫，以及土地的各項開發工作上，目前國內各項法令的要求並非不夠完備，森林法、水利法、環評法、水保法、地質法，以及建築法等各項土地開發的規範要求，相當繁多，大家如何落實法令的要求，確實執行，似乎是目前存在於公部門中的一項課題。莫拉克颱風過後，中南部山區處處柔腸寸斷，地質敏感區往往受創最為嚴重，土石流潛勢危險溪流地區不宜居住，災害地區的重建，這正好是永續會的委員，可以發揮所長的一項工作，如何以專業的常識及建言，有效的植入於各部會常態性的國土規劃工作中，讓穩定的地質環境，成為居家安全的唯一選項。另外，從島內有限的資源中，如何尋找地熱或其他替代能源，可以幫助社會大眾，解除坐困愁城的不安，也是提供政府思緒多元的選項之一。

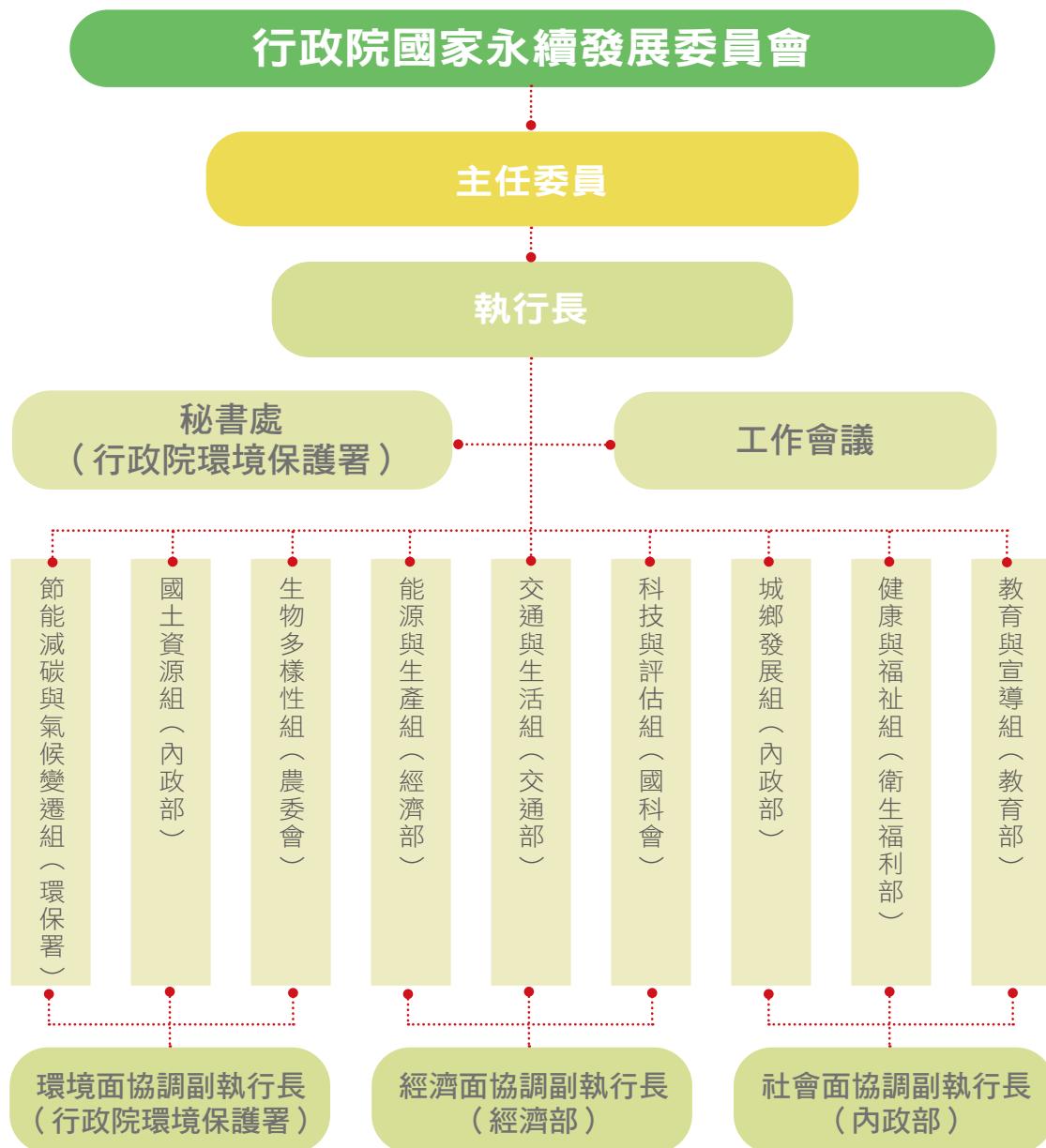
未來委員會的建言，如何落實在各級政府的執行面上，是還有許多強化的空間。期望永續會能夠更落實，而永續的幫助這個社會成長和進步。



# 附錄

## 附錄一

### 行政院國家永續發展委員會組織圖



## 附錄二

行政院國家永續發展委員會  
第15屆委員名單

## 政府部門委員

| 姓名         | 職稱              | 姓名     | 職稱       |
|------------|-----------------|--------|----------|
| 江主任委員 宜樺   | 行政院 院長          | 蔣委員 偉寧 | 教育部 部長   |
| 管委員兼執行長 中閔 | 經濟建設委員會<br>主任委員 | 邱委員 文達 | 衛生福利部 部長 |
|            |                 | 朱委員 敬一 | 國科會 主任委員 |
| 李委員 鴻源     | 內政部 部長          | 陳委員 保基 | 農委會 主任委員 |
| 張委員 家祝     | 經濟部 部長          | 沈委員 世宏 | 環保署 署長   |
| 葉委員 匡時     | 交通部 部長          |        |          |

## 民間委員

| 學者專家 |                              |
|------|------------------------------|
| 姓名   | 職稱                           |
| 李玲玲  | 台灣大學生命科學院生態學與<br>演化生物學研究所 教授 |
| 邵廣昭  | 中央研究院生物多樣性研究中心<br>研究員        |
| 吳再益  | 台灣綜合研究院 院長                   |
| 張四立  | 國立台北大學自然資源與<br>環境管理研究所 教授    |
| 陳郁蕙  | 台灣大學農業經濟系 教授                 |
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# 2013 ANNUAL REPORT ON NATIONAL SUSTAINABLE DEVELOPMENT





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## 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 36<sup>th</sup> 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 37<sup>th</sup> 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 NCSD, the NCSD convened a meeting on 1 February, 2013. Various units within the NCSD 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 NCSD 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 NCSD 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 NCSD 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 NCSD 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 NCSD 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 NCSD 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 NCSD 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 NCSD 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 CO<sub>2</sub> reduction of 3.615 million metric tons; Five exchange cases were registered, with an estimated 2.69 million metric tons reduction of CO<sub>2</sub>.
- (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.



① 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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://lcss.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 km<sup>2</sup> 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 austinogebia 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.

(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.

## ● 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

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 inceptioned 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 CO<sub>2</sub> 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.

- (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.

## ● 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.

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

### 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

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



① 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-terms 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.

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



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

- (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 25<sup>th</sup> 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 29<sup>th</sup> Working Meeting on 31 December of that same year. The NCSD's 2<sup>nd</sup> SDI system includes 12 themes, 41 sub-themes, and 86 indicators, which is considerably more encompassing than the 1<sup>st</sup> 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-

The screenshot shows the homepage of the SDI Information Management System. At the top, there is a banner for the "National Council for Sustainable Development Network" with a globe and floral icons. Below the banner, there is a menu with various options in Chinese. The main content area is titled "永續發展指標系統年度評量結果" (Annual Evaluation Results of the Sustainable Development Indicators System). Below this title, there are two rows of years: "2011年 2010年 2009年 2008年 2007年" and "2006年 2005年 2004年 2003年". At the bottom left of the screenshot, there is a small icon with the text "SDI Information Management System Website."

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 CO<sub>2</sub> emissions due to fuel combustion, annual increase of CO<sub>2</sub> 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.

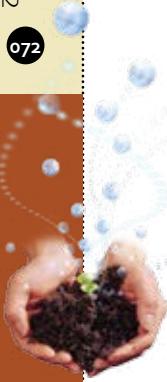
**12. Participation (2 indicators):** Official Development Assistance (ODA) ratio and community-based participation of social welfare.

## 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 NCSD Secretariat invited indicator competent authorities and NCSD 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 NCSD 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 NCSD 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 scholars, 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**

**H**ushan 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 'ribbiting' 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 harvest vegetables together.

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.

## ► 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. Engraining 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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<sup>CM</sup> 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 environmentally 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 CO<sub>2</sub> by 77%. Da Ai refuses to use post-production dying 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<sup>CM</sup> league. The company's Grey Eco Blanket was audited and approved by the U.S.'s Cradle to Cradle<sup>®</sup> Products Innovation Institute, and last December it became the first in the Asian Region to become Silver Level Cradle to Cradle Certified<sup>CM</sup> 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 Chungang Estuary, Guandu Nature Park, Huaijiang 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 Rukei 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 Rukei 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 Grandmother Get Moving contests that promote health:**

Since 2011, city and county



● 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**

1. 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.
2. 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.
3. 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 (NCSD) 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 NCSD 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 NCSD, 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 NCSD. 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 NCSD, pointed out in his opening speech that Taiwan has been actively promoting sustainable development since NCSD 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 NCSD 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 coffers lack 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 geo-political 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



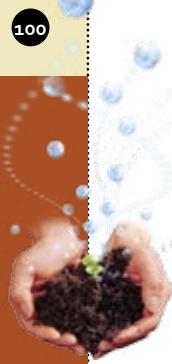
emerging industries can help the world at large take a new look at Taiwan. Take for instance, tourism and gaming, these two types of non-smokestack industries are widely recognized internationally. Taiwan is the strategic hub of the Asia-Pacific region, and as such, citizens of our neighboring nations 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, opto-electronics, 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 CO<sub>2</sub> 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

*(Professor, Institute of Traffic and Transportation, National Chiao Tung University)*

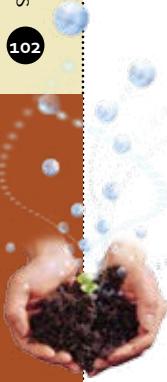
The National Council for Sustainable Development (NCSD) established by the Executive Yuan represents the nation in attending international affairs such as the UN's Rio+20 Conference. Domestically, the NCSD provides counsel and suggestions to various competent authorities, instructs administrative departments in implementing specific action plans, and publishes the sustainable development indicators. NCSD members participate in various working groups targeted at the environmental, economic or social aspects based on their interests, specialties and division of responsibilities. The NCSD 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 (NCSD) 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 NCSD 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 21<sup>st</sup> 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 (NCSD) seems to be the response to that expectation.

To the best of my understanding, the NCSD is not classified as a permanent organization, and is very different from the functional operations of government ministries. Members of the NCSD come from all walk of life, and colors, comprising of scholars, experts and civic members from varying fields. The NCSD 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 NCSD 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 NCSD 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.

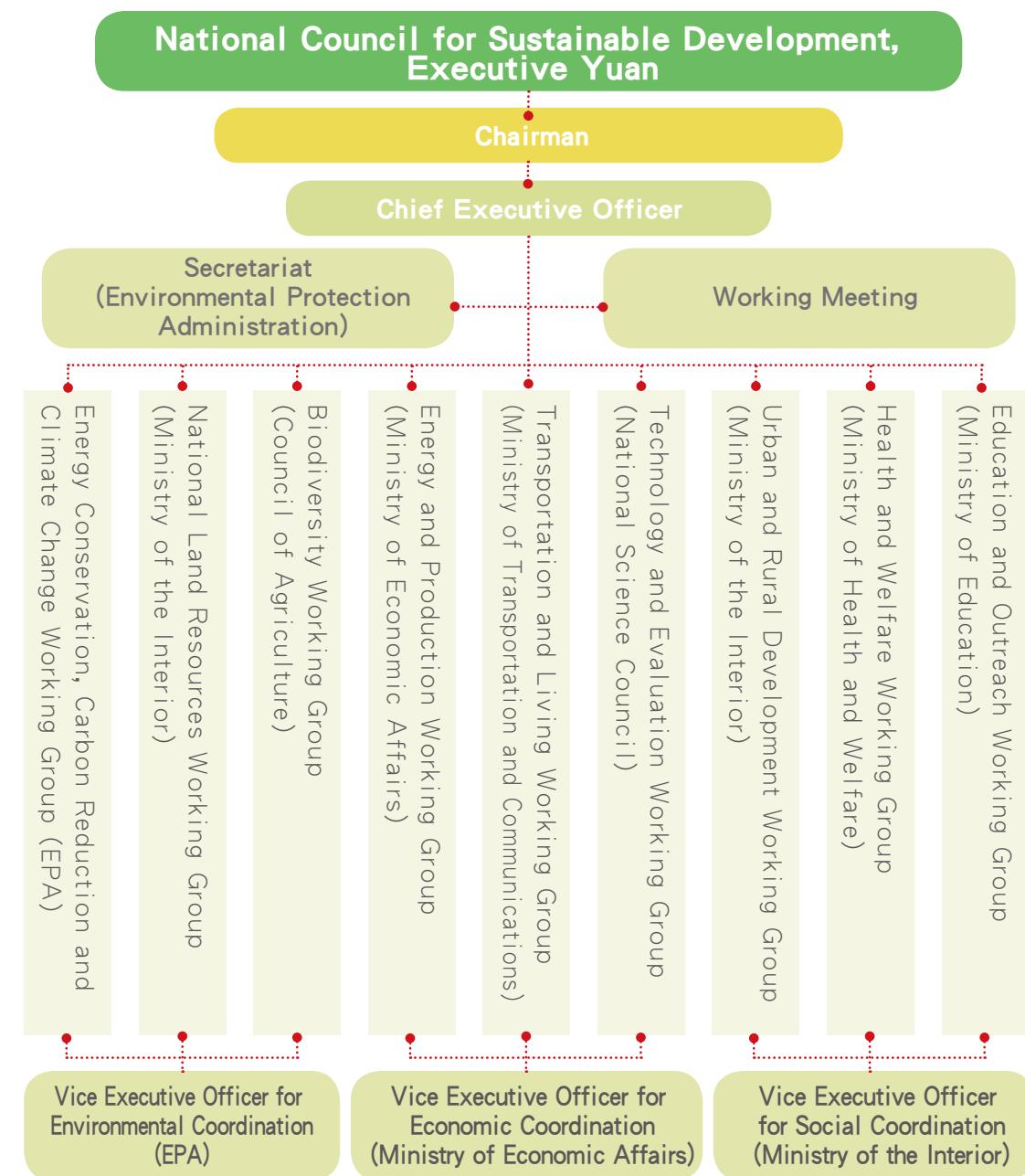
In the area of national land planning and various land development projects, current regulations, such as the Forestry Act, Water Act, Environmental Impact Assessment Act, Soil and Water Conservation Act, Geology Act and Building Act are not insufficient in terms of land development requirements, but 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 NCSD 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 NCSD members on a practical level leaves much room for improvement. We sincerely hope that the NCSD will become more pragmatic and continually support this society in sustainable growth and development.

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## 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       |

