2007 台灣電力公司 永續報告書

Taiwan Power Company Sustainability Report

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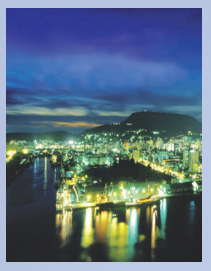

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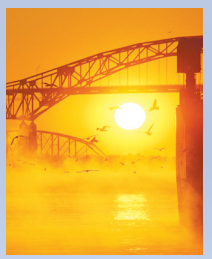

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善盡環保責任　邁向永續發展

台電公司自1946年成立以來，即以提供穩定可靠電力及滿足用戶需求爲目標。60年來，雖然經濟結構與社會型態改變，且面臨自由化與民營化的挑戰，但所扮演的企業角色及肩負的任務並沒有改變。隨著電力市場逐步開放，未來勢必面臨強大的競爭壓力，本公司更應積極努力成爲以顧客爲導向的服務型公司。

自「京都議定書」生效之後，節約能源是政府的施政重點，亦爲本公司努力推動的項目。本公司已加強對外溝通與宣導，使民眾瞭解能源資源的有限，高能源價格時代已經來臨，大家應該更珍惜使用能源，進而養成節約能源的好習慣。本公司內部則積極推展節約用電計畫，總處辦公大樓更以身作則，厲行各項節約能源措施，目前已見成效，外屬各單位亦加強推動提高熱效率的各項節能措施，營造整體的節能文化。

除了節約能源之外，爲落實全國能源會議有關二氧化碳管制決議，本公司除了繼續執行核四廠的興建，與大力推動風力發電及太陽光電示範計畫等無碳電力外，亦致力興建低碳之大潭天然氣發電廠，逐年提高天然氣發電之比例，並將陸續汰換老舊火力機組及興建高效率及提升環保標準之發電機組。此外，本公司已採行機組效率提升策略，除維持各機組最佳運轉外，也成立節能計畫評估專案小組，評估各既有機組運轉狀況，同時蒐集引進美日電業相同機組所採行之提升效率具體措施，做爲研擬既有機組局部改善計畫參考。

「顧客至上」與「追求卓越」是本公司企業文化重要精神所在，台電將以「誠信」與「關懷」對待我們所有的員工、顧客、股東，爭取各界對我們的認同與支持；以「創新」與「服務」戮力追求經營效率，提升顧客滿意度，並善盡環境保護責任，邁向永續經營發展的願景。

董事長

陳貴明

謹誌

Our Commitment

Environmentally Responsible - Moving toward Sustainable Development

Ever since its establishment in 1946, Taipower has been focusing on providing stable and reliable electricity to meet the demands of the public and the industry. The structure of Taiwan's economy and society has changed over the last 60 years. Moreover, the trend of liberalization and privatization has posed various challenges for us . However, Taipower's role and missions at all times remain the same. As the market for electricity becomes even more open to competition, Taipower will no doubt be confronted with increasingly intense competition in the future and must strive to become a service-oriented company that puts its customers in the first place.

Since the Kyoto Protocol came into effect, energy conservation has been a fundamentally important policy of the government and also one of the main tasks that Taipower has been actively undertaking . We have strengthened our communication with the public, in the hope that everybody can clearly understand that energy resources are limited and we are now in an era of costly energy. Every one of us should value the use of energy resources and make it a habit to save energy. We, at Taipower, have plans in place for energy conservation. The headquarters, setting a good example, has mapped out a detailed plan to substantiate this policy and already obtained fruitful results. At the same time, our regional offices have been assisting the customers in promoting effective measures to increase energy efficiency. All together, Taipower is enthusiastic to create a culture of energy conservation company-wide.

In addition to energy conservation , Taipower, to implement the resolutions on the control of carbon dioxide emissions reached at the National Energy Conference, has continued the construction project of the 4th Nuclear Power station, developed schemes for the use of carbon-free energies such as wind power and solar power, and also built gas-fired power plants of low carbon emission in Datan. Each year, the ratio of the usage of natural gas in power generation is increased. We will continue to replace old thermal power units and construct new power units that are more efficient and environmentally friendly. We have adopted strategies to increase the efficiency of our power plants and maintain their best operating status. The Assessment Group for Energy Conservation has been set up within Taipower to evaluate the operation of our existing power plants and to collect information on efficiency enhancement measures adopted by similar power plants in the United States and Japan. Hopefully valuable experience of our colleagues in the power industry can be used as a reference for the betterment of our existing plants.

'Putting our customers in the first place' and 'Pursuing excellence' are the essence of our corporate culture. Taipower believes in the value of 'integrity' and 'caring' when building up cordial and long-lasting relations with our employees, customers and shareholders, and winning recognition and support of the public. Our dedication to 'innovation' and 'service' help us increase operating efficiency, maximize customer satisfaction, fulfill our responsibilities for protecting environment, and ultimately move toward the goal of sustainable development.

Chairman - Edward K.M.Chen

摘要

台灣的電力發展已有百年歷史，台電公司以公司企業化經營係自1946年5月1日成立開始，迄今已走過60個年頭。這段期間，台電公司秉持一步一腳印的精神，孜孜不息的提供國家經濟所需的動力，促進國人家庭邁入「電氣化」生活的領域，成為國家經濟發展及國人生活不可或缺的夥伴。

在過去台灣產業發展過程中，台電公司提供穩定且充分可靠的電力，扮演締造經濟發展奇蹟的重要角色。由於電力無法有效大量儲存，電業必須規劃設置相當容量之各型發電、變電設備及輸配電線路，以充分滿足用戶隨時變化的用電需求。台電公司身爲國營事業且爲提供全民電力服務的公用電業，肩負台灣地區供電任務，爲滿足國家經濟發展及用戶用電需要，歷年來莫不盡力持續推動各項電源開發及輸配電投資計畫，期望以更經濟可行方式提供充裕、穩定、質優的電力。

台灣電力公司（台電公司）

總部：台北市羅斯福路3段242號
成立：1946年5月1日
固定資產淨額：13,197億元
股東人數：41,689人
營業收入：3,893億元
營業支出：3,851億元
資產總額：14,076億元
員工人數：26,300人
售電量：1,815.9億度
總發購電量：1,965.7億度
用戶總數：11,739千戶
總裝置容量：3,737.1萬瓩
結算至2006年12月

Abstract

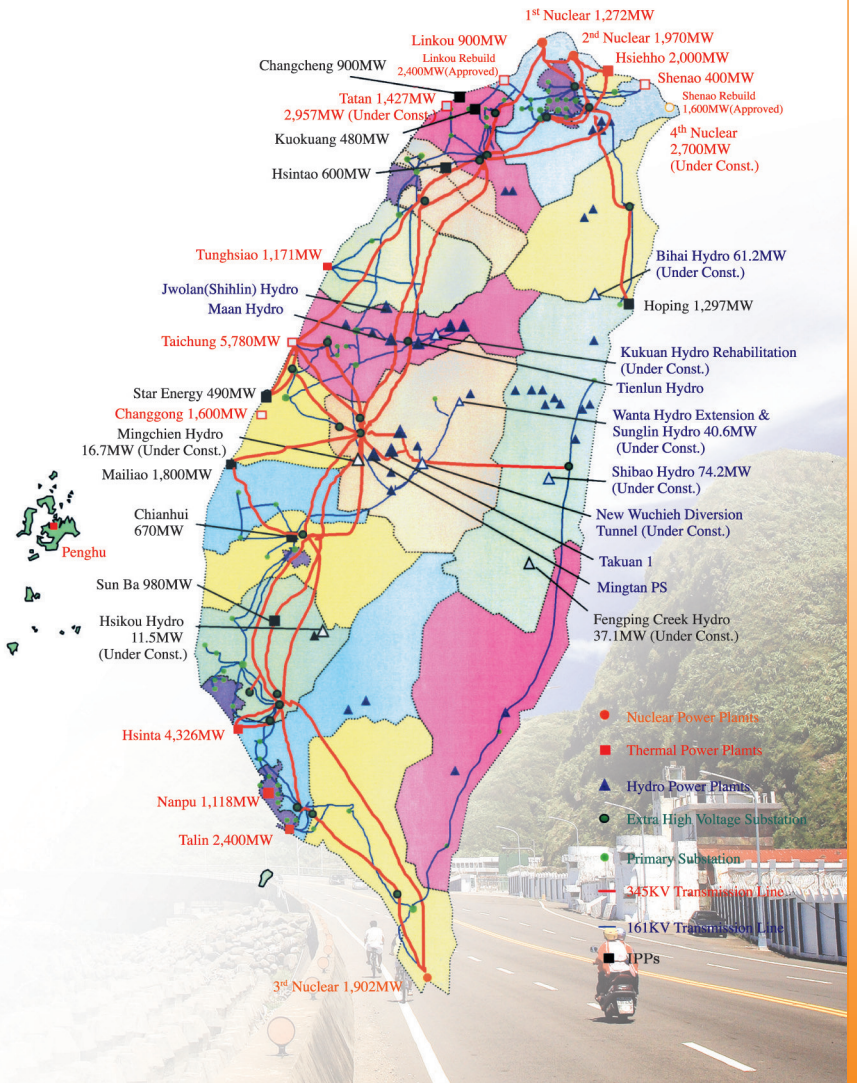
Taipower has been developing for one hundred years and went corporate on May 1 1946 some 60 years ago. Over this time, Taipower has done everything meticulously and has constantly supplied Taiwan's economy with the energy it has needed. Taipower has given Taiwan a plentiful and reliable source of electricity and has become an indispensable part of Taiwan's economic development and the daily lives of the Taiwanese people.

In the process of Taiwan's industrial development, Taipower has supplied stable, plentiful and reliable power and played a vital role in the creation of the country's economic miracle. Because electricity cannot be effectively stored in large amounts, power suppliers must install various types of generators, transformers and transmission and distribution lines of considerable capacity in order to meet the varying needs of users. As a state-owned power company and the sole supplier of electricity in Taiwan, Taipower shoulder the responsibility to meet the power demands for economic development and the needs of users. Over the years, Taipower has invested continuously in the development of energy sources and power lines in the hope to supply plentiful, stable and quality power in more economical ways.

Taiwan Power Company (Taipower)

Headquarters: No.242, Sec. 3, Roosevelt Rd., Taipei
Establishment: May 1, 1946
Net Property, plant and equipment:1,319.7 billion NTD
Number of shareholders: 41,689
Operating revenues: 389.3 billion NTD
Operating expenses: 385.1 billion NTD
Total assets:1407.6 billion NTD
Number of employees: 26,300
Energy Sales:181.59 billion kWh
Energy Production:196.57 billion kWh
Customers: 11,739 (Thousand)
Installed capacity: 37,371MW

Figures calculated up to December 2006



2007

社會責任與服務

Social Responsibility and Service

落實睦鄰，回饋地方建設

營造社區人文氣息

台電公司除了固守專業技術外，並秉持「誠信、關懷、創新、服務」經營理念關懷社區、用户，善盡社會責任，並在2003年成立「促進電力開發協助金審議委員會」（簡稱電協會），專責辦理協助地方及關懷社區工作。2003至2006年協助案件4,543件，協助金額約114億元，協助對象包括各發電設施周邊地區18個縣市政府，80個鄉公所、農會、漁會及學校共計390餘個單位，對充實地方公共建設、教育文化、環境衛生及社會福利有相當的貢獻。

▶ 花蓮希望種子計畫結業式台電公司董事長陳貴明與門諾醫院總執行長黃勝雄共同頒發結業證書。

▶ 希望種子計畫結業式

除了「電協會」的硬體的睦鄰建設之外，台電公司也展開軟體的睦鄰回饋工作，自2004年開始，台電公司與台東基督教醫院及花蓮門諾醫院招募設籍於花蓮及台東之原住民青少年學生，利用暑假期間，以工讀的形式參與花東社區關懷服務、從事公益活動服務弱勢團體，此計畫稱爲「希望種子」。除此之外，台電公司在社區設置K書中心做睦鄰的活動、另外屬於台電公司社團的「文化列車合唱團」的巡迴演唱，都可以看到台電公司人文、社區關懷的用心。

40位原住民學生利用暑假期間返鄉，化身爲蒲公英、松果、相思樹、桃花心木的「希望種子」，在暑假利用6週的時間，投入台東基督教醫院及花蓮門諾醫院暑期工讀，爲社區、部落及醫院服務，希望將愛的種子散播給需要幫助的人。

厝邊的關懷與溫暖

做鄰舍的「好厝邊」一直是台電公司努力的目標，因此，台電公司認養台北市羅斯福與新生南路口的人行地下道；並設置K書中心及民眾閱覽室；贊助盲人喜樂合唱團創作歌曲，鼓舞視障朋友；並啓動「台電文化列車」由台電公司合唱團巡迴各縣市演唱。

心聲

門諾基金會副執行長鄭文琪

小小的力量，可以改變生命

參與工讀的同學有些從來沒有看過重度殘障的老人，他們從害怕、到慢慢的接觸、幫他們按摩，以至於帶他們去曬太陽，在漸進的互動當中，二個生命有了變化，同學一點一滴的努力，使得重障的老人有了希望與活力，當同學用母語與部落的老人溝通時，也發現部落快要凋零的母語的重要，希望種子計畫提醒大家不要忽視任何人的力量，每個人都可以去改善別人的生命。

Being a Good Neighbor - Helping with Local Development

Creating Communities with Humanistic Values and Culture

Apart from its professional skills and basing our services to the community on 'Sincerity, Care, Innovation and Service' and taking social responsibility, in 2003, Taipower established the 'Advisory Committee for the Promotion of Electric Energy Development Allowances' (herein referred to as the Advisory Committee). The Advisory Committee's main purpose is to assist and care for communities and carry out social welfare work. From 2003 to 2006, the committee carried out 4,543 assistance projects and gave out approximately 11.4 billion in assistance funding. The committee's services are aimed at more than 390 organizations including city and county level governments in 18 areas surrounding Taipower power stations, 80 town offices, farmers' associations, fishery associations and schools. The committee has made many contributions to the construction of local public infrastructure, education, culture, the environment, health and hygiene as well as social welfare.

Apart from investing in community infrastructure, the Advisory Committee for the Promotion of Electric Energy Development Allowances has also invested in community education. From 2004, Taipower and Taitung Christian Hospital and Hualien Mennonite Hospital invited young indigenous students from Hualien and Taitung to carry out social welfare work in the Hualien/Taitung area over their summer vacations and serve the disadvantaged. This plan is known as 'The Seeds of hope'. Apart from this, Taipower has set up study centers in communities. Taipower also has a chorus called 'The Culture Train' which tours Taiwan giving performances. These various activities clearly reflect the care Taipower has for culture and local communities.

For example, over their summer vacations, 40 indigenous students went back to their home of Taitung and became 'seeds of hope'; working at the Taitung Christian Hospital and Hualien Mennonite Hospital. They also helped out in hospitals in the community and in villages spreading the seeds of love to those who need love and care.

Care and Warmth for Neighbors

To coincide with Taipower's ideal of being a good neighbor, Taipower decorated and upkeeps the pedestrian underpass at Taipei City's Roosevelt and Xinsheng South Roads. Taipower has also set up study centers and public reading rooms. Taipower offers music appreciation classes to the blind to fill their lives with joy and the Taipower chorus 'The Culture Train' travels across Taiwan giving musical performances.

Mennonite Social Welfare Foundation, Vice Executive Officer, Zheng Wenqi

A Small Force Can Greatly Change a Life

Some of the work-study students that took part in this program had never seen disabled elderly people before in their lives. The students quickly got used to the elderly and gave them massages and took them out to get some sun. From this simple interaction, their lives were changed forever: The work-study students' hard work gives the elderly a new sense of hope and new found energy. When the students use their native dialects to communicate with the elders of the villages, the students realize the importance of the native dialects that are becoming lost. The Seeds of Hope program reminds us that nobody should be overlooked and that everyone can help improve the life of others.

▶ 台電志工陪伴老人採買年貨

▶ 圍爐餐會溫暖長者的心

爲愛發光
歲末獨居老人關懷活動

一粒麥子不落在地裡死了，仍就是一粒；若是死了，就結出許多子粒來。

—摘錄自「聖經」約翰福音12章24節

當第一道寒流侵逼台東時，「一粒麥子來電」的集聚力量卻讓歲末的獨居老人溫熱起來。台電公司集結人力和經費，與台東一粒麥子社會福利基金會及台東基督教醫院聯合舉辦「爲愛發光」關懷獨居老人圍爐聚餐活動，並陪伴長者買年貨，且以發揮敬老恤貧精神，協助長者住家修繕、義剪頭髮、貼春聯。

電力併同愛心無遠弗屆

「爲愛發光」關懷獨居老人圍爐聚餐活動，以一輛社區服務車及6輛遊覽車迎接獨居老人前往圍爐現場。近兩百名長者與百名志工坐滿30桌一起圍爐，邊欣賞精彩歌舞，邊品嚐「麻油雞麵線」，麵線用的是台電鉅工電廠員工宿舍區生產的「鉅工麵線」，藉此象徵「老人吃麻油雞——老熱（台語諧音爲【熱鬧】）」的意思。

圍爐後長者在志工的陪同下一起前往大賣場買年貨，也讓老人再次擁有逛市場買年貨的記憶，而「空車進、滿車歸」更是每台推車的最佳寫照。當「眞歡喜」、「眞感動」不絕於耳的時候，一位69歲的老阿嬤甚至說：「一整年就今天最高興！」而義剪活動同樣讓獨居老人容光煥發、神采奕奕。特別是住家修繕的幫忙，更讓一位近80歲、高齡照顧下半身癱瘓的老公的老阿嬤，在按下開關鍵而重現新光亮時說：「我終於可以再刺繡了！」原來老阿嬤習慣以刺繡打發剩餘時間，其內心歡喜可想而知。

對此台電公司承諾，今後這班愛心列車將持續開往有需要的地方，讓「電力與愛心相同，哪裡需要就往哪裡去！」

▶ 活動執行時間、地點、參加對象及受益人數

活動項目	時間	地點	受益人數	志工人數
義剪	2006年1月18日	太麻里、金崙	4	2
圍爐	2006年1月24日	娜路彎大酒店	91	55
買年貨	2006年1月24日	大潤發大賣場	91	35

希望種子

台電公司秉持「關懷」的經營理念，散發台電人的愛與活力，主動結合花蓮門諾醫院及台東基督教醫院發起希望種子計畫，分別招募20位設籍於花蓮及台東之原住民青少年學生（中低收住戶或清寒優先），在暑假期間返回故鄉服務。

原住民學子常因經濟壓力無法順利完成學業，本計畫藉由提供暑期工讀獎助學金，鼓勵清寒原住民青年學子投入社服醫療，參與部落服務，希望能增加未來畢業返鄉就業的意願，為花、東地區注入新的活力。

Shine for Love

Care for the Aged

"Verily, verily, I say unto you, except a corn of wheat fall into the ground and die, it abideth alone: but if it die, it bringeth forth much fruit".

---The Gospel of John, Chapter 12, Verse 24

When winter hits Taiwan for the first time each year, the Kernel of Wheat Foundation helps bring warmth to elderly people who live alone. Taipower gathers funds and man power and cooperates with Taitung's Kernel of Wheat Foundation as well as Taitung Christian Hospital to host 'Shine for Love' activities. These activities include group dinners with the elderly who live by themselves as well as accompanying them to buy goods for Chinese New Year. 'Shine for Love' also provides the elderly with services such as house repairs, haircuts and Chinese New Year house decorations.

Love is Everywhere

At a dinner organized for the elderly under the 'Shine for Love' plan, a local community bus and six tour buses picked up elderly community members and took them to the site of the dinner party. Almost 200 elderly people and 100 volunteers sat at 30 large banquet tables and enjoyed a meal together whilst watching singing and dancing performances. Sesame oil chicken noodles were served and hand-made by Taipower employees. In Taiwanese culture, sesame oilhicken noodles represent the idea of the elderly having fun and enjoying themselves.

After the meal, the elderly were accompanied by volunteers to a large shopping center where they purchased goods for use at Chinese New Year. This allowed the elderly to relive the joy of buying products for the New Year. All participants went home with a lot of things. Everybody said they enjoyed themselves and were moved by the experience. One 69-year-old dame said: "I have never been happier for all year!" Free haircuts were given to the elderly and this made them look full of energy and vigor. The home repairs offered were of even greater significance: An elderly woman of almost 80 who looks after her paralyzed husband had an electric door installed in her home. After she pressed the button she said: "I will finally be able to weave again!" This elderly woman used to enjoy weaving in her spare time and with our help she will now have the energy to take it up again. It is easy to see the joy she received from our assistance.

Taipower will hold similar events in the future so that people who need our assistance are able to receive it.

Event time, location, audience and number of those who benefited

Activity	Time	Location	Number of those who benefited	Number of volunteers
Free haircuts	January 18 2006	Taimali, Jinlun	4	2
Group dinner	January 24 2006	Formosan Naruwan Hotel and Resort	91	55
Chinese New Year shopping	January 24 2006	RT-Mart	91	35

Seeds of Hope Program

Based on Taipower's motto of 'care', Taipower employees regularly host activities aimed at helping others. Taipower started the Seeds of Hope Program with Mennonite Hospital and the Taitung Christian Hospital. 20 young indigenous students were invited to take part in this program (preference was given to those from families with low incomes) and spend their summer vacation working for this program.

Indigenous students are often unable to complete their studies due to economic difficulties and this program is aimed at providing scholarships over summer vacations to students who take part. This program encourages indigenous students to participate in medical care work in their local communities. It is hoped that this will encourage these students to return to their home towns in the Taitung and Hualien areas to work and take care of those that need help.

爲魚兒蓋新家

人工魚礁15,684座，復育有成

魚礁就像在荒蕪的地區為魚兒建造公寓、國宅，使魚兒有新社區、新市鎮，使海洋漁業從「無」變為「豐富」，因而造福近海的漁民。

台灣沿海漁業資源日漸減小，台電公司體認全民對海洋資源的依賴，基於回饋地方、增進地方繁榮、保護海洋生態環境及善盡社會責任，近年來積極參與台灣沿海漁業資源的培育及復育工作，台電公司本著推動資源回收再利用及漁業永續經營之理念，利用退廢水泥電桿轉製作成人工魚礁，投放於電廠附近海域之公告礁區，以豐富漁業資源，復育海洋生態。最近10年來已於電廠附近海域19個礁區共投放電桿人工魚礁15,684座，對於改善漁場環境及培育資源的成效，頗獲各界的好評與肯定。

▶ 台電公司最近10年辦理電桿人工魚礁投放統計表

年度	數量（座）	投放地點
1997年	500	屏東海口、枋寮第二礁區
1998年	1,900	屏東枋寮第三礁區、台中五甲、金山跳石、苗栗外埔
1999年	1,684	屏東海口、高雄彌陀、苗栗白新、台北林口、宜蘭頭城
2000年	2,000	台北淡水、花蓮鹽寮、台中五甲、彰化王功、桃園永安
2001年	1,600	台北野柳、桃園永安、苗栗白新、高雄林園
2002年	1,600	台北澳底、台北淡水、台中五甲、屏東海口
2003年	1,600	台北澳底、桃園永安、苗栗白新、高雄林園
2004年	1,600	台北澳底、台北淡水、彰化鹿港、屏東海口
2005年	1,600	台北澳底、台北深澳、台北淡水、桃園永安、苗栗白新、台中五甲、彰化鹿港、高雄林園
2006年	1,600	台北澳底、基隆大武崙、桃園永安、苗栗通霄、彰化王功、高雄林園、屏東海口、澎湖香爐嶼
合計	15,684	19個礁區

▶ 利用退廢水泥電桿轉製作成人工魚礁

電桿魚礁優點多

人工魚礁具有培育及保護魚類的雙重功能，它一方面可以在許多原本一片荒蕪的沙泥地上增加魚類的棲息場所，提供魚類覓食和成長繁殖的環境，發揮「培育礁」的功能培育出許多高經濟性的岩礁魚種，例如石斑、石鱸、鯛類、金梭、燕魚、雞魚、龍蝦、蟳、蟹、九孔、章魚等；另一方面亦可發揮「保護礁」的功能，防止違法之底拖漁船過魚作業。

廢棄電桿再利用好典範

根據研究結果顯示，電桿人工魚礁就表面積、孔隙率、體積等均優於傳統水泥魚礁，且其造價便宜僅為傳統水泥魚礁的二分之一，其經濟效果與聚魚效果更優於傳統水泥魚礁。因此台電公司利用退廢水泥電桿製作人工魚礁，不僅是廢棄資材資源化再利用的良好典範，並可促進電廠和諧經營與漁業永續發展共存共榮，是台電公司回饋地方，展示做好鄰居的誠意。

Building New Homes for Fish

15,684 Artificial Fish Reefs Successfully Help Raise Fish

Artificial fish reefs are safe homes for fish in the rough ocean. Artificial fish reefs increase the number of fish in the ocean and this in turn helps fishermen who make livings by the sea.

Taiwan's fishing resources are decreasing day by day. Taipower understands deeply just how much people rely on the resources of the ocean. Taipower wishes to give back to the community, make local areas more prosperous, protect oceanic resources and meet our various social responsibilities. Over the past few years, Taipower has been very active in the cultivation and conservation of Taiwan's oceanic resources. In line with Taipower's beliefs on resource recycling and sustainable oceanic resources, Taipower has utilized used electric poles to build artificial fish reefs in ocean areas that surround our plants in order to enrich oceanic resources and encourage the growth of aquatic life. Over the last ten years, Taipower has set up 15,684 artificial fish reefs in ocean areas around our power plants. These efforts aimed at improving the oceanic environment and creating new resources have been well received by the public.

Fish Reefs made of Electric Poles -Beneficial in Many Ways

Artificial fish reefs help cultivate fish habitats and also protect fish. Artificial fish reefs offer a place of rest to fish in originally barren sandy areas. They also provide fish with places to search for food and environments to reproduce. These reefs have played an important role in increasing the number of fish such as grouper, perch, bream, Chevron Barracuda, Spanish mackerel, thornfish, lobster, crab, abalone and octopus.

▶ Statistics on the number of artificial fish reefs Taipower has built from used electric poles over the last ten years

Year	Total number	Reef locations
1997	500	Pingtung Haikou, 2nd fish reef in Fangliao
1998	1,900	Pingtung 3rd fish reef in Fangliao, Taichung Wuchia, Chinshan Tiaoshih, Miaoli Waipu
1999	1,684	Pingtung Haikou, Kaohsiung Mito, Miaoli Paihsin, Taipei Linkou, Yilan Toucheng
2000	2,000	Taipei Danshui, Hualien Yanliao, Taichung Wuchia, ChanghuaWangkung, Taoyuan Yungan
2001	1,600	Taipei Yehliu, Taoyuan Yungan, Miaoli Paihsin, Kaohsiung Linyuan
2002	1,600	Taipei Aoti, Taipei Danshui, Taichung Wuchia, Pingtung Haikou
2003	1,600	Taipei Aoti, Taoyuan Yungan, Miaoli Paihsin, Kaohsiung Linyuan
2004	1,600	Taipei Aoti, Taipei Danshui, Changhua Lukang, Pingtung Haikou
2005	1,600	Taipei Aoti, Taipei Shenao, Taipei Danshui, Taoyuan Yungan Miaoli Paihsin, Taichung Wuchia, Changhua Lukang, Kaohsiung Linyuan
2006	1,600	Taipei Aoti, Keelong Tawulun, Taoyuan Yungan, Miaoli Tunghsio, Changhua Wangkung, Kaohsiung Linyuan, Pingtung Haikou, Penghu Hsianglu Island
Total	15,684	19 reef areas

A Perfect Example of how to Utilize Used Electric Poles

According to research, artificial fish reefs made from electric poles are better than standard concrete fish reefs in terms of surface area, porosity and volume. They cost half the price of traditional concrete fish reefs and are therefore better economically whilst also being better for the breeding of fish than traditional fish reefs. These are the reasons for Taipower choosing to make artificial fish reefs out of used electric poles. This has not only set a good example in the recycling of waste material but can also make Taipower's operations more readily accepted by the public whilst also contributing to the sustainable development of local fishing industries. This is another way Taipower shows its care and sincerity towards local communities.

轉出光明與希望

風力發電采風

台電公司為慶祝成立60週年（1946至2006年），特別在公司舉辦一系列的慶祝活動中，舉行「風力發電采風攝影比賽」，以增加國人對再生能源、電力設施的瞭解；攝影題材以台電公司建造完成的石門、大園、觀音、大潭、恆春、澎湖中屯風力發電站為主。

「風力發電采風攝影比賽」參賽氣氛相當熱烈，分別有社會組的3,062張與台電公司員工組的847張，展現台電公司積極推展風力發電效果。每張攝影搭配合襯的取材標題，不論是「兩情繾綣」、「科技與自然的結合」、「旭日風采」、「石門暮色」、「海風陣陣吹，電能源源來」等，都將山邊海角的風力發電之美網羅在照片中。這些精彩照片都將成爲政府推動再生能源的最佳代言素材，而結合當地觀光特色的風場，亦是綠色能源運用的最佳寫照。

風之詩

澎湖的天空
非常taipower
雲雀說

海豚卻早早踏浪
逐尾追向三葉白的頂端
企盼垂釣起夢的驚嘆號

天人菊以圓形迤邐
散蔓成時針分針秒針
滴答擺盪著鎏光

呵
那一葉一葉的風之翼
捎來了菊島的最是一抹溫柔

▶ 台電公司舉辦「人際關係成長營」活動
Taipower held Interpersonal Relationship Growth Camp

Light and Hope

Wind Power Generation

To celebrate its 60th year anniversary (1946~2006), Taipower had a series of celebrations that included a 'Wind Power Photography Competition'. This was aimed at increasing the public's understanding of renewable energy and electric power infrastructure. Photos were taken of Taipower's Shihmen, Tayuan, Kuanyin, Tatan, Hengchun and Penghu Chuntun wind power farms.

The 'Wind Power Photography Competition' was highly competitive and consisted of 3,062 photos taken by members of the public and 847 photos taken by Taipower employees. This competition showed the efforts that Taipower has been making in the promotion of wind power. Each photo captured the beauty of the wind farms located on mountain tops or by the ocean. Each photo also had accompanying titles that complemented the photography. These beautiful photographs are the best way that the government can promote the use of renewable energy whilst also showing the way in which wind farms can also be used as tourist attractions.

勞資和諧

台電公司一向非常重視勞資關係，勞資雙方同心共榮，齊同為公司努力打拼創造多贏，使台電公司得以茁壯發展及永續經營。

勞資溝通情形

台電公司各單位均依照主管機關訂頒「勞資會議實施辦法」之規定，定期召開勞資會議，計有73個附屬單位與其所轄屬之電力工會分會共同召開勞資會議，2006年全年共計召開429場次。並依規定將會議紀錄報送當地主管機關備查。另各附屬單位勞資會議之建議提案轉送總管理處協助處理解決者共有130項建議案。

鑑於台電公司「民營化計畫書」修正案，事涉員工權益至鉅，爰於2006年7月6日召開民營化計畫書修正溝通說明會議，請台電公司相關單位與電力工會重要幹部溝通說明相關修正事宜。不定時與工

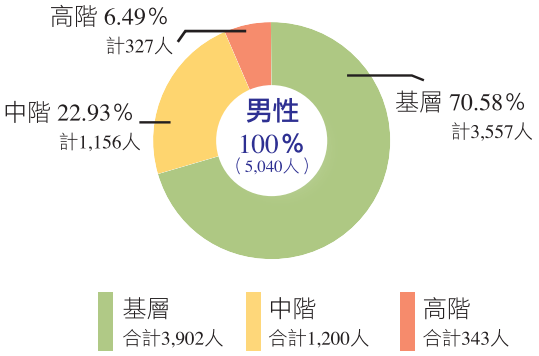
會就台電公司重要措施、人事勞資事項等召開溝通協商會議，2006年度並已處理工會各系統幹部聯席會訴求議案及總會函送之各類書面建議案件計有399件。

▶ 雇用殘障及原住民等弱勢群體之人數及比例

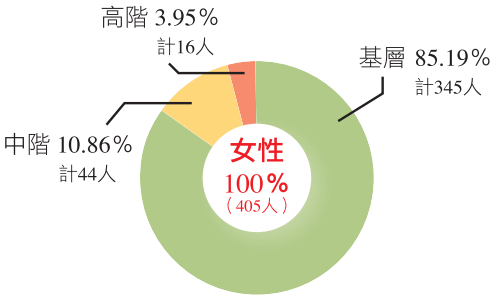
2006年底	身心障礙人員	原住民
進用人數	647	144
員工總人數	26,300	26,300
比例	2.46%	0.55%

註：台電公司進用身心障礙人員及原住民人數，均已達成「身心障礙者保護法」、「原住民族工作權保護法」規定進用目標。

▶ 2006年底男性與女性主管的比率



註：主管階級分為3種（男性與女性主管的比率分別占92.56%及7.44%）。



註：2006年底員工人數26,300人，男性23,636人（89.9%）、女性2,664人（10.1%）。

員工訓練及福利狀況

2006年之從業人員特殊健康檢查，依台電公司健康管理體系規定，由單位人事部門辦理，檢查資料由工安部門列管，另外2006年50歲以上從業人員體檢人數為856人。員工每年平均受訓時數為40.45小時；鼓勵、協助員工取得與工作相關之專業證照為2,084人照／年，2006年員工訓練為43,288人次。

Harmonious Labor - Capital Relations

Taipower has always placed a great emphasis on harmonious relations between employees and employers. Common goals are established between employees and employers at Taipower so that everyone works toward the same goals. This has helped spur Taipower's growth and will aid the sustainable management of Taipower.

Communication between Employees and Employers at Taipower

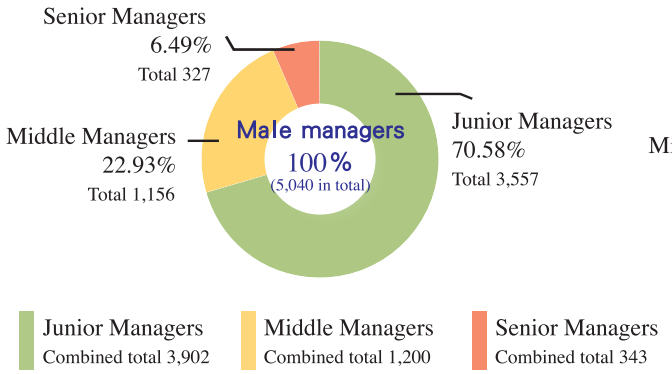
The various departments at Taipower regularly conduct meetings between employees and employers based on the rules and regulations in Taipower's Guidelines for labor-capital meetings. A total of 73 work units and their labor unions held 429 meetings in 2006.

▶ Numbers and ratios of workers from disadvantaged groups such as the disabled and indigenous peoples

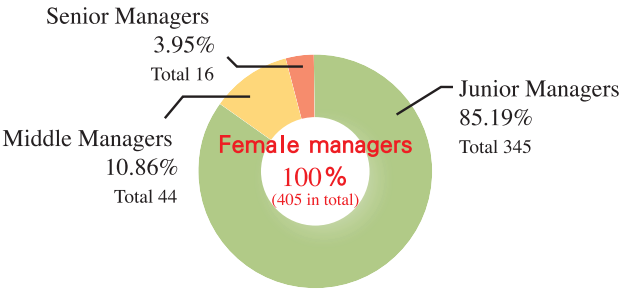
2006	Staff with disabilities	Indigenous people
Number employed	647	144
Total number of staff	26,300	26,300
Ratio	2.46%	0.55%

Note: The number of workers from disadvantaged groups such as the disabled and indigenous people that Taipower employs is in line with the goals and regulations stipulated in the Disabled Employment Rights Protection Act and the Indigenous Peoples Employment Rights Protection Act.

▶ Ratio of male and female managers at the end of 2006



Note: Management consists of three levels (the ratio of male and female managers is 92.56% and 7.44% respectively).



Note: At the end of 2006, there were a total number of 26,300 employees of which 23,636 were male (89.9%) and 2,664 were female (10.1%).

The meeting minutes from these meetings are sent to governing bodies for inspection as stipulated in related regulations. In addition, 130 recommendations and proposals in total from meetings between employers and employees are sent to General Management to help policy makers with their decisions.

Because the amendments of Taipower's 'Privatization Plan' greatly affect the welfare of Taipower's employees, an explanatory meeting on the privatization plan was held on July 6, 2006. Taipower's various units met with labor union representatives from the power sector on major issues. Meetings are also held regularly between Taipower and labor unions on issues such as major company policies and labor-capital relations. In 2006, 399 cases had meeting conducted on them including motions put forward by various labor unions as well as written recommendations on various cases that were sent from General Management.

Staff Training and Welfare

According to health management regulations at Taipower, special medical examinations in 2006 were carried out by the Human Resources Departments of each unit at Taipower. The medical information gained from these examinations is filed by the Industrial Safety Department. In addition, in 2006 there were a total of 856 workers aged 50 years and over took part in medical examinations. In terms of employee training, each employee receives an average of 40.45 hours professional training each year where they are encouraged and assisted in obtaining licenses related to their work. In 2006, 2,084 employees received licenses or certificates related to their work and in 2006 a total of 43,288 employees received training.

同心園地
一股看不見的力量

自1984年勞動基準法公布實施之後，企業中勞資爭議有上升的趨勢，勞資問題也受到各方面的關注，但所注意的焦點幾乎集中在勞資爭議上，絕少注意到勞工本身的問題，一般公司也將精力擺在生產、管理上，而未注意勞工身心的狀況，然而若爆發問題，將會影響事業本身的生產力。

台電公司是一個員工人數眾多、規模龐大的組織，一向對於勞工身心健康相當重視，在1988年建立了「員工諮商輔導制度」，目前共有75個同心園地，約500餘位熱心員工加入「員工輔導員」（園丁）行列。各單位同心園地設置協談室，並備有各種身心成長的圖書及影音媒體供同仁借閱。園丁們傾聽同仁心聲、紓解同仁壓力，熱心幫助同仁走過工作壓力、人際關係、家庭婚姻、憂鬱症的陰霾。至2006年已經成立了18年，許多企業及學校都到台電公司「取經」，學習如何「在企業做諮商輔導」。

Heart to Heart
An Invisible Tendency

After the Labor Standard Law was passed in 1984, labor-capital disputes have become increasingly common and have drawn more concern from all aspects. However, most of the attention has been confined to the disputes themselves and have rarely looked at side of the employees. Companies normally focus on production and management and do not concern themselves with the physical and mental health of their employees. However, if problems in these areas do arise, these will greatly affect a company's productivity.

Taipower is a massive organization with many employees. Therefore, Taipower has always paid a lot of attention to the health of our employees. In 1988, Taipower established a 'System for employee counseling and guidance'. At present there are 75 counseling centers (named Heart to Heart) with more than 500 enthusiastic staff members working as counselors. Each department at Taipower has their own counseling group complete with a counseling room that provides various printed and audio media about spiritual growth that employees can borrow. Counselors listen to employees, help them relax and help employees get over the stress of their jobs, improve their interpersonal relations, and help them solve marriage problems as well as depression. These counseling services have been offered at Taipower for 18 years and many schools and businesses have come to Taipower for advice in the area of counseling and to learn how to carry out 'corporate counseling'.

重視顧客意見加強互動

台電公司近年來力求轉型，希望由電力供應者，逐步蛻變成為電力服務業，為達此一目標，除每年定期委外辦理顧客滿意調查，並建立用户陳情處理機制，深入用户需求，研擬更適當之服務策略；此外每年皆會安排邀請社會各界人士參觀電廠、變電所，使其能夠瞭解台電公司發電作業。

台電公司定期委託外界公關公司，以量化電話訪問及質化焦點座談會等方式，針對大用戶及一般家庭用電戶進行顧客滿意度調查；調查結果除做爲服務措施改善之參考，並深入探討用戶需求，藉以提出滿足用戶之最佳方案。2006年整體滿意度調查結果平均得分達86.1，顯示用戶對於台電公司整體表現係持肯定態度。

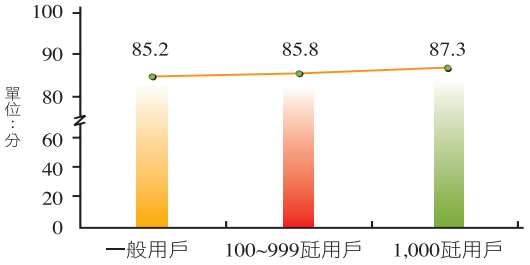
陳情案件盡力溝通

台電公司在處理用戶陳情案件方面也相當用心，2006年度共計2,796件（其中E-mail有2,034件），陳情事項以線路遷移（719件；25.7%）、抄表收費（435件；15.6%）、供電品質（370件；13.2%）及用電申請（256件；9.2%）等案件最多。陳情案件屬於台電公司原因者，只要是法規許可、技術可行者即予改善，如仍有困難除持續研辦外，亦向用戶婉予說明；如屬用戶原因者，也主動向用戶詳細說明原因，盡力協調溝通，解決問題。

新聞揭露84則，媒體採訪76次

台電公司秉持「誠信、關懷、創新、服務」爲經營理念，及資訊透明公開原則，提供用戶多元化的電力需求與服務，2006年對台電公司經營管理、電源開發、輸變電工程、環境保護、工業安全、用戶服務、財務資料、人力規劃等發布84則，新聞稿及澄清媒體錯誤或不實報導16則。另答覆媒體詢問及安排採訪76次。

▶ 2006年度調查結果整體滿意度



各界參觀台電公司561,871人次

2006年全年政府機關、民意代表、各級學校、民間團體及國外人士參觀台電公司各發電廠、變電所、工程處及北部展示館、電力文物展示館、蘭嶼貯存場共計561,871人次。台電公司同仁都熱忱接待，讓大眾更瞭解電力事業，並且將資訊更透明化。

碧海藍天 台電北部展示館

北部展示館位於台北縣萬里鄉，包括庭園面積約7,700坪，地處北部濱海觀光旅遊線上，背山面海，風景秀麗，有寬闊的停車空間，及一流的軟硬體設施，來賓可經由賞心悅目的視聽感受，輕鬆進入核能世界。

從一盞燈到萬家燈 台灣電業文物館

位於台北縣新店新烏路的「台灣電業文物館」，是台灣電業史的縮影，有光與熱千里一線牽的火力發電及輸變電系統介紹，且有以食、衣、住、行、育、樂分類顯示電力帶動台灣工商業成長，創造經濟奇蹟。

Respecting Customers' Opinions - Enhancing Interaction with the Public

In recent years, Taipower has been carrying out corporate transformations in the hope of becoming more of a service provider. In order to reach this goal, apart from carrying out customer satisfaction surveys each year, a mechanism for the handling of complaints has also been established. Such tools are used to gain a greater understanding of the needs of our clients and come up with more appropriate service strategies. In addition, members from different sectors of society are invited to Taipower to visit our power plants and transformer stations so as to give the public a greater understanding of Taipower and its operations.

Taipower regularly employs the services of external public relations companies to use quantitative phone interviews and qualitative focus interviews to carry out customer satisfaction surveys. The results of such surveys are used not only as a reference for improving the company's operations, but also as a way to understand the demands of clients better and provide the best solutions for our customers. Overall satisfaction for 2006 was 86.1% showing that our users are rather satisfied with our services.

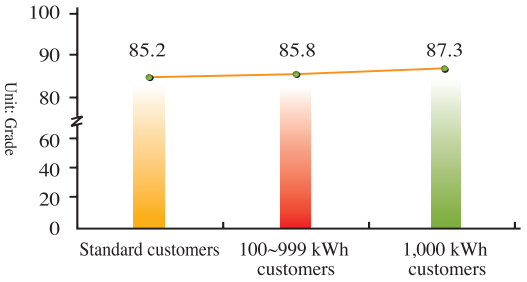
Communicating when dealing with complaints

Taipower has worked hard in the area of customer complaints. In 2006, 2,796 complaints were recorded (of which 2,034 were complaints received via e-mail). Most complaints related to area such as wiring changes (719 cases, 25.7%), bill collections (435 cases, 15.6%), quality of electricity (370 cases, 13.2%) and applications for electricity (256 cases, 9.2%). In cases where the fault was with Taipower, we offered solutions so long as the law permitted them and we had the necessary technology available. In cases where difficulties still existed, apart from trying to reach the bottom of the problem, explanations were also offered to the customers. In cases where the problem was due to problems at the customer end, we also provide detailed explanations and assistance to help customers solve their problems.

84 news releases, 76 media interviews

Based on Taipower's business ideals of 'Sincerity, Care, Innovation and Service', the principles of openness and transparency and providing customers with a diversified range of services, Taipower released a total of 84 press releases about topics such as the company's management, electric resource development, transmittance and transformation tools, environmental protection, industrial safety, customer service, company finances and human resources planning. In addition, Taipower made 16 clarifications in response to mistakes in inaccurate media reports. Taipower also took 76 interviews with the media.

Survey into overall satisfaction 2006



A total of 561,871 visits by the public to Taipower

In 2006, a total of 561,871 visits were made to Taipower by visitors from government organizations, civil representatives, schools of various levels, civil groups and foreign guests visited the various Taipower power plants, transformer stations, engineering stations and the Display Hall of 2nd Nuclear Power Station, the Taiwan Electricity Museum and the Lanyu Storage Plant. Visitors were received warmly by the colleagues at Taipower and were given a deeper understanding of the electric power industry in Taiwan. Information about the company was also made more available and transparent to the public.

Blue sea and sky Display Hall of 2nd Nuclear Power Station

The Display Hall of 2nd Nuclear Power Station is located in Wanli Township. It is approximately 7,700 ping in size and is located at the northern coast scenic and tourism area. Looking off into the mountains and the ocean, the display hall has spectacular natural views, a large parking lot and first class infrastructure. Here, visitors can understand more about nuclear power whilst also observing beautiful natural scenery.

Taiwan Electricity Museum

Located on Xinwu Rd in Taipei County's Xindian, the Taiwan Electricity Museum showcases the history of electric power and its use in Taiwan. The museum features displays of thermal power and electric transmission and transformation systems as well as information on how electricity is related to food, clothing, accommodation, transportation, education and entertainment to show how electricity was behind the growth of the Taiwanese economy and the Taiwanese economic miracle.

2007

公司組織與經營概況

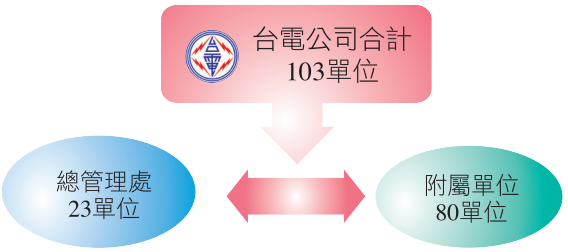
Company Organization and Business Overview

組織概況

台電公司係經濟部所屬國營事業，其組織除依據公司法成立董事會，且置監察人外，並依據「經濟部所屬事業組織設置要點」規定辦理組織申設與調整。

台電公司經理部門設置總經理1人，依據有關法令、董事會決定方針及常務董事會議決議，綜理一切業務並監督所屬人員；置副總經理8人，輔助總經理所指定的業務；置專業總工程師5人，負責主持各項工程業務。

60年來，爲配合業務快速拓展及滿足用戶多元化的用電需求，設置及調整相關組織，其業務屬性



爲規劃與督導性質者，歸屬「總管理處」，包括秘書處、企劃處等23個處室，另因業務需要設有6個跨處室的委員會；其業務屬性偏重執行性質者，歸類爲「附屬單位」。包括發電廠、供電區營運處、區營業處、工程單位及其他附屬單位等80個單位。

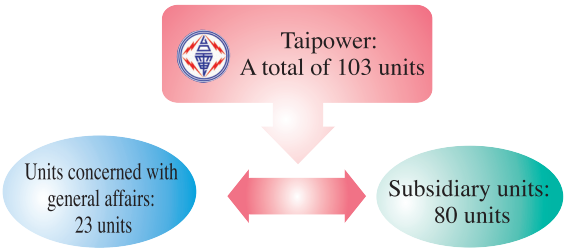
經營管理業務

推動國際標準品質管理系統、建立全面品質管理體系；強化董事會與監察人之功能，並規劃獨立董事、監察人制度，加強內部稽核功能，提升資訊透明度，健全內部控制制度；強化目標體系之建構，透過責任中心制度追蹤執行成果，落實目標管理；鼓勵員工創新提案，包括工作流程改善、管理制度調整、品質強化、經營模式創新等，提升員工創新能力。

Organizational Overview

The Taiwan Power Company is a state - owned under the Ministry of Economic Affairs. Apart from setting the Board of Directors and supervisors in line with the Company Act, organizational establishment and adjustments are carried out in line with the regulations of the Guidelines for the Organizational Establishment of Enterprises under the Ministry of Economic Affairs.

Taipower's management section has one president. According to related laws and regulations, the president carries out the decisions made by the Board of Directors and decisions made at Managing Director Meetings. There are eight vice presidents assisting the president and five chief engineers that are responsible for Taipower's various construction projects.



Over the last 60 years, in order to keep up with our rapidly expanding business and meet the various demands of our clients, we have adjusted our organization into two categories. Departments responsible for planning and supervision are referred to as 'General Affairs Management'. These departments include 23 units such as the Secretariat and the Department of corporate Planning. There are also another six cross-department committees to meet different needs. As for subsidiary Departments, there are 80 units and include power plants, power supply branches, local branches and engineering departments.

Operations and Management

We are promoting the use of quality management system of international standard. We have established a system for overall quality management, and have strengthened the functions of the Board of Directors and supervisors. We have planned an independent director and supervisor system. We have strengthened the internal auditing abilities of Taipower and made our operations and information more transparent. We have established a complete system for internal controls and have strengthened the development of target systems. We have used a responsibility center system to track how tasks are being carried out to fulfill target management. We encourage employees to improve their innovative skills and encourage them to come up with innovative proposals in areas such as work flow improvements, management system adjustments, quality enhancement and business mode innovations.

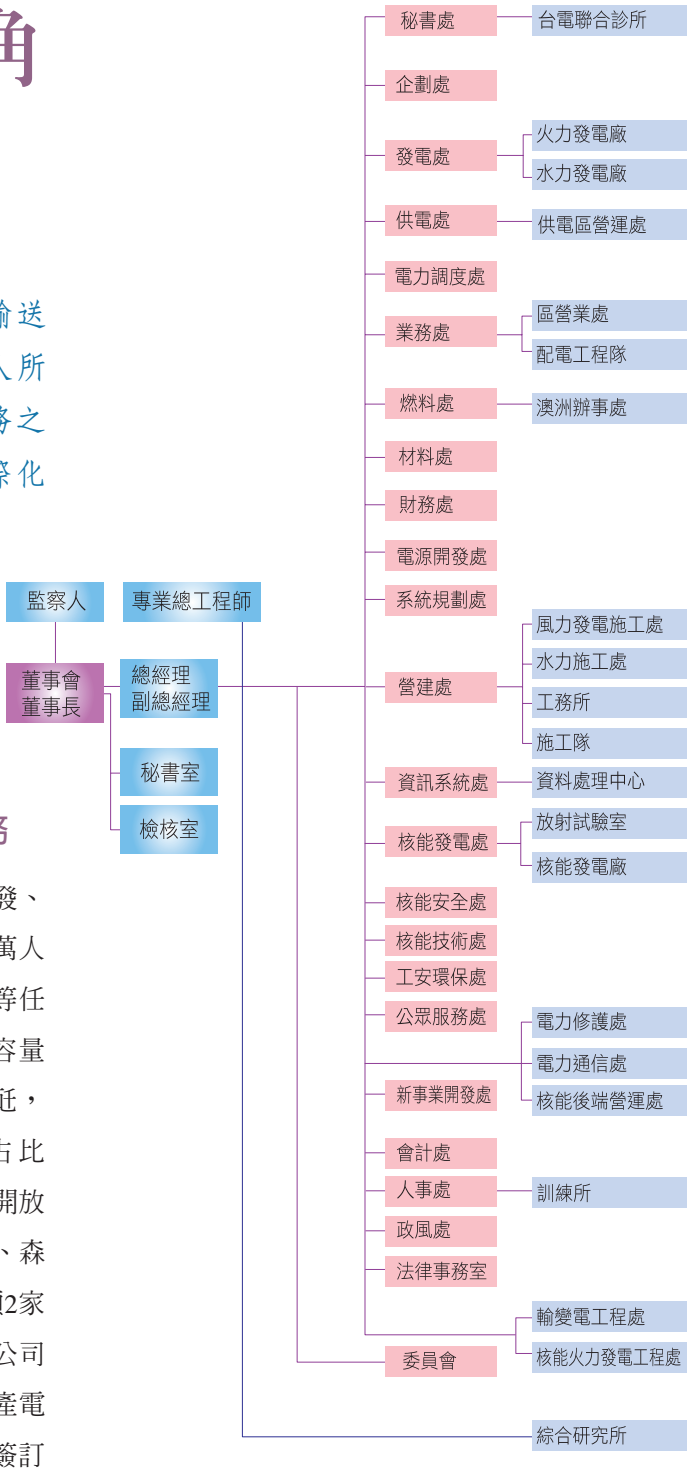
未來電業經營環境將朝自由化、多角化與國際化發展

台電公司負有電力開發、生產、輸送與銷售等義務，供應台灣地區2,300萬人所需之電力，除了發電、輸電、配電業務之外，並多角化經營其他業務，及朝國際化的業務前進。

電業現況：肩負經濟發展與社會服務

根據電業法規定，台電公司須負責電力開發、生產、輸送與銷售等義務，供應台灣地區2,300萬人所需之電力，並肩負國家經濟發展與社會服務等任務。截至2006年底，全台灣地區發電總裝置容量5,022萬瓩，台電公司發電裝置容量爲3,737萬瓩，占比爲74.4%（含民營電廠728萬瓩，占比14.5%）。自1995年政府開放發電業迄今，已經開放麥寮、長生、新桃、和平、國光、嘉惠、星能、森霸及星元等9家火力民營電廠，及卑南、烏山頭2家小水力發電廠加入營運，其所發電力皆由台電公司統一收購；另有近百家合格汽電共生業者亦生產電力售給台電公司，截至2006年12月與台電公司簽訂有購售電合約者之尖峰保證容量爲290萬瓩，這些

▶ 台電公司組織圖



民營電廠與汽電共生業者對全台灣電力系統之供電穩定頗有助益。但是近年，因國際油煤價格高漲，促使台電公司發電成本升高，對未來經營環境影響頗大。

未來電業經營面向

一、自由化

因應經濟自由化與政治民主化之國際潮流與國內政治、社會環境變化之實際需要，經濟部於1991年著手規劃「電業自由化政策」，擬定「電業法修正草案」報行政院轉送立法院審查以來，法案審議期間長達十餘年。上屆（第5屆）立委任期，「修正草案」總算在2002年12月通過一讀，惟又因部分立委有鑑於國外電業自由化失敗案例，可能造成電價飆漲及供電品質波動，連署將該草案交付黨團協商，由於部分立委對電業自由化配套措施是否周全、是否對供電安全與穩定、國家經濟發展、電價以及社會民生產生重大衝

▶ 深澳發電廠

主要服務項目：發電、輸電、配電業務

台電公司2006年電力產品占營業收入的98.18%，為大宗產品，其他僅占小部分，並受限於國營事業法規章，因而部分業務仍在規劃中。

台電公司經營事業範圍包括：

- 經營發電、輸電、配電業務
- 承攬國內外電力工程之設計、施工與監造業務（營造業、建築師業、國內電機、技師業、電器承裝業除外）
- 承攬國內外電業設備之運轉與維護修理製造業務
- 從事國內外電力技術之研究發展、訓練、校正、檢驗及其諮詢顧問業務
- 發電副產物石膏、飛灰之研究發展、銷售與設計業務
- 委託營造廠商興建住宅及商業大樓之出售、出租業務
- 委託營造廠商興建一般工業用地之廠房出租業務
- 管線、鐵塔、電桿、電力設備出租業務
- 經營停車場業務；H703100不動產租賃業
- JZ99050仲介服務業；G801010倉儲業；JA02051度量衡修理業

擊，存有疑慮，截至2005年1月底第5屆立委任期屆滿前仍無法達成共識，須由行政部門重新提案。

經濟部已依行政院指示重新提案，仍以第5屆立委期間通過之一讀版「電業法修正草案」爲架構做適度修正後，於2005年10月13日陳報行政院審議，行政院自2006年2月開始審議，至2006年11月止共計召開17次審查會議。經濟部並希望該草案能於2007年底前完成三讀立法程序。

▶ 台電公司輸電線路架線作業

依據新版電業法修正草案之規劃架構，未來台灣將全面開放綜合電業、輸電業及配電業（公用電業）及發電業（非公用電業）之設立。成立財團法人性質之「電力調度中心」，專責電力系統調度，並受中央主管機關之監督。發電業可以躉售、或自設線路直接供電、或轉供（代輸）3種方式售電，電價不受管制。用戶請求轉供（代輸）或直供之適用範圍，由中央主管機關定之。綜合電業及配電業對營業區域內之用戶，負供電義務，其電價及費率受管制。增訂公用電業設置輸電線路時，有關徵收私有土地、線下補償及對障礙物拆除權之法源依據。設立電價及費率審議小組，審議公用電業之電價及電力調度中心之收費率。增訂電能基金及核能後端營運基金，專款專用於特定業務。增訂公用電業運轉事故

▶ 台電公司經營目標

項目	2006年實績值	2007年目標值	2016年目標值	2007至2016年年平均成長率
裝置容量	3,737萬瓩	3,934萬瓩	5,717萬瓩	4.3%
變電所容量	124,106千仟伏安	151,623千仟伏安	205,428千仟伏安	4.2%
輸配電線路回線長度	326,482回線公里	329,966回線公里	364,887回線公里	1.2%
發購電量	1,966億度	2,071億度	2,971億度	4.2%
售電量	1,816億度	1,919億度	2,769億度	4.3%

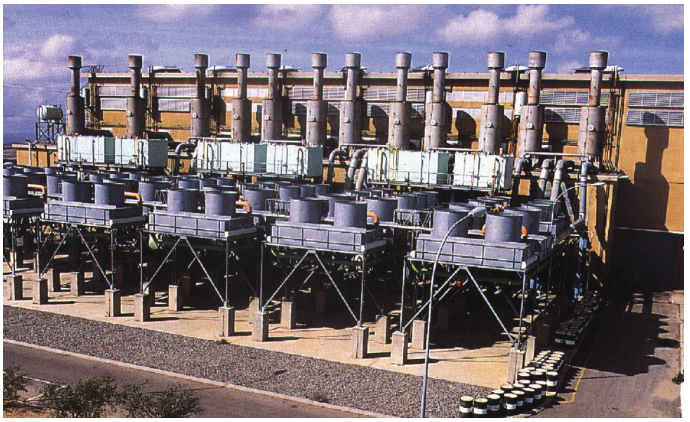
重要投資目標

2006年繼續計畫包括：碧海水力等7個水力發電計畫、大潭複循環等5個火力發電計畫、核能四廠第1、2號發電計畫等計畫。另外5項新興計畫包括：深澳及林口電廠更新擴建、第3期煤輪建造、湖西風力發電及高雄港卸煤碼頭等計畫。

之損失補償規定及自用發電設備售電限制規定等。

二、多角化與國際化業務

短期將以整合電力核心能力爲目標，發展以發、輸、配售電的核心事業及其相關聯產業爲主，再漸次切入上、下游產業，除陸續成立之「維修事業推動小組」、「教育休閒推動中心」與「保全推動中心」外，於2005年成立「宏都拉斯PATUCA3水力發電計畫」推動組織、「廣告事業推動中心」、「不動產事業推動中心」進行多角化新事業開發之推動，逐步開發建立教育休閒、保全、工程維修、廣告、不動產、資訊通信及能源與環境等關聯事業。



▶ 巴哈發電廠（國際合作）

▶ 大潭發電廠

另爲配合企業全球化的發展趨勢，台電公司除藉由與國外機構技術交流互訪，推動與國際電業技術合作關係，拓展交流領域，提升創新能力外，並將積極拓展海外投資與利用策略聯盟機會，擴展事業領域，使台電公司營運範疇向國際市場延伸，增強台電公司的全球競爭力。

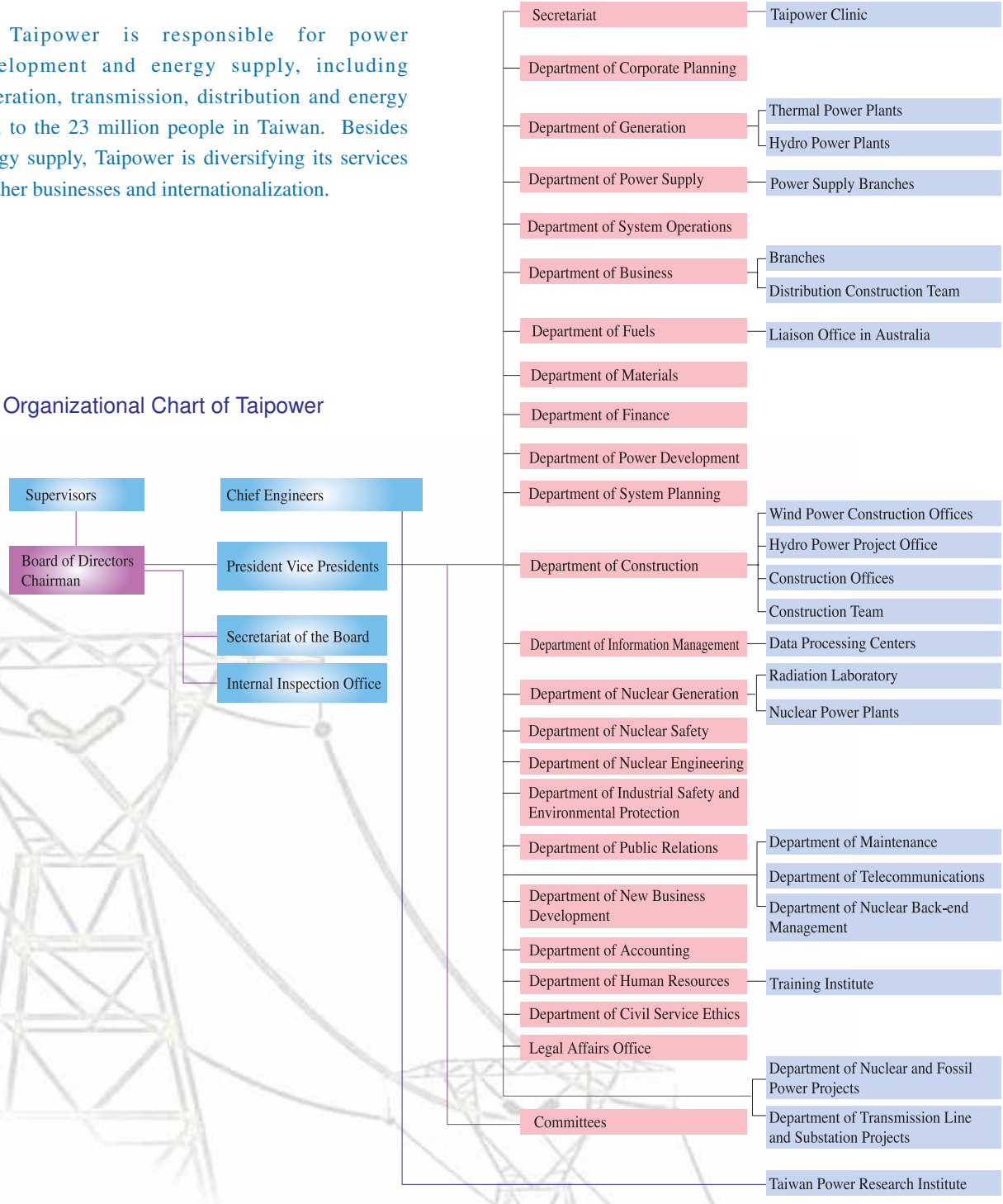
台電公司3年來開發成功之專利

1.複合式極低頻磁場屏蔽之架構（新型280530）
2.儲氫裝置（新型273668）
3.具有較佳導熱特性及電纜管路偵測能力的道路回填材料（新型273578）
4.水產養殖裝置（新型243017）
5.用電端動態雙向負載控制方法及其系統（發明237169）
6.運用需量控制器之電力管理方法及其管理系統（發明190145）
7.具有空調裝置控制器之一控制系統及其對空調溫度之調控方法（發明173893）

Future Developments for the Electric Power Industry will Move towards Liberalization, Diversification and Internationalization

Taipower is responsible for power development and energy supply, including generation, transmission, distribution and energy sale, to the 23 million people in Taiwan. Besides energy supply, Taipower is diversifying its services to other businesses and internationalization.

Organizational Chart of Taipower



Current Situation of the Electric Power Industry: A responsibility for Economic Development and Social Service

According to the Electricity Law, Taipower has an obligation to serve energy supply, including generation, transmission, distribution and energy sales, to the 23 millions people in Taiwan, and to load with the missions of national economic development and social services. At the end of 2006, total installed generation capacity in the Taiwan power system is 50,220MW. Taipower occupied 74.4% of which, 37,371MW, including 7,280MW from independent power producers (IPPs), which accounted for 14.5%. Until the government deregulated the IPP in 1995, nine IPPs with thermal power plants and two small hydro power plants have been established and are in operation. The 9 thermal power plants are Mailiao, Chengsheng, Xintao, Hepin, Guoguang, Jiahui, Xingyuan, where the hydro power plants are Beinan and Wushantou. The energy production from those IPPs is purchased by Taipower based on long-term contracts. As of December 2006, Taipower gave IPPs signed long-term contracts with guaranteed capacity in the peak load. Taipower also purchases the electricity from approximately 100 cogenerators and resell it to end-users.

These IPPs and cogenerators contributed extremely to stable power supply and system reliability in the Taiwan power system. However, soaring up oil and coal price in the international market have resulted in increasing generation cost in Taipower. The rising generation cost will undoubtedly have a large impact on Taipower's operating environment in the future.

Future Business Trends of the Electric Power Industry

1.Deregulation of the power sector

Major Services: Power Generation, Transmission and Distribution

Taipower 's business operations include:

- Power generation, transmission and distribution.
- Design, construction and supervision of domestic and overseas power projects (excluding the services of construction contractor, architect, electrical engineer, electrical technician, and electrical contractor).
- Operation, maintenance, repair and manufacture of electric power machinery and equipment at home and abroad.
- Research and development, training, calibration, testing and other consulting services for power technology.
- Research and development, sales and design of power production by-products, including gypsum and fly ash.
- Sales and leasing of residential and commercial buildings built by contracted constructors.
- Leasing of industrial factories and buildings built by contracted constructors.
- Rentals of pipes, electric towers, electric poles and power equipment.
- Car parking services : H703100 real estate rental business.
- JZ99050 Agency services : G801010 Storage services; JA02051 : Electric meter repairs.

In order to deal with impacts of economic liberalization, political democratization and the changing social environment, the government announced the policy of deregulating the power sector and started the revising work of the Electricity Act in 1991. However, the draft of the Electricity Act, which proposed by the Executive Yuan, had been withdrawn by the Legislative Yuan from 1999 to 2001. The draft of the Electricity Act proposed by the government in 2002 was passed the first reading process in the Legislative Yuan. But in the end of 2005, the draft was not able to be a law under the no consensus among the parties in the Legislative Yuan, which part of legislators worrying about the impacts of deregulation on the electricity tariff, service quality, stability and reliability of power supply, and concerning with impacts of deregulation on national economic development and social life. According to internal regulation of the Legislative Yuan, the draft of 2002 should be returned to the government for resubmission.

Therefore, the Ministry of Economic Affairs (MOEA)resubmitted the new draft of the law on October, 13, 2005 to the Executive Yuan for reviewing based on the market structure of the draft of 2002. The Executive Yuan had finished the first reviewing after 17 times of internal meeting. The MOEA hope that the new draft will be passed by the Legislative Yuan in the end of 2007.

According to the new draft of the Electricity Act Amendment, the government will deregulate the sectors of generation, transmission and distribution and integrated utilities. The generation industries will be defined as non-utilities while the Transmission, distribution and integrated utilities will be defined as public utilities. The Power Dispatch Center will be set up and is in charge of power dispatching and load forecasting under the monitoring of the MOEA. The generation companies can sell the electricity to their consumers through the way of bilateral contract and direct supply and wholesale energy to other generation companies and utilities except transmission utilities. The tariff of generation companies is not regulated by the government. However, the government will continuously regulate the tariffs of integrated, transmission and distribution utilities.

The integrated and distribution utilities have obligation to serve power supply for customers within their business areas. The more regulations are added in the draft, including the land acquisition process from the

▶ Taipower operation goals

Item	2006 actual value	2007 target values	2016 target values from 2007 thru 2016	Average growth rates
Installed capacity	37,371 MW	39, 340 MW	57,170 MW	4.3%
Transformer station capacity	124,106 MVA	151,623 MVA	205,428 MVA	4.2%
Transmission line length	326,482 ckt-km	329,966 ckt-km	364,887 ckt-km	1.2%
Energy Production	196.6 billion kWh	207.1 billion kWh	297.1 billion kWh	4.2%
Energy Sales	181.6 billion kWh	191.9 billion kWh	276.9 billion kWh	4.3%

Major Investment Goals

2006 plans include: Seven Hydro power plant projects such as the plant at Pihai, five thermal power plant projects such as two plans for the Tatan Combined-Cycle Power Plant as well as unit plans 1 and 2 for the Fourth Nuclear Power Station. In addition, another 5 projects are in planning and include maintenance and extensions on Shenao and Linkou power plants, the third stage of the construction of a coal ship, a wind power plant at Huhsi and a plan for a coal unloading dock at Kaohsiung port.

private sector and its compensation, reimbursement under transmission line uses and funds of R&D in electricity and back-end of nuclear waste disposal. The tariffs and regulation fee of utilities and the Power Dispatch Center will be regulated by the government.

2.Diverse, internationalized operations

In the short-term, our goal is to integrate our key power sources. Development will be based around power generation, transmission, distribution and other related areas. Gradually we will start to focus on upper stream and lower stream operations. Apart from establishing 'Maintenance Promotion Groups', 'Education and Leisure Promotion Groups' and 'Security Promotion Groups', in 2005 we established the 'Honduras Patuca 3 Hydro Power Plan' which included the establishment of the 'Advertising Promotion Center' and the 'Real Estate Promotion Center'. This was aimed at allowing Taipower to become involved in a more diversified set of business activities including education, recreation, security, construction and maintenance, advertising, real estate, information and communications.

In order to keep up with the trend of corporate globalization, Taipower has carried out technological exchanges with foreign organizations, promoted international technological cooperation and expanded the scope of international exchange. In addition, we have also improved our innovative abilities and have expanded our business by pursuing overseas investment and strategic alliances. Such efforts have seen Taipower's business become more international and have also increased our international competitiveness.

Patents Successfully Applied for in the Last 3 years by Taipower

1.Combined ultra low frequency magnetic field barrier structure (new type 280530)
2.Device for hydrogen storage (new type 273668)
3.Road backfill material having better heat conductivity and electric cable conduit detection ability (new type 273578)
4.Aquatic breeding device (new type 243017)
5.A user-end, dynamic, two-way load control method and system for same (invention 237169)
6.Electric power management method using demand controller and management system for same (invention 190145)
7.Control system with air conditioning device controller and method for controlling the temperature of air-conditioner (invention 173893)

財務資訊

台電公司2006年營業收入3,893億元，營業支出3,852億元，營業利益為41億元，營業外收入85億元，營業外支出155億元，收支相抵後稅前損失為29億元，較上年度決算盈餘12億元，反盈為虧，虧損增加41億元，主要係國際油氣價格持續上漲，雖台電公司2006年7月起調整電價5.8%，並致力供電經濟調度、管控用人及其他營業費用之支出，但仍發生虧損。

資產、負債及股東權益部分

資產總額爲14,076億元，其中固定資產爲13,197億元，占資產總額之94%；負債爲8,490億元，占資產總額之60%，其中長期負債爲6,533億元，占資產總額之46%；股東權益爲5,586億元，占資產總額之40%，其中股本爲3,300億元，占資產總額之24%。

▶ 簡明損益表（最近3年）

單位：新台幣仟元

項目	2004年	2005年	2006年
營業收入	349,816,104	366,587,773	389,264,170
營業毛利	33,226,697	20,350,350	14,228,757
營業利益	22,703,655	10,072,176	4,107,694
營業外收入及利益	5,298,424	6,384,733	8,478,035
營業外費用及損失	19,534,597	15,230,868	15,479,540
繼續營業部門稅前利益（損失－）	8,467,482	1,226,041	-2,893,811
繼續營業部門稅後利益（損失－）	7,095,074	2,154,347	-355,519
會計原則變動累積影響數	—	—	137,507
本期純益（純損－）	7,095,074	2,154,347	-218,012
每股盈餘	0.22	0.07	-0.01

註：2004至2005年之財務資料係會計師按審計部審定之金額編製；2006年爲會計師查簽數。

▶ 簡明資產負債表（最近3年）

單位：新台幣仟元

項目	2004年12月31日	2005年12月31日	2006年12月31日
流動資產	45,974,918	43,513,531	51,051,757
基金及長期投資	4,249,818	3,628,701	3,587,355
固定資產	1,223,859,637	1,270,990,575	1,319,742,236
無形資產	5,643,779	5,907,505	6,180,702
其他資產	22,679,478	22,458,930	27,043,530
資產總額	1,302,407,630	1,346,499,242	1,407,605,580
流動負債分配前	194,485,910	170,899,313	189,972,679
流動負債分配後	194,485,910	170,899,313	189,972,679
長期負債	585,201,777	611,371,284	653,314,705
其他負債	10,774,543	5,275,456	5,740,228
負債總額分配前	790,462,230	787,546,053	849,027,612
負債總額分配後	790,462,230	787,546,053	849,027,612
股本	330,000,000	330,000,000	330,000,000
資本公積	2,755,447	2,745,035	2,747,268
保留盈餘分配前	67,809,748	69,964,094	69,746,082
保留盈餘分配後	67,809,748	69,964,094	69,746,082
業主權益其他項目	111,380,205	156,244,060	156,084,618
股東權益總額分配前	511,945,400	558,953,189	558,577,968
股東權益總額分配後	511,945,400	558,953,189	558,577,968

註：1.2004至2005年之財務資料係會計師按審計部審定之金額編製；2006年爲會計師查簽數。

2.配合商業會計法及證券發行人財務報告編製準則修訂，自2006年度起原列「資本公積」項下之「土地重估增值準備」、「固定資產漲價補償準備」、「資產增值準備」重分類至「業主權益其他項目」項下之「未實現重估增值」及「固定資產漲價補償準備」科目，以前年度配合做科目重分類。

經營管理應注意事項

2006年營收成長6.19%，惟營業利益率僅1.06%，較上年度2.75%，減少了1.69%，主要係電費收入因售電量增加63億度及2006年7月起電價小幅調整增加223億元，低於國際燃料價格持續上漲，及配合產銷供電量增加68億度，致燃料及購電支出較上年度增加280億元所致。展望未來，能源價格預期仍維持在高檔，經營環境依然艱辛，台電公司仍須加倍努力，致力開源節流降低成本，提高經營效率，並加強核心能力，發展多角化事業，擴大經營利基，以確保公司之永續發展。

Financial Information

In 2006, Taipower recorded 389.3 billion NTD in revenue, 385.2 billion NTD in operating expenses, 4.1 billion NTD in operating profit, 8.5 billion NTD in non-operating income, and 15.5 billion NTD in non-operating expenses, and registered a pre-tax loss of 2.9 billion NTD for the year as compared to 1.2 billion NTD of profit in 2005. The increase in loss by 4.1 billion NTD was attributed mainly to the continued escalation of international oil and gas prices. Whilst Taipower adjusted the price of electricity by 5.8% starting July 2006 and tried to save money and reduce loss, a deficit still occurred.

Assets, Liabilities and Stockholder's Equity

Taipower's total assets were worth 1.4076 trillion NTD in 2006. Of these, fixed assets were worth 1.3197 trillion NTD accounting for 94% of total assets. Liabilities reached 849 billion NTD, 60% of total assets. Of these, long-term debts reached 653.3 billion NTD, 46% of total assets. Stockholder's equity was 558.6 billion NTD, 40% of total assets. Of this, capital stock was worth 330 billion NTD, 24% of total assets.

Simplified Income Statement (Most recent 3 years)

Unit: New Taiwan Dollars in Thousands

Item	2004	2005	2006
Operating Revenue	349,816,104	366,587,773	389,264,170
Gross Profit	33,226,697	20,350,350	14,228,757
Operating Income	22,703,655	10,072,176	4,107,694
Non-operating Income and Gains	5,298,424	6,384,733	8,478,035
Non-operating Expenses and Losses	19,534,597	15,230,868	15,479,540
Profit before income tax from continuing operations (Losses -)	8,467,482	1,226,041	-2,893,811
Profit after income tax from continuing operations (Losses -)	7,095,074	2,154,347	-355,519
Cumulative Effect of Changes in Accounting Principle	—	—	137,507
Net Income (Net losses -)	7,095,074	2,154,347	-218,012
Earnings Per Share	0.22	0.07	-0.01

Note: The statement for 2004 thru 2005 was examined by the Ministry of Audit and reclassified by CPA. Statement 2006 examined by CPA.

Simplified Balance Sheet (Most recent 3 years)

Units: New Taiwan Dollars in Thousands

Item	December 31 2004	December 31 2005	December 31 2006
Current Assets	45,974,918	43,513,531	51,051,757
Long-term Investments and Funds	4,249,818	3,628,701	3,587,355
Fixed Assets	1,223,859,637	1,270,990,575	1,319,742,236
Intangible Assets	5,643,779	5,907,505	6,180,702
Other Assets	22,679,478	22,458,930	2,7043,530
Total Assets	1,302,407,630	1,346,499,242	1,407,605,580
Current Liabilities Before Appropriation	194,485,910	170,899,313	189,972,679
Current Liabilities after Appropriation	194,485,910	170,899,313	189,972,679
Long-term Debts	585,201,777	611,371,284	653,314,705
Other Liabilities	10,774,543	5,275,456	5,740,228
Total Liabilities Before Appropriation	793,462,230	787,546,053	849,027,612
Total Liabilities after Appropriation	79,0462,230	787,546,053	849,027,612
Capital Stock	330,000,000	330,000,000	330,000,000
Capital Surplus	2,755,447	2,745,035	2,747,268
Retained Earnings Before Appropriation	67,809,748	69,964,094	69,746,082
Retained Earnings after Appropriation	67,809,748	69,964,094	69,746,082
Other Types of Owner's Equity	111,380,205	156,244,060	156,084,618
Total Stockholder's Equity Before Appropriation	511,945,400	558,953,189	558,577,968
Total Stockholder's Equity after Appropriation	511,945,400	558,953,189	558,577,968

Notes: 1. The statement for 2004 thru 2005 was examined by the Ministry of Audit and reclassified by CPA. Statement 2006 examined by CPA.
2. According to the revision of Commercial Accounting Law and amended Criteria for the preparation of Financial Reports by Securities Issuers, starting from 2006, items such as 'Revaluation Increment on Fixed Assets' and 'Accumulated Depreciation on Appreciation of Fixed Assets' that used to be calculated under 'Capital Surplus' are now classified under 'E1uity Adjustment'.

Key Points for Management

Taipower's revenue grew by 6.19% in 2006. The operating margin was only 1.06%, down 1.69 percentage points from 2005's operating margin of 2.75%. The main reason for the low operating margin was that, although a 6.3 billion kWh increase in the volume of electricity sold and a slight increase in the price of electricity from July 2006 onwards caused sales to increase by 22.3 billion NTD, this was offset by the continuing rise in international oil prices and the 6.8 billion kWh increase in the volume of electricity supplied by co-generation plants which caused Taipower's expenditure on fuel and the purchase of electricity from co-generation plants to rise by 28 billion NTD compared to 2005. In the future, fuel prices are expected to remain high and the overall business environment will be tough. Taipower must continue to work hard to broaden our sources of income, reduce expenditure and become more efficient. We must also improve our core competencies and get involved in more diversified types of business to increase our markets and guarantee the sustainable management of Taipower.

2007

環境 Environmental 管理 Management

永續的環境願景

電力是經濟發展的原動力，也是維持高品質生活不可或缺的能源。台電公司負責台灣地區電力事業的開發與經營，然而在環境問題日趨受到重視的今日，兼顧環境保護的社會責任，樹立公司綠色與永續的企業形象，更是台電公司不遺餘力邁進的目標。

「環境保護」是項永無止境的工作，不僅須確保這一代生存環境的清新潔淨，也是一項爲後世子孫謀求福祉的使命。台電公司也企盼社會大眾能夠深切瞭解台電公司在推動環境保護工作的誠意，繼續給予支持與鼓勵，讓環境保護工作能夠徹底落實，共創美麗而潔淨的明天。

環境保護政策

在台灣經濟持續成長的現今，目前的用電需求不斷增加，而台電公司在承擔著「滿足用戶多元化的電力需求，促進國家競爭力的提升，維護股東及員工的合理權益」的使命之下，仍秉承「成爲具有卓越聲望的世界級電力事業集團」的願景，除在建構電力安全供應系統上不斷努力精進外，對於落實保護地球環境，維護人體與生態的健康更是不遺餘

力，將對環境保護關切的誠意，擴展到員工及客戶等其他利害相關者的福祉、供應商管理、社區互動、社會公益以及每個受到重視的國際議題。台電公司在推動環境保護所採行之策略內容如下：

環境保護策略

- 符合環保法規，兼顧環境涵容能力。
- 落實環境影響評估，提升電源計畫環境可行性。
- 改善污染防治措施，維護環境品質。
- 擴大公眾參與，加強宣導溝通。
- 注意環境品質，加強景觀規劃。
- 重視生態保育與復育。
- 建立完備環境監測系統。
- 致力敦親睦鄰工作。
- 研訂公害糾紛處理因應對策。
- 培育環保人才，健全環境組織。
- 推動環境管理系統（ISO 14001）。

Vision of a Sustainable Environment

Electric power is the impetus behind the growth of an economy and is also an important resource in assuring a high standard of living. Taipower is in charge of developing and managing electric power in Taiwan. With attention on the environment growing globally, Taipower must continue to establish an image of being an environmentally friendly and sustainable company.

Environmental protection is a never-ending job. Environmental protection is not only aimed at assuring the cleanliness of the environment for this generation, but is also aimed at assuring the welfare of our future generations. At Taipower, we hope that every member of the society can understand our sincerity in the promotion of environmental protection and also hope that our efforts will continue to be supported and encouraged. In this way, we can continue on with our environmental protection work and create a more beautiful, cleaner world for tomorrow.

Environmental Protection Policy

With Taiwan's constant economic development, there is a constant demand for electric power. Taipower has the missions of "Satisfying the diverse needs of our users, increasing the nation's competitiveness and protecting the interests of our shareholders and employees".

Taipower also hopes to "become a renowned, world-class provider of electric power". Thus, Taipower has been working assiduously at improving our safety systems as well as at protecting the environment, the health of people and ecological conservation. In the future, we shall extend the sincerity we have for environmental protection to the welfare of our employees and shareholders, to supplier management, interaction with local communities, public welfare and other major areas. Environmental protection policy measures used by Taipower encompass the following elements:

Environmental Protection Policies

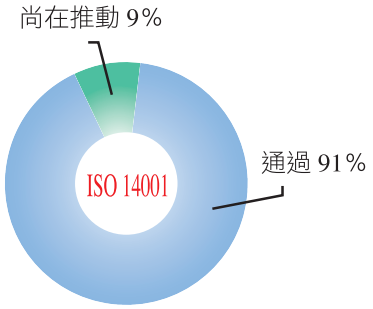
- Formulating policies that meet environmental protection regulations that are also in line with the carrying capacity of the environment.
- Environmental Impact Assessments are carried out to increase the environmental feasibility of our electric plans.
- Improving pollution control measures and maintaining the quality of the environment.
- Increasing public participation and strengthening advocacy.
- Paying attention to the quality of the environment and increasing the planning of tourist sites.
- Paying attention to ecological conservation and restoration.
- Establishing a complete environmental monitoring system.
- Focusing on social work for communities.
- Formulating responses for the handling of environmental pollution disputes.
- Training personnel in environmental protection and setting up complete environmental protection work groups.
- Promoting Environmental Management Standards (ISO 14001)

ISO 14001 環境管理系統

自1996年9月ISO 14001環境管理系統標準公布以來，國內許多注重環境管理與企業環保形象的公民營機構，莫不積極推行ISO 14001。至目前為止，已有1,000餘家公司通過驗證。綜觀ISO 14001的主要精神，即在於鼓勵業者自動自發的持續改善環境績效，進而改善企業體質，提升形象，減少污染、強化競爭力。

台電公司在1997年間即由公司內部工安環保處積極自行輔導各單位投入推動環境管理系統之建立工作，在規劃時必須考量相關單位之特性與其潛在環境衝擊，以擬定執行之優先順序。依此原則，台電公司按發電、工程、修護、供電、營業等不同部門，各擇1個（或數個）單位，率先推動ISO 14001，俟通過驗證後，再陸續推動至其他單位。

▶ 台電公司火力及核能發電廠通過ISO 14001的比例



ISO 14001環境管理系統

ISO 14001是ISO 14000環境管理系列標準中，針對組織環境管理系統的驗證規範，與組織環境管理能力的提升和企業界對外的貿易最為相關。依據統計資料顯示，截至2005年底，全世界通過ISO 14001驗證的廠商已超過11萬家。

台電公司前期自台中、大林及林口發電廠推行ISO 14001，並持續推行至其他單位，至2006年底已有32個單位通過驗證，可謂績效卓越。不僅降低了對環境的衝擊並帶給台電公司相當之環境及經濟效益，進一步提升公司內部環境管理的思維與文化。

建立環境管理系統替台電公司帶來的效益

- 提升公司整體營運績效，降低生產成本，並回饋社會。
- 推動工業減廢，減少各單位廢棄物之產生，相對而言並減少廢棄物處理費用。
- 樹立台電公司維護環境保護及珍惜資源之良好形象。
- 培植各單位環境管理系統種子人員。
- 發掘環保污染問題，進行相關環保技術之改善及研究。
- 藉由持續改善及污染預防，降低環境意外風險，提升環境績效及公司競爭力。

▶ 台電公司已通過ISO 14001驗證之單位一覽表

編號	單位名稱	通過日期	驗證機構	編號	單位名稱	通過日期	驗證機構
1	台中發電廠	1998.10.09	標準檢驗局	17	台北市區營業處	2003.10.24	標準檢驗局
2	大林發電廠	1998.12.14	標準檢驗局	18	第三核能發電廠	2004.01.16	標準檢驗局
3	林口發電廠	1999.05.12	標準檢驗局	19	雲林區營業處	2004.08.06	標準檢驗局
4	協和發電廠	1999.06.01	SGS	20	通霄發電廠	2005.03.31	標準檢驗局
5	第一核能發電廠	1999.07.09	標準檢驗局	21	台東區營業處	2005.04.18	標準檢驗局
6	台南區營業處	1999.11.01	標準檢驗局	22	宜蘭區營業處	2005.08.31	標準檢驗局
7	和平施工處	1999.12.02	SGS	23	東部發電廠	2005.12.29	標準檢驗局
8	高屏供電區營運處	1999.12.03	標準檢驗局	24	鳳山區營業處	2005.12.03	標準檢驗局
9	大觀發電廠	2000.06.22	標準檢驗局	25	輸工處南區施工處	2006.03.24	標準檢驗局
10	南部發電廠	2001.03.02	標準檢驗局	26	輸工處中區施工處	2006.05.19	標準檢驗局
11	興達發電廠	2001.04.13	標準檢驗局	27	輸工處北區施工處	2006.05.05	標準檢驗局
12	第二核能發電廠	2001.07.26	NSF	28	萬榮施工處	2006.08.09	標準檢驗局
13	明潭發電廠	2001.09.13	標準檢驗局	29	台中區營業處	2006.10.04	標準檢驗局
14	抽蓄施工處	2002.12.13	標準檢驗局	30	北南區營業處	2006.10.20	標準檢驗局
15	屏東區營業處	2003.01.09	標準檢驗局	31	嘉南供電區處	2006.12.20	標準檢驗局
16	電力修護處	2003.04.25	標準檢驗局	32	花東供電區處	2006.12.22	標準檢驗局

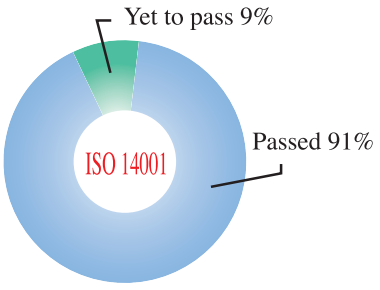
註：1.SGS：台灣檢驗科技股份有限公司
2.NSF：恩是富國際驗證股份有限公司

ISO 14001 Environmental Management Standards

Since the ISO 14001 Environmental Management Standards were announced in September 1996, many public and private organizations in Taiwan and overseas that are concerned with environmental management and environmentally friendly business practices have promoted the use of ISO 14001. At present, there are more than 1,000 companies who have met ISO 14001 criteria and have been accredited. The main goal of the ISO 14001 standards is to encourage business to continue to improve the quality of the environment which will help increase the quality of companies, their image, decrease pollution and also help strengthen the competitiveness of companies.

In 1997, Taipower's Department of Industrial Safety and Environmental Protection started to encourage Taipower's various departments to establish an environmental management system. During the planning of this system, it was necessary to consider the characteristics of each department and the potential shocks this system would cause each department so as to ascertain which departments should implement the system first. Based on this principle, Taipower chose one (or several) units from departments such as power generation, engineering, maintenance, power supply and business to implement the ISO 14001 standards. Once these departments were certified for ISO 14001, the use of these standards was promoted in other units at Taipower.

▶ The proportion of Taipower thermal and nuclear power plants that have passed ISO 14001 accreditation



ISO 14001 Environmental Management Standards

ISO 14001 is part of the ISO 14000 series of environmental management standards and provides an accreditation system for the environmental management systems of companies. ISO 14001 is an integral part of a company's environmental management capabilities as well as a company's trade and interaction with the public. According to statistical information, there were more than 110,000 companies around the globe who have been accredited for ISO 14001 at the end of 2005.

At Taipower, we started promoting ISO 14001 in our power plant in Taichung,Talin and Linkou and gradually expanded ISO 14001 to other units after this. By the end of 2006, 32 units had passed accreditation for ISO 14001. This not only decreased the impact we have on the environment but also made us more environmentally and economically efficient, helped us improve the way we think about environmental management and helped us establish a culture of environmental management.

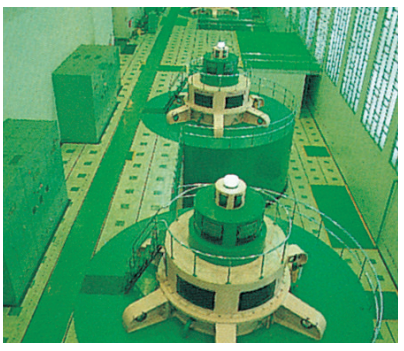
The benefits that environmental management systems have brought Taipower

- Environmental management systems have increased the efficiency of Taipower's overall operations, lowered production costs and have helped Taipower give back to society.
- They have helped in the reduction of industrial waste materials by various units and have also helped decrease expenditure on waste material management.
- Helped establish Taipower's image of being a company who cares about environmental protection and the careful use of resources.
- Helped train staff in the use of environmental management systems.
- Discovered problems with pollution and helped in the research on and improvement of related technical issues.
- The risk of environmental accidents has been lowered through continued improvement and anti-pollution measures. This has helped increase Taipower's environmental efficiency as well as Taipower's competitiveness.

Table of units in Taipower who have been accredited for ISO 14001

Number	Name of unit	Date accredited responsible for accreditation	Organization	Number	Name of unit	Date accredited responsible for accreditation	Organization
1	Taichung Power Plant	1998.10.09	The Bureau of Plant, Metrology and Inspection (BSMI)	17	Taipei City District Office	2003.10.24	BSMI
2	Talin Power Plant	1998.12.14	BSMI	18	3rd Nuclear Power Station	2004.01.16	BSMI
3	Linkou Power Plant	1999.05.12	BSMI	19	Yunlin District Office	2004.08.06	BSMI
4	Hsiehho Power Plant	1999.06.01	SGS	20	Tunghsiao Power Plant	2005.03.31	BSMI
5	1st Nuclear Power Station	1999.07.09	BSMI	21	Taitung District Office	2005.04.18	BSMI
6	Tainan District Office	1999.11.01	BSMI	22	Yilan District Office	2005.08.31	BSMI
7	Hoping Construction Department	1999.12.02	SGS	23	Tungbu (Eastern) Power Plant	2005.12.29	BSMI
8	Kaohsiung/Pingtung Power Supply Branch	1999.12.03	BSMI	24	Fengshan District Office	2005.12.03	BSMI
9	Takuan Power Plant	2000.06.22	BSMI	25	Southern Region Construction, Office, Department of Transmission Line and Transformer Construction	2006.03.24	BSMI
10	Nanpu (Southern) Power Plant	2001.03.02	BSMI	26	Central Region Construction Office, Department of Transmission Line and Transformer Construction	2006.05.19	BSMI
11	Hsinta Power Plant	2001.04.13	BSMI	27	Northern Region Construction Office, Department of Transmission Line and Transformer Construction	2006.05.05	BSMI
12	2nd Nuclear Power Station	2001.07.26	NSF	28	Wanjung Construction Department	2006.08.09	BSMI
13	Mingtan Power Plant	2001.09.13	BSMI	29	Taichung District Office	2006.10.04	BSMI
14	Pumped Storage Construction Office	2002.12.13	BSMI	30	Peinan District Office	2006.10.20	BSMI
15	Pingtung District Office	2003.01.09	BSMI	31	Chiayi / Nantou Power Supply Branch	2006.12.20	BSMI
16	Department of Maintenance	2003.04.25	BSMI	32	Hualien / Taitung Power Supply Branch	2006.12.22	BSMI

Note: 1. SGS stands for SGS Far East Ltd., Taiwan.
2. NSF stands for NSF International Strategic Registrations.



環境成本會計

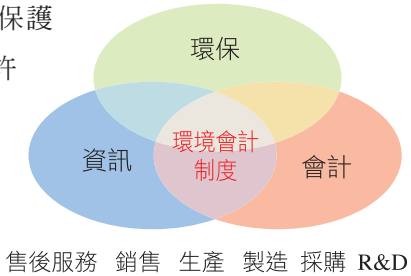
台電公司是國內重要的國營電力事業，社會責任已是台電公司經營中的重要期許。然而無論是空污、噪音、水污染問題甚至廢棄物處理等，都是供電過程中所無法避免的。目前台電公司在環境保護的努力除了在原有的技術及設備的投資外，必須結合有效的環境管理工具及環境管理會計制度以發揮整體環境保護的管理功能，透過完整的環境財務資訊共創台電公司永續發展之榮景。

環境管理會計

環境管理會計（Environmental Management Accounting）又稱做綠色會計，是透過一套有系統的方式，將環境的活動（包含環境保護、工安及衛生）轉換成財務或會計資訊並以此資訊為基礎，透過管理的手段或方法解決或改善環境的問題，以促成企業的永續經營。未來因應各項環保法規限制，環境成本勢必大幅成長，因此，必須要將環境成本釐清，以反映真實的經營成本。

環境的概念一般以企業對外環境所需保護的事項爲主，但從廣義來看應可擴充爲對內員工作業環境所要保護的事項，這也包含了工安及衛生兩個議題，而環境會計爲結合環境及會計之新興知識領域。

過去產業以追求利潤爲目標，著重生產設備及技術輔以經營管理制度，最後以財務資訊呈現經營績效並應用於個別經營議題。而未來產業將面臨各項國際環保規範的壓力，除了追求利潤外更要自我要求至環保的永續經營。環境保護的目標是期許未來能建立起一個美好且永續的社會，所以台電公司除了追求經濟成長之外，也兼顧環境保護工作及環境成本的負擔並承受其環境責任。



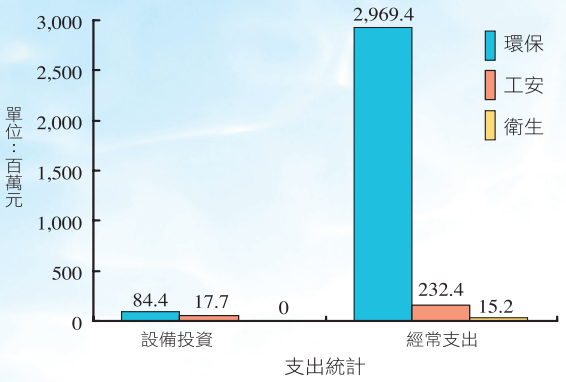
▶ 環境會計制度圖

台電公司環境會計組織

對台電公司而言，環境會計制度引進必須整合其他組織，成爲一專業的團隊小組。以第1座示範興達發電廠爲例，專案小組由公司總處副總經理擔任召集人，底下再結合各相關一級單位，包括：會計處、資訊系統處及發電處，並由工安環保處做爲主辦處，由此縝密的組織可看出，台電公司對於環境會計的重視程度。

台電公司於2003年起陸續施行其環境會計制度，自興達廠爲示範廠之後，陸續推廣至其他8座火力發電廠，並整理出2006年火力發電系統環保工安衛生之設備投資經常性支出的成本統計。

▶ 2006年9座火力發電廠支出統計



支出統計

▶ 近年來台灣電價及消費支出對照表

項目	2001年	2002年	2003年	2004年	2005年	2006年
家庭用每度電平均售價（新台幣元）	2.54	2.54	2.51	2.49	2.51	2.57
消費者物價指數（2005年1至12月=100）	100	99.80	99.52	101.13	103.46	104.08
平均每戶家庭每月用電量（度）	297	305	316	313	328	321
平均每戶家庭每月電費支出（新台幣元）	754	775	793	779	823	825
每戶家庭電費支出占消費支出比率（%）	1.45	1.49	1.54	1.46	1.47	1.92

▶ 9座火力發電廠環保大分類成本統計表

單位：百萬元

大分類＼電廠	林口	深澳	南部	大林	興達	台中	通霄	協和	尖山	合計
E1 企業營運成本	78	36	21	43	784	849	578	124	31	2,544
E2 供應商及客戶之上下游關聯成本	0	1	0	1	4	1	0	0	0	7
E3 管理活動成本	9	8	7	9	11	1	20	14	0	79
E4 研究開發成本	0	0	0	0	2	0	0	3	0	5
E5 社會活動成本	0	0	1	0	4	11	1	2	6	25
E6 損失及補償成本	0	0	0	0	0	0	0	0	0	0
E7 規費稅捐及碳稅等其他費用	17	120	0	114	70	59	0	132	10	522
總計	104	165	29	167	875	921	599	275	47	3,182

▶ 我國與世界各國平均電價比較表

單位：新台幣

住宅用電				工業用電			
國別	平均電價（元/度）	國別	平均電價（元/度）	國別	平均電價（元/度）	國別	平均電價（元/度）
印尼	1.8857	芬蘭	3.8926	挪威	1.3833	西班牙	2.6701
馬來西亞	2.0333	紐西蘭	4.3430	法國	1.6085	瑞士	2.6701
挪威	2.2841	瑞士	4.4716	美國	1.8015	斯洛伐克	2.7616
泰國	2.4836	斯洛伐克	4.5360	馬來西亞	1.8423	新加坡	2.7863
中華民國	2.5933	法國	4.5360	中華民國	1.8573	墨西哥	2.8310
南韓	2.9228	菲律賓	4.6601	印尼	1.9170	香港	2.8642
美國	3.0240	英國	4.7933	紐西蘭	1.9302	匈牙利	3.0883
墨西哥	3.1205	匈牙利	4.8255	南韓	1.9335	葡萄牙	3.1527
新加坡	3.2267	西班牙	4.9542	泰國	2.2051	愛爾蘭	3.1848
捷克	3.4100	奧地利	5.5976	英國	2.2391	奧地利	3.2813
香港	3.7048	葡萄牙	5.7906	波蘭	2.2519	土耳其	3.4422
土耳其	3.7961	愛爾蘭	6.4018	芬蘭	2.2519	菲律賓	3.9459
波蘭	3.8926	日本	6.5111	捷克	2.6058	日本	4.8310

註：1.資料來源：美國The Energy Information Administration（EIA）統計資料
2.我國平均電價係依2006年7月1日電價調整後2006年實績值列示

供電穩定低廉

能源危機後，爲節約用電，家庭用電價採累進率；6年來家庭用每度電價實際變動不大，2006年電價僅小幅增加2.3%，與消費者物價指數6年來上升4.08%相較呈低廉且穩定。隨著家庭用電量之增加，平均每戶家庭每月電費支出自2001年之754元，增至2006年之825元；即使如此，相對於家庭消費支出之增加，2006年每戶家庭電費支出占消費支出比率約1.92%比率仍低，顯示電價穩定，國人用電量雖增加，電費負擔並未相對增加。

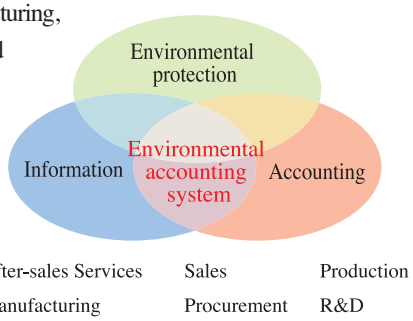
相對於其他國家而言，我國在電力收取費用上，算是較低廉的，但隨著這幾年因國際燃料價格飆漲，燃料支出及購電成本大幅增加，電力成本相對有所波動。

Environmental Cost Accounting

Taipower is one of Taiwan's major state owned enterprises and fulfilling social responsibility is one of Taipower's most important goals. However, air pollution, noise and water pollution are unavoidable during the process of supplying electric power. Apart from Taipower's original investments in technology and equipment, effective environmental management tools and an environmental management accounting system must be established in order to protect the environment. By using complete information on the environment and finances, we will be able to reach our goal of sustainable management.

Theories on the environment are mainly concerned with aspects of the external environment a company must protect. In a broader sense, theories on the environment can include employee working environments as well as industrial safety and health. Environmental accounting is a new knowledge area concerned with the environment and accounting.

Industries in the past were concerned with maximizing profit. They placed emphasis on equipment and technology necessary for production and less emphasis on business management systems. Financial information was only used to gain a glimpse of how a company was performing. In the future, industries will be under pressure from the various international environment standards that are currently in use. Apart from maximizing profit, companies will have to become capable of sustainable management One of the goals of environmental protection is to establish a company capable of having sustainable after sales service, sales, production, manufacturing, procurement and research and development. Therefore, apart from striving for growth, we at Taipower are also working assiduously in environmental protection and is taking responsibility for the effects our operations have on the environment.



▶ Diagram of environmental accounting system

Environmental Management Accounting

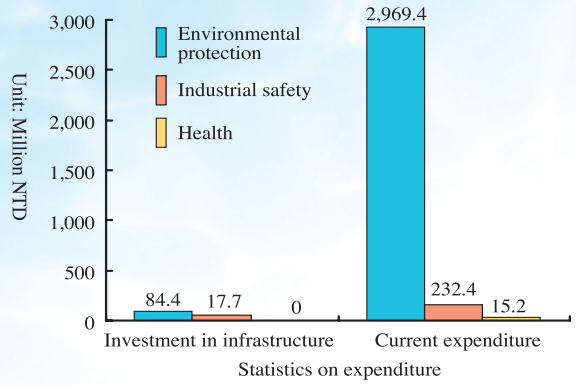
Environmental management accounting is also known as green accounting. Environmental management accounting is a systematic way of turning environment related activities (such as environmental protection, industrial safety and health) into financial or accounting information. With this information as a base, management methods are used to solve environmental problems and obtain sustainable management of a company. In the future, various environmental protection laws will have to be followed. These laws will place certain restrictions on us and greatly raise our environmental costs. Therefore, clear figures on environmental costs must be gained in order to truly understand the real costs of our operations.

Organization of Environmental Accounting at Taipower

At Taipower, the use of an environmental accounting system must be integrated into the whole of our organization if it is to become a professional and effective mechanism. For example, when environmental accounting was introduced at the Hsinta power plant, the convener of the task group for environmental accounting was the vice president of Taipower's department headquarters. The vice president was then responsible for integrating the other first-level departments, including the Department of Accounting, the Department of Information Management and the Department of Generation. The Department of Industrial Safety and Environmental Protection oversaw the whole project.

After first introducing the environmental accounting system in 2003 at Hsinta power plant, the system was gradually introduced to another eight thermal power plants and in 2006, current expenditure for equipment investments in environmental protection, industrial safety and health at thermal power plants was organized.

Statistics on expenditure at nine thermal power plants in 2006 expenditure



Comparison of the price of electricity and consumer expenditure in recent years in Taiwan

Item	2001	2002	2003	2004	2005	2006
Average price of household electricity kWh (NTD)	2.54	2.54	2.51	2.49	2.51	2.57
Consumer Price Index (CPI) (from January 2005-December=100)	100	99.80	99.52	101.13	103.46	104.08
Average monthly use of electricity per household (kWh)	297	305	316	313	328	321
Average monthly expenditure on electricity per household (NTD)	754	775	793	779	823	825
Electricity expenditure and its ratio of on consumer expenditure per household (%)	1.45	1.49	1.54	1.46	1.47	1.92

Statistics of the major costs at nine Taipower thermal power plants

Unit:Millions NTD

	Linkou	Shenao	Nanpu	Talin	Hsinta	Taichung	Tunghsiao	Hsiehho	Chienshan	Total
E1 Business operation costs	78	36	21	43	784	849	578	124	31	2,544
E2 Costs involved in linking upstream and downstream suppliers and clients	0	1	0	1	4	1	0	0	0	7
E3 Managerial costs	9	8	7	9	11	1	20	14	0	79
E4 Research and development costs	0	0	0	0	2	0	0	3	0	5
E5 Social activity costs	0	0	1	0	4	11	1	2	6	25
E6 Losses and compensation costs	0	0	0	0	0	0	0	0	0	0
E7 Official fees and taxes as well as other expenses like carbon tax	17	120	0	114	70	59	0	132	10	522
Total	104	165	29	167	875	921	599	275	47	3,182

Comparison of electricity prices between Taiwan and other countries of the world

Unit: NTD

Household electricity				Industrial electricity			
Country	Average price of electricity (NTD/kWh)	Country	Average price of electricity (NTD/kWh)	Country	Average price of electricity (NTD/kWh)	Country	Average price of electricity (NTD/kWh)
Indonesia	1.8857	Finland	3.8926	Norway	1.3833	Spain	2.6701
Malaysia	2.0333	New Zealand	4.3430	France	1.6085	Switzerland	2.6701
Norway	2.2841	Switzerland	4.4716	United States	1.8015	Slovakia	2.7616
Thailand	2.4836	Slovakia	4.5360	Malaysia	1.8423	Singapore	2.7863
Taiwan	2.5933	France	4.5360	Taiwan	1.8573	Mexico	2.8310
South Korea	2.9228	Philippines	4.6601	Indonesia	1.9170	Hong Kong	2.8642
United States	3.0240	United Kingdom	4.7933	New Zealand	1.9302	Hungary	3.0883
Mexico	3.1205	Hungary	4.8255	South Korea	1.9335	Portugal	3.1527
Singapore	3.2267	Spain	4.9542	Thailand	2.2051	Ireland	3.1848
Czech Republic	3.4100	Austria	5.5976	United Kingdom	2.2391	Austria	3.2813
Hong Kong	3.7048	Portugal	5.7906	Poland	2.2519	Turkey	3.4422
Turkey	3.7961	Ireland	6.4018	Finland	2.2519	Philippines	3.9459
Poland	3.8926	Japan	6.5111	Czech Republic	2.6058	Japan	4.8310

Note: 1.Information Source: Statistics from the Energy Information Administration (EIA), United Sates.
2.Taiwan's average electricity prices are based on the actual 2006 values after the price of electricity was changed on July 1 2006.

Affordable and Stable Electricity Supplies

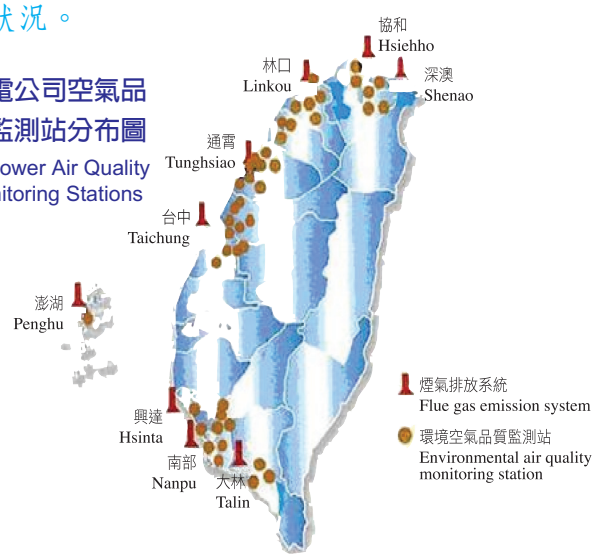
After several energy crises, Taiwan's household electricity prices started to be calculated by a progressive rate. Over the last six years, there has not been a significant change in the cost of electricity kWh. In 2006, the price of electricity increase slightly by 2.3% which is low and stable when compared to the increase in the consumer price index over the last six years. Following increases in household electricity use, the average amount of money spent on electricity each month by households has went from 754 NTD in 2001 to 825 NTD in 2006. Even though households are consuming more, there was only a 1.92% increase in the money spent on electricity by families. This shows that Taiwan's electricity prices are stable and that although users are using more electricity, prices have not risen accordingly.

Compared to other nations, electricity in Taiwan is less expensive. However, electric power costs have fluctuated in recent years due to soaring international fuel prices and large increases in fuel expenditure and the cost of buying electricity.

空氣污染防制

空氣污染防制方面，台電公司分成兩部分：一是環境監測空氣品質，一是有關施工及運轉階段的空氣污染防制。在環境監測部分，台電公司自1988年起陸續完成各火力發電廠附近地區環境空氣品質監測系統，可隨時掌握電廠附近地區之空氣品質狀況。

▶ 台電公司空氣品質監測站分布圖
Taipower Air Quality Monitoring Stations



各監測站所監測到的數值，需記錄下來，做爲觀測空氣品質重要依據。如表「2006年台電公司各火力發電廠附近地區環境空氣品質年報」監測結果所示。

▶ 2006年台電公司各火力發電廠附近地區環境空氣品質年報

地區名稱	測站數量	二氧化硫（ppb）	二氧化氮（ppb）	懸浮微粒PM10（ug／m³）
深澳	4	4.0-11.8	7.8-9.8	45.3-64.3
協和	3	5.7-7.7	10.8-16.6	33.5-63.0
林口	8	3.2-6.2	11.3-16.5	49.7-92.4
通霄	8	3.8-8.4	12.0-16.8	52.2-93.2
台中	11	4.8-8.0	12.2-20.9	49.4-77.8
興達	6	3.2-5.7	16.0-17.9	74.2-79.5
南部	3	8.4-8.6	25.4-27.7	78.0-79.6
大林	6	8.6-11.7	19.8-24.1	76.0-81.1
尖山	3	3.1-4.0	4.6-5.4	44.5-47.9

註：表列之各項監測值係各火力發電廠環境空氣品質監測站所測得年平均值

污染物排放

針對各發電廠本身機組運轉時，產生的一些空氣污染物的排放狀況，台電公司自1988年起於各火力發電廠之煙囪皆裝設煙氣排放連續監測儀器，以確實掌握煙氣中污染物濃度，使污染防制設備在最佳情況操作，將煙氣中污染物排放量降至最低。

▶ 2006年台電公司各火力發電廠空氣污染物年報

電廠名稱	機組	硫氧化物（ppm）	氮氧化物（ppm）	粒狀污染物（mg／Nm³）
深澳	3	271-285	171-179	23-24
協和	4	159-176	110-127	14-26
林口	3	2-41	21-189	3-16
通霄	6	0.3-1.9	16-69	6-10
台中	10	18-43	41-91	3-13
興達	9	0-81	19-170	1-17
南部	4	—	16-21	—
大林	6	0.3-144	27-141	0-15
尖山	12	147-167	192-591	28-41

註：表列之各項監測值係各火力發電廠各機組所測得年平均值

提升技術　降低排放

近年來民眾對於環境空氣品質的要求日益提高，台電公司亦配合逐步進行各項空氣污染排放改善工作，使不僅達到法規的要求，更進一步達到環境影響評估之承諾。並訂定一系列空氣污染防制因應對策，主要可從改變燃料、控制燃燒及裝設燃燒後防制設備等三方面來進行。

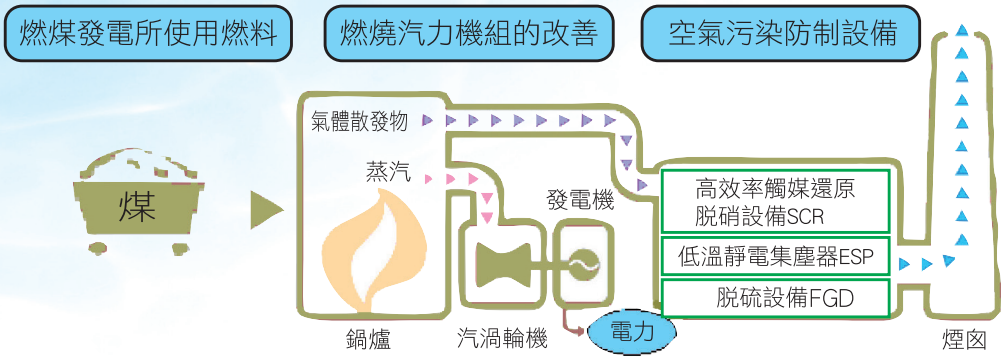
一、粒狀污染物防制對策

以選用低灰份良質燃料，佐以適宜的燃燒方法，且裝置與改善集塵設備（燃油機組另需裝置油灰減容設備）。

二、SOx防制對策

以使用低硫份燃料，並設置煙氣除硫設備（FGD），且增建天然氣機組。

▶ 台電燃煤發電廠空氣污染防制概述圖



三、NOx防制對策

以使用低氮份燃料，並改善燃燒方法（如火上風門、低NOx燃燒器、煙氣再循環燃燒法等），設置高效率之煙氣脫硝設備（如選擇性觸媒還原設備SCR）。

改善績效

在汽力機組空氣污染改善計畫中，至2005年6月共完成5座電廠18部機組之硫氧化物及氮氧化物改善工程，計有11項子計畫，總工程經費約新台幣132億元，在各項工程陸續完工啓用後，對於空氣品質均有明顯改善。

而各電廠經執行各項空氣污染防制改善計畫後，2006年之空氣污染物年平均單位排放量與1989年排放量相較於「台電公司火力發電廠空氣污染改善績效」所示，其結果可清楚顯示良好的改善績效，且各機組煙囪排放之粒狀污染物、硫氧化物及氮氧化物，其排放濃度均比法規容許值低，且逐年均有顯著的下降趨勢。

▶ 林口火力發電廠附近海域

訂定目標、自我期許

每年台電公司訂定其年度目標時，都會落實社會關懷與環境績效，並根據上一年度實際排放量訂定下年度各項空氣污染物排放的目標值，希望能夠提升自我管理能力。

▶ 台電公司火力發電廠空氣污染物排放數據表

環境（空氣污染物）績效						
項目	2001年	2002年	2003年	2004年	2005年	2006年
粒狀污染物（公斤／百萬度）	37	36	48	51	41	34
硫氧化物（公斤／百萬度）	827	601	559	541	496	533
氮氧化物（公斤／百萬度）	661	603	533	494	441	460

爲善盡社會責任，台電公司環保改善指標中，雖粒狀污染物由2001年之每百萬度發電量37公斤降至2006年之34公斤；且遠低於法規容許值116公斤；硫氧化物則由2001年每百萬度發電量827公斤降至2006年之533公斤；氮氧化物由2001年每百萬度發電量661公斤降至2006年460公斤，降幅甚大，顯示台電公司之環保改善決心與努力績效。

▶ 台電公司火力發電廠空氣污染改善績效

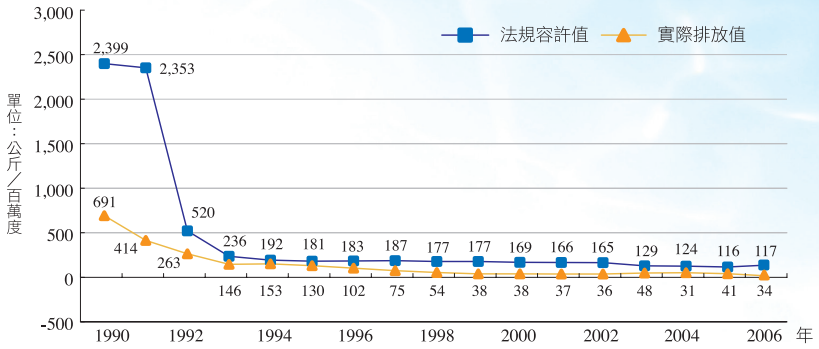
單位空氣污染物排放量（公斤／百萬度）	1989年	2006年	減少率（%）
硫氧化物	6,323	533	91.6
氮氧化物	1,503	460	69.4
粒狀污染物	745	34	95.4

Air Pollution Control

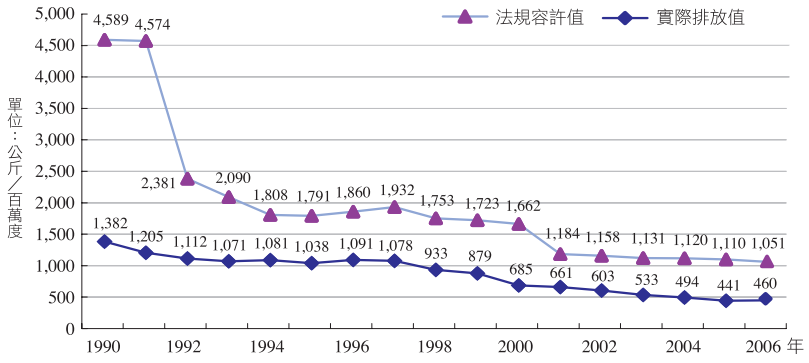
In terms of air pollution, Taipower is doing two things: monitoring the quality of the air and bringing in air pollution controls for construction work and general operations. Starting from 1988, Taipower has completed work on air quality monitoring systems in areas around thermal power plants. This allows us to keep track of the air quality near our power plants at all times.

The figures obtained from our monitoring stations must be recorded because they are an important reference material when looking at air quality. Monitoring results for 2006 are shown in the following table 'Report on environmental and air quality in areas nearby Taipower thermal power plants in 2006'.

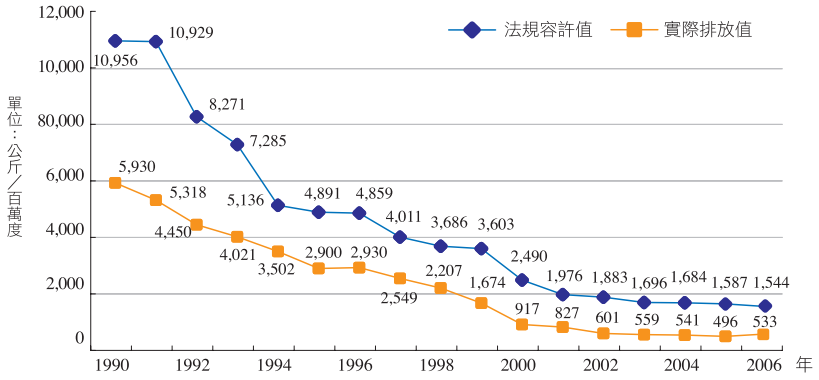
▶ 粒狀污染物排放改善績效



▶ 氮氧化物排放改善績效



▶ 硫氧化物排放改善績效



▶ Report on environmental and air quality in areas nearby Taipower thermal power plants in 2006

Location	Number of monitoring stations	Sulfur Dioxide (ppb)	Nitrogen Dioxide (ppb)	Small suspended particles PM10 (ug／m³)
Shenao	4	4.0-11.8	7.8-9.8	45.3-64.3
Hsiehho	3	5.7-7.7	10.8-16.6	33.5-63.0
Linkou	8	3.2-6.2	11.3-16.5	49.7-92.4
Tunghsiao	8	3.8-8.4	12.0-16.8	52.2-93.2
Taichung	11	4.8-8.0	12.2-20.9	49.4-77.8
Hsinta	6	3.2-5.7	16.0-17.9	74.2-79.5
Nanpu (Southern Plant)	3	8.4-8.6	25.4-27.7	78.0-79.6
Talin	6	8.6-11.7	19.8-24.1	76.0-81.1
Chienshan	3	3.1-4.0	4.6-5.4	44.5-47.9

Note: The various values shown in this table are yearly averages of Taipower's thermal power plants gained from environmental and air quality monitoring stations.

The Emission of Pollutants

From 1988, Taipower installed continuous monitoring apparatuses for flue gas emissions on all chimneys of our thermal power plants in order to measure the amount of pollution in the air. This allowed our anti-pollution equipment to work at the most efficient state and helped us minimize the amount of pollutants we emit into the air.

Report on air pollution by Taipower thermal power plants in 2006

Name of power station	Number of units	Sulfur Oxides (ppm)	Nitrogen Oxides (ppm)	Particle pollutants (mg/Nm³)
Shenao	3	271-285	171-179	23-24
Hsiehho	4	159-176	110-127	14-26
Linkou	3	2-41	21-189	3-16
Tunghsiao	6	0.3-1.9	16-69	6-10
Taichung	10	18-43	41-91	3-13
Hsinta	9	0-81	19-170	1-17
Nanpu (Southern Plant)	4	—	16-21	—
Talin	6	0.3-144	27-141	0-15
Chienshan	12	147-167	192-591	28-41

Note: The various values shown in this table are yearly averages obtained from the generating units at Taipower's thermal power plants.

Improving Technology to Release Emissions

In recent years, the public has been demanding better quality air. Taipower has been working assiduously in this area and has been carrying out various projects aimed at improving air quality. Taipower's measures have not only met related rules and regulations, but have also met the commitments required by Environmental Impact Assessments. We have also established a series of anti-air pollution measures that can be carried out in three ways including changing to different fuels, controlling combustion and installing equipment that can be used to fight pollution after the burning of resources has taken place.

1.Strategy for dealing with Particulate Pollutants

This involves using low ash fuels with suitable combustion methods and improving existing dust collectors and installing new ones (fuel units must also have putty reduction equipment).

2.Strategy for dealing with Sulfur Oxides

This involves using low sulfur fuels with Flue Gas Desulphurization (FGD) equipment and increasing the number of natural gas units.

3.Strategy for dealing with Nitrogen Oxides

This involves using low nitrogen fuels with improved combustion methods (for example dampers, low nitrogen oxide burners, flue gas recycling) and installing high efficiency selective catalytic reduction equipment.

Constant Improvements

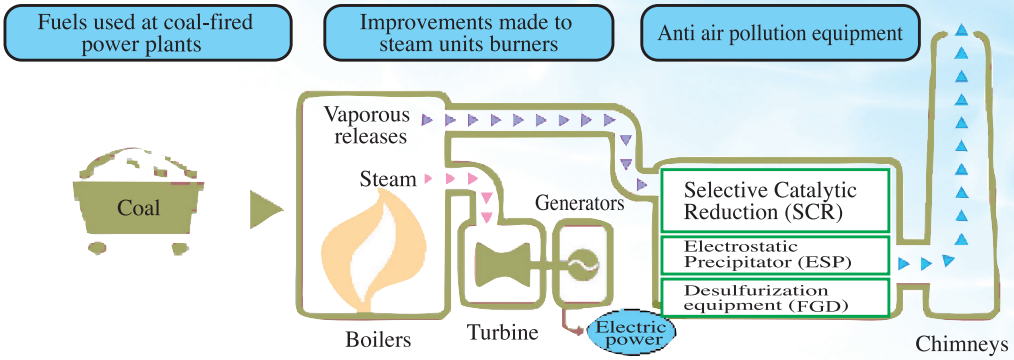
As of June 2005, a project which included 11 sub-projects aiming at improving air quality by reducing emissions of sulfur oxide and nitrogen oxide from 18 steam units at five of our power plants was completed. A total of 13.2 billion NTD was put into these projects. Considerable improvements were made to air quality after the projects were completed and put into use.

After our power plants implemented the various projects aimed at improving air quality and lowering pollution, the average emission of air pollutants per unit in 2006 was better than in 1989 when the Suggestions for Improvements to be made in air pollution at Taipower Thermal Power plants was made. Such results clearly show the improvements we have made at Taipower in lowering pollution and improving air quality. Emission concentration of particulate pollutants, sulfur oxide pollutants and nitrogen oxide pollutants from unit chimneys are all below the amounts allowed by the law. We are also decreasing emissions considerably each year.

Setting up Goals - Our Own Hopes and Wishes

The annual targets set forth by Taipower each year take into consideration care for the society and environmental effects. This year we made target plans to reach for emissions based on actual emission levels from last year. We also hope that we can improve our self management capabilities.

Overview of measures used at Taipower coal-fired power plants to prevent air pollution



Data on the emission of air pollutants by Taipower thermal power plants

Performance in environmental improvement (air pollutants)						
Item	2001	2002	2003	2004	2005	2006
Particulate Pollutants (Kilograms/million kWh)	37	36	48	51	41	34
Sulfur Oxides (Kilograms/million kWh)	827	601	559	541	496	533
Nitrogen Oxides (Kilograms/million kWh)	661	603	533	494	441	460

Improvements made in the emissions of air pollutants by Taipower thermal power plants

Emissions of air pollutants made by units at Taipower (Kilograms/million kWh)	1989	2006	Rate of reduction (%)
Sulfur Oxides	6,323	533	91.6
Nitrogen Oxides	1,503	460	69.4
Particulate Pollutants	745	34	95.4

Amongst the indexes used by Taipower for making improvements and becoming more environmentally friendly, particulate pollutants per million kWh of electricity produced dropped from 37 kilograms in 2001 to 34 kilograms in 2006. This is way below the 116 kilograms allowed by the law. Sulfur Oxide emissions per million kWh of electricity went from 827 kilograms in 2001 to 533 kilograms in 2006. Nitrogen Oxide emissions went from 661 kilograms per million kWh of electricity in 2001 to 460 kilograms in 2006. These are all considerable reductions and clearly demonstrate the resolve Taipower has to improve the environment and become more environmentally friendly, the hard work we have carried out as well as our commitment to meeting our social responsibilities.

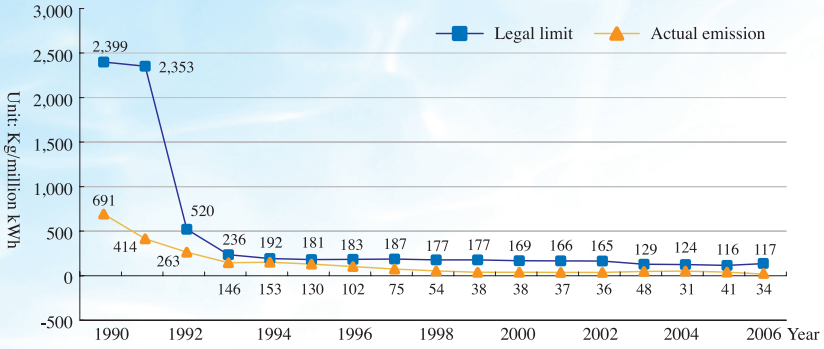
廢棄物減量及資源化利用

在發電及供電過程中難免會產生許多類型的廢棄物，如火力發電產生之煤灰及早期含多氯聯苯變壓器等，必須朝減量及資源化利用規劃，並妥善處理以免影響電廠營運，俾使地球資源永續利用，並確保環境品質。

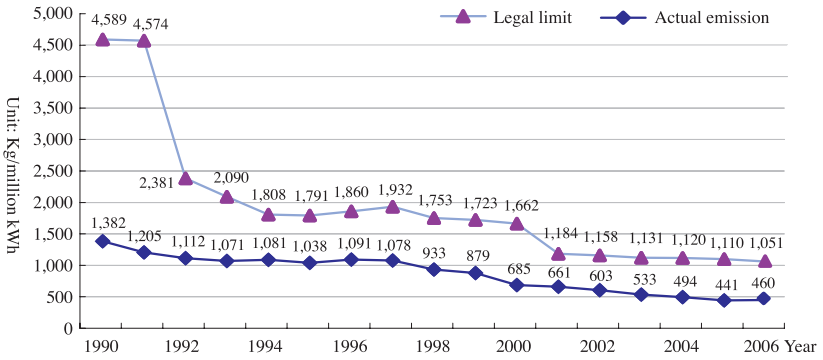
煤灰

台電公司主要廢棄物爲火力發電產生之煤灰，煤灰分爲飛灰及底灰，飛灰因具有卜作嵐（Pozzolanic）特性，可用於取代部分水泥，在國內營建工程上，主要使用於預拌混凝土中，可提升晚期混凝土強度及密度。台電公司更積極籌設「煤灰資源化再利用」組織，以有效推動煤灰資源整合、行銷通路建置、分級處理廠建置及煤灰多元化利用等相關業務，除可避免延伸煤灰處理問題而影響電廠營運，亦可增加公司收益。經過了多年努力，發電產生之煤灰大部分皆已資源化利用，如圖「台電公司歷年煤灰生產量及利用量表」所示。

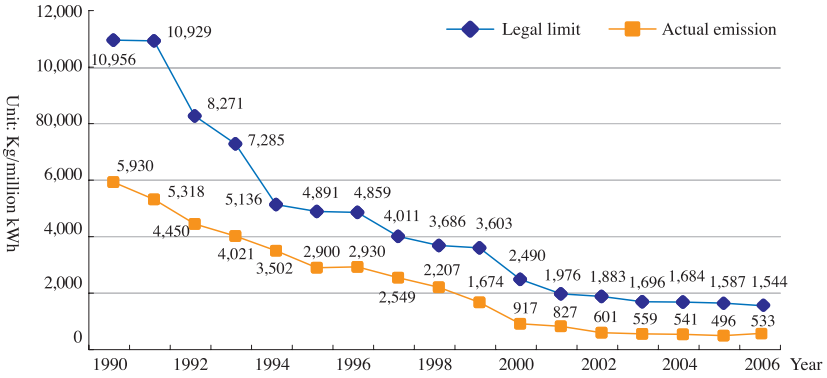
Improvement in Emissions of Particulate Pollutants



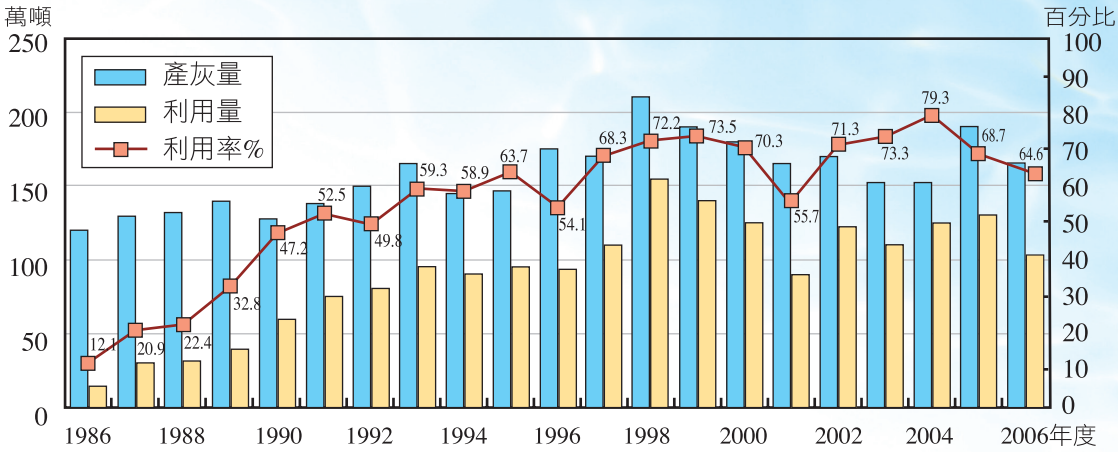
Improvement in Emissions of Nitrous Oxides



Improvement in the Emissions of Sulfur Oxides



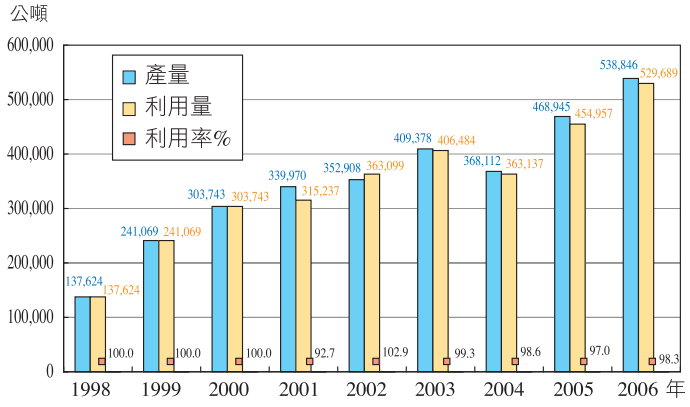
▶ 台電公司歷年煤灰生產量及利用量表



石膏

在燃煤發電廠的煤炭中所含的硫份，經過燃燒後以硫氧化物存在於煙氣中，台電公司爲符合國家環保標準及減少煙氣中硫氧化物排放，以及提升環境空氣品質，在林口、台中及興達等3座主要燃煤火力發電廠皆已裝設排煙脫硫設備，以石灰石粉漿液與煙氣中硫氧化物吸收反應轉化爲石膏，所生產的石膏爲台電公司之副產品，以標售方式提供國內水泥業及防火板材業者使用。

▶ 台電公司歷年來石膏產量、利用量及利用率情形



多氯聯苯廢棄物

台電公司已營運多年，由於1983年以前所採購之桿上型變壓器之絕緣油疑受多氯聯苯污染，其達到使用年限而汰換下來的廢變壓器經檢測程序屬於多氯聯苯廢棄物者，即依環保法規清理，自2001年8月起至2006年底，共計清理出7,228具此類變壓器，總重約1,524公噸，已於2006年底全數清理完畢。

榮獲國家企業環保獎

台電公司為達成資源有效利用及解決環境污染問題，已於1993年成立「減廢輔導小組」規劃並推動工業減廢及參選各項環保評選，其中2006年興達發電廠由於積極從事環境管理制度落實製程改善污染預防節省能源及減廢工作成效卓越，榮獲環保署「第15屆中華民國企業環保獎」，並獲總統召見及勖勉。

Waste Reduction and Resource Reutilization

It is inevitable that various types of waste will be produced during the process of power generation and supply, such as the coal ash produced in thermal power plant and, in the past, transformers that contained PCBs. It is thus vitally important to implement effective planning for waste reduction and recycling, and to implement them in such a way that power plant operations are not adversely affected. By doing so, an important contribution can be made towards ensuring the sustainability of the earth's resources, and towards the maintenance of environmental quality.

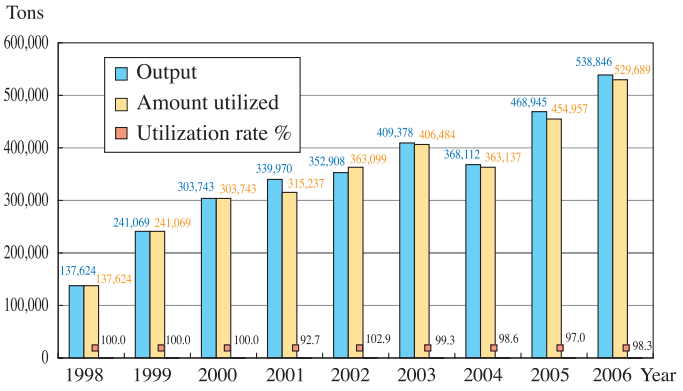
Coal Ash

Coal ash from thermal power plant is a major component of Taipower waste stream. Coal ash comprises fly ash and bottom ash. Fly ash can be used as a partial substitute for cement because of its pozzolanic properties. In the construction industry in Taiwan, fly ash is used primarily in ready-mixed concrete to enhance the strength and density of concrete in the late stage. Taipower has set up an ash-recycling program to push for more effective integration of ash resources, establishment of marketing channels, establishment of processing plants, and the development of a wider range of uses for coal ash. The objectives of this program are two-fold: to prevent the coal ash disposal problem from undermining the operation of power plants, and to tap new sources of income for the company. After many years of effort, the vast majority of the coal ash produced by Taipower's coal-fired power plants of Taipower is already being recycled as illustrated in the figure - Taipower Coal Ash Generation and Reutilization over the Years.

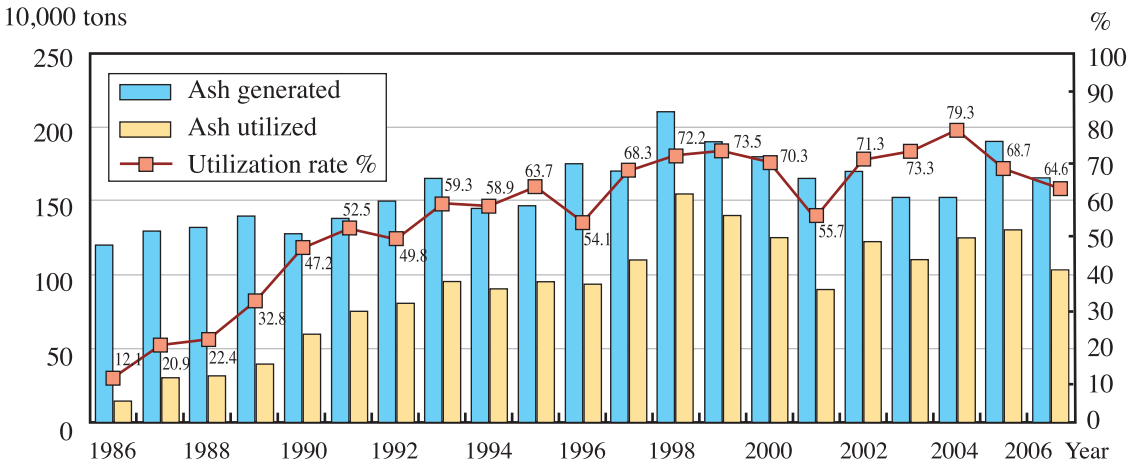
Gypsum

The sulfur contained in the coal used in coal-fired power plants is converted into sulfur oxide during the combustion process, and is then emitted with the flue gas. To comply with the national environmental standards, reduce the emission of sulfur oxides in flue gas, and improve air quality, Taipower has installed exhaust desulfurization facilities at three major coal-fired power plants, namely Linko, Taichung and Hsinta, which use

▶ Taipower's Gypsum Output, Amount Utilized and Utilization Rate Over the Years



▶ Taipower's Coal Ash Generation and Reutilization Over the Years



limestone slurry to transform sulfur oxides in flue gas into gypsum. The gypsum by-product produced by Taipower is sold to local cement makers and fire resistant board makers.

PCB Waste

Over the concern that insulating oil in pin-rod type transformers purchased by Taipower prior to 1983 might be contaminated with PCB, Taipower would test all retired transformers for the presence of PCB and clean them up according to the prevailing environmental regulations if PCB is found. Between August 2001 and the end of 2006, we have cleaned up 7,228 PCB-contaminated transformers that weigh in total 1,524 tons.

National Enterprise Environmental Protection Award

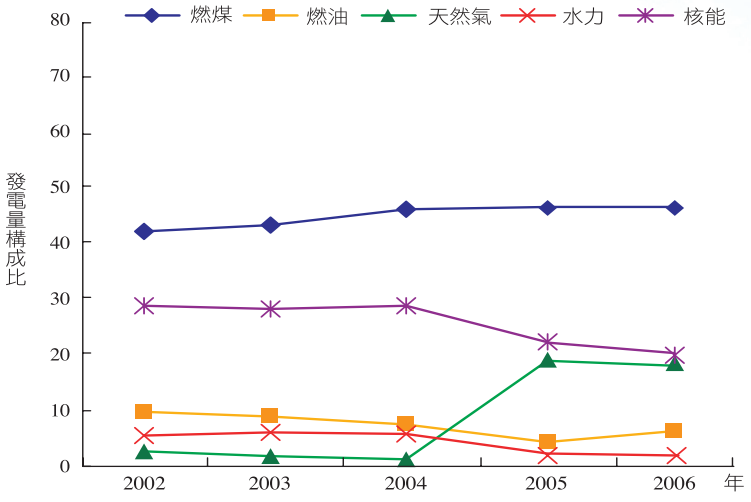
In the efforts to achieve effective utilization of resources and address the environmental pollution problem, Taipower set up a Waste Reduction Advisory Team in 1993 to plan and promote industrial waste reduction and participation in environmental contests. In 2006, the Hsinta Power Plant was one of the recipients of the Environmental Protection Administration's 15th Annual Enterprises Environmental Protection Award of the Republic of China, in recognition of its impressive achievements in environmental management system implementation, process improvement, pollution prevention, energy conservation and waste reduction. The Hsinta Plant's managers had an audience with the President, who commended them for their efforts.

▶ 興達火電廠廢水質再處理

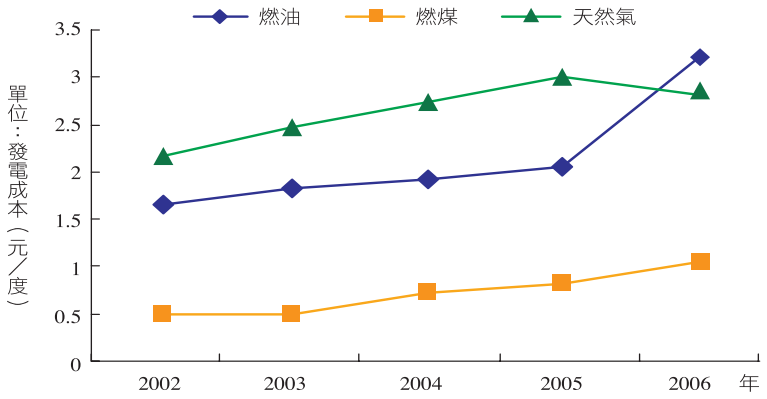
能源與資源使用

依據我國能源統計手冊顯示，自1990至2004年間，台電公司之燃氣發電裝置容量已由全國總發電裝置容量之4.20%提升至14.95%，成長率將近達260%，同期燃油及核能發電比例則呈現明顯下降趨勢，而燃煤及水力發電之比例則相對呈現小幅降低的狀態。

▶ 台電公司2002至2006年各類型發電結構占台電公司總發電裝置容量比例圖



▶ 台電公司2002至2006年燃煤、燃油及燃氣之燃料發電成本變化趨勢圖



燃料價格對電價

依據台電公司2006年度成本分析結果顯示，在發電成本中燃料成本占比即高達77.74%，顯示燃料價格對電價具有顯著影響。由於不同發電結購之發電成本差異性極大，因此往往會成爲後續進行發電結構配比調整時最主要之參酌因子。

以燃煤、燃油及燃氣等化石燃料爲例，台電公司在僅考量燃料使用成本下，燃煤、燃油及燃氣之發電成本依據計算結果，分別爲1.03元／度、3.32元／度、2.89元／度（2006年資料），顯示燃氣發電成本仍明顯高於燃煤發電。

帶頭推動節約能源

2006年總發購電量爲1,965.7億度，較2005年成長3.6%。抽蓄水力發電量爲39.0億度，占2.0%；火力發購電量爲1,500.1億度，占76.3%；核能發電量爲383.2億度，占19.5%； 再生能源發購電量爲43.3億度，占2.2%；其中購自託營水力、汽電共生、民營電廠等電量爲477.2億度，占24.3%。而再生能源部分更是較往年提升了4.9%，可以見得再生能源對於未來發電的重要性。

台電公司做爲全國最主要供電公司，自有義務與責任負起電力供應穩定與節約用電教育推廣之責任，爲落實公司內部節約能源推動，特訂定「推行節約能源實施要點」及「節約能源考核要點」，按月加以追蹤管控用電、用水、用油情形，對於年度考核績優單位予以表揚激勵，並透過「節能日」活動深化全體員工節能意識，營造公司節能文化。2006年全年用電節約1.04億度，用油節約14.45萬公升，用水節約43.57萬度，合計節省能量2.60萬公秉油當量，節能金額爲0.72億元。

能源供應端管理

台電公司已採行機組效率提升策略，除維持各機組最佳化運轉外，新設機組採用最佳可行技術及配合機組更新，提升發電效率。

需求面管理

另外，台電公司對外亦積極推廣節約電力措施，藉由「需求面管理」之方式降低全國電能消耗，目前採取作法有：

- 舉辦大型及各項節約能源活動，吸引群眾聚焦。
- 編印各項節約宣傳品，廣爲傳發。
- 製作平面、電子宣傳廣告，利用大眾媒體宣導。
- 在各營業處設置節約能源展示場所。
- 設置節約用電免費諮詢專線，提供專業諮詢服務。
- 加強100瓩以上用戶訪問服務，主動提供專業諮詢服務。
- 勸導功率未達80%用戶改善其設備。

雨水回收再利用

台灣地區年平均降雨量達2,500公釐，屬多降水地區，惟因時空分配不均，豐枯懸殊，致可利用之河川逕流僅約18%，且因人口稠密產業發達，平均可用水量僅達世界平均的七分之一，屬相對缺水國家。

而雨水貯留利用爲替代水源的一種，由於不需消耗能源、且無污染、易取得、無水權爭議、水質佳，是一種經濟又實用的水源開發模式。雨水貯留主要是以屋頂及地面集流方式，可提供家庭生活供水之補充水源、工業區之替代用水、防火貯水及降低城市洪峰負荷等多目標的系統。

廢水零排放

有鑑於水資源對人類生活之重要性，台電公司一直秉持節約用水理念，並追求「廢水零排放」之目標，積極推動雨水收集、廢水回收再使用工程，針對廠區雨水收集再利用及各項擬排放廢水之性質，分析研究合適之回收再利用對象，以減少發電廠自來水使用量。台電公司在2004年底訂定2005年度總目標計畫時，已將規劃設置完成雨水回收設施列入在其中，且配合政府政策在2005年進行「台中及通霄發電廠雨水回收設施規劃」（包含廠區周界及宿舍區之雨水，並與既有之生活污水及事業廢水系統做整體規劃），新興工程（如大潭電廠）亦自2005年開始實施雨水回收，並對興達發電廠已完成之雨水回收設施進行成效評估工作。

以興達電廠爲例，2006年該廠機組廢水場廢水回收率達76.84%（每日約350噸，不含FGD廢水場），生活污水場廢水回收率達86.65%（每日約37噸），擴大廠區雨水收集每日平均約418噸，機組廢水處理後回收及汽力機組鍋爐沖放回收再利用量合計222,930噸，占自來水用量之8.89%。

節約用水績優肯定

興達發電廠在節約用水工作努力，獲得2003年經濟部水利署節約用水績優單位肯定，不僅是鼓舞台電公司在節約用水工作上的士氣，更對於往後之廢水回收再利用工程，及雨水回收再使用的執行成果給予高度的期待。

效益分析

一、機組廢水回收投資費用：8,114,285元（完成日期：2000.02.10）。2006年回收水量：127,890噸，2000至2006年累計回收618,975噸。

二、生活用水回收投資費用：500,000元（完成日期：2003.03.28）。2006年回收水量：13,616噸，2003至2006年累計回收36,387噸。

三、雨水回收投資費用：41,523,810元（完成日期：2002.12.15）。2006年回收水量：155,753噸，2004至2006年累計回收362,577噸。

四、2006年鍋爐沖放水回收95,010噸。

五、節省成本分析（自來水以每噸11.5元計算）

節水項目	2006年度績效（噸）	節省水費（元）
機組廢水回收	127,890	1,470,735
生活用水回收	13,616	156,584
雨水回收	155,753	1,791,160
鍋爐沖放水回收	95,010	1,092,615
合　計	392,269	4,511,094

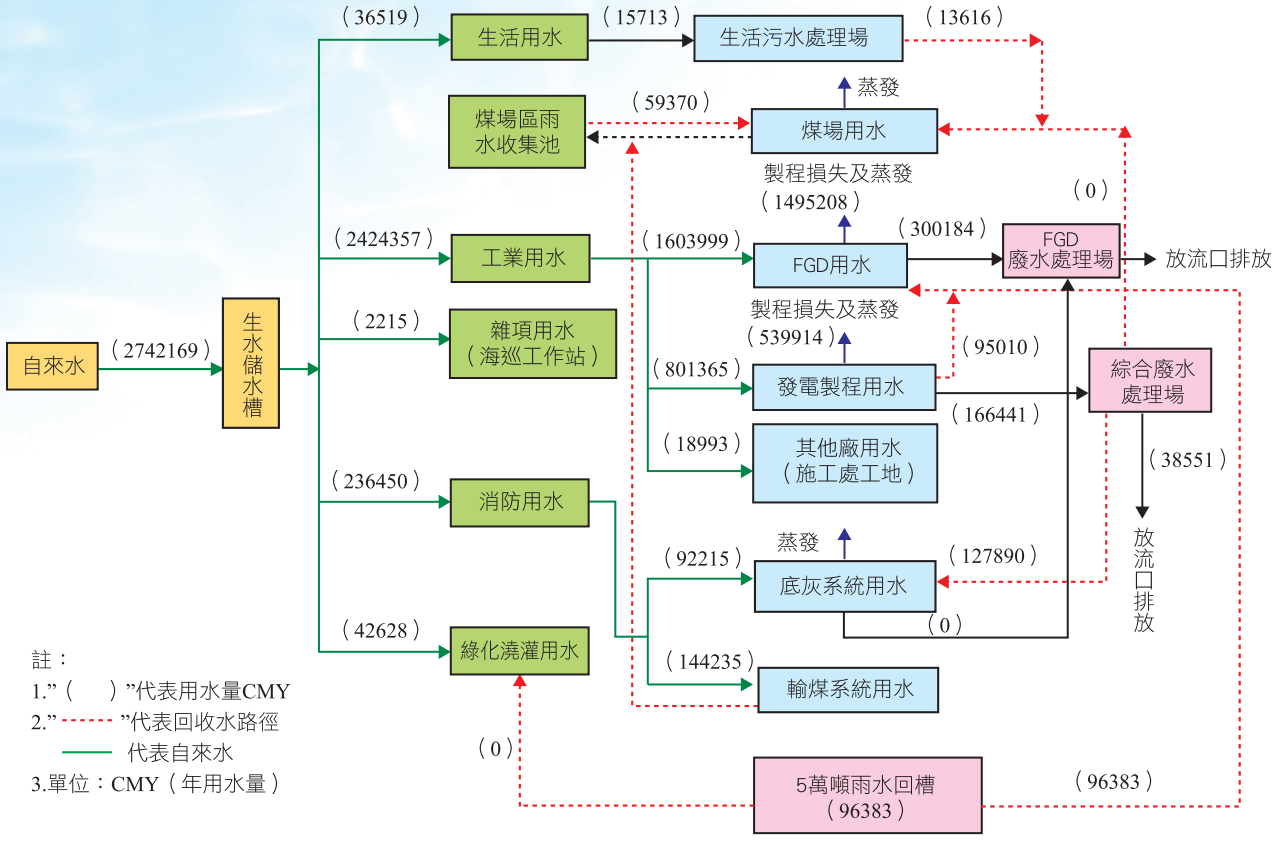
▶ 興達發電廠的節水效能

實施方案	用水量			經濟效益		
	改善前（M³／月）	改善後（M³／月）	節省水量（M³／年）	節省金額（元／年）	投資金額（元）	回收期（月）
廢水回收再利用	294,000	240,000	648,000	7,452,000	8,614,285	13.8
雨水回收再利用（預估）	–	–	584,000	6,716,000	41,523,810	74.2

註：1 US$ ≒ 34 NT$

▶ 林口發電廠環境綠化

▶ 興達發電廠2006年用水平衡圖



節約用水

台電公司興達發電廠2006年節水設備主要改進效益及管理分為下列幾項：

- 鍋爐排放水回收再利用，做為鍋爐排煙脫硫處理設備（FGD）用水，節省自來水524噸／日。
- 充分收集機組廢水、綜合廢水及複循環廢水，每日產出456噸，處理後均予以回收，供給燃煤機組鍋爐底灰出灰系統（SSC）使用（252噸／日），餘204噸規劃送煤場儲水池，多層次回收再利用。
- 生活廢水回收再利用，供給煤場噴水37噸／日。
- 雨水收集設備已完成，預估平均每日節水426噸／日，供鍋爐排煙脫硫處理設備用水、煤場噴水、綠化及廁所用水。
- 規劃設置管溝及蓄水槽，全面收集廠區雨水，使用自動化控制系統，充分發揮節省自來水功效。
- 燃煤機組鍋爐底灰出灰系統（SSC）回收水槽，設置儀控保護裝置。

Energy and Resources Use

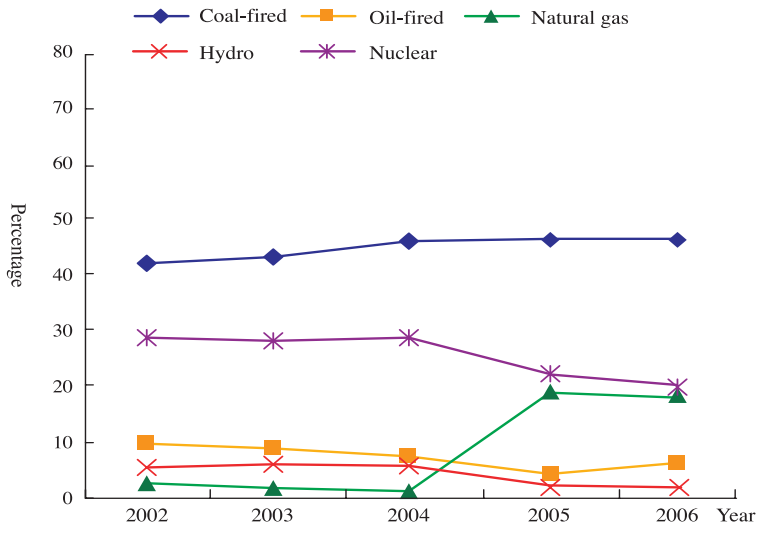
According to Taiwan's Energy Statistical Data Book, the installed capacity of Taipower's gas-fired generators rose from 4.20% of nationwide power generation capacity in 1900 to 14.95% by 2006, growing nearly 260%. Over the same period of time, the shares of oil-fired and nuclear power generation declined markedly, while the shares of coal-fired and hydro-power generation dropped modestly.

Fuel Prices vs. Electricity Price

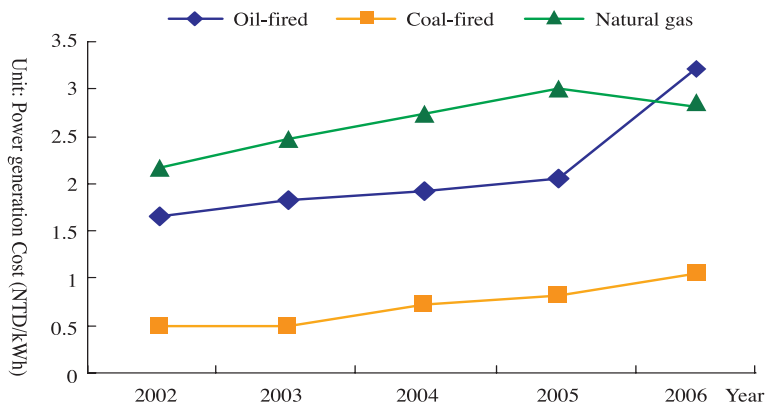
According to Taipower's cost analysis in 2006, fuel cost accounted for 77.74% of the cost of power generation, suggesting the conspicuous influence of fuel prices over the price of electricity. Given that the costs of power generation vary significantly, cost factor becomes a prime consideration in the subsequent adjustment of power generation structure.

Take the example of fossil fuels, including coal, oil and natural gas, the costs of power generation by taking into the fuel cost alone for Taipower were NT$1.03/kWh, NT$3.32/kWh, and NT$2.89/kWh for coal, oil and natural gas respectively in 2006, indicating the considerable high costs of gas and oil-fired generation as compared to coal-fired generation.

▶ Power Generation of Various Forms as a Percentage of Total Installed Capacity, 2002~2006



▶ Cost Trends of Coal-fired, Oil-fired and Natural Gas Power Generation, 2002~2006



Leader in Energy Conservation Efforts

Taipower generated and purchased altogether 196.57 billion kWh of electricity in 2006, an increase of 3.6% from 2005. Pumped Storage generation amounted to 3.9 billion kWh or 2.0% of the total; thermal generation reached 150 billion kWh or 76.3% of the total; nuclear generation amounted to 38.32 billion kWh or 19.5% of the total; renewable energy amounted to 4.33 billion kWh or 2.2% of the total; purchases from hydro, cogeneration and IPPs combined amounted to 47.72 billion kWh or 24.3% of the total. The share of renewable energy increased by 4.9% from the year before, indicating its potential and importance in future energy production.

As Taiwan's leading power supplier, Taipower has the obligation and responsibility for stable power supply and public education of energy conservation. In promoting internal energy conservation, Taipower has established the "Guidelines for Promotion of Energy Conservation" and "Guidelines for Review of Energy

Conservation" to track the monthly power, water and oil consumptions, and openly commends departments with outstanding performance each year. Taipower also raises employees' awareness to energy conservation through events such as "Energy Conservation Day" to build a corporate culture of conservation. For 2006, Taipower conserved 104 million kWh of electricity, 144,500 liters of oil, and 435,700 tons of water, that in combination was equivalent to 26,000,000 liters of oil and saved NT$72 million in energy expenses.

Energy Supply Management

Taipower adopts a generator efficiency enhancement strategy. Aside from keeping generating units in optimum working condition, Taipower procures new units that employ the best available technology and upgrades existing units to enhance the generation efficiency.

Energy Demand Management

Taipower also actively promotes public awareness and acceptance to energy conservation in the hope to reduce energy consumption via "demand-side management." Actions currently taken by Taipower include:

- Holding large energy conservation events to catch the attention of the public.
- Widely distributing printed promotional materials on energy conservation.
- Producing printed and electronic ads and propagating through mass media.
- Setting up energy conservation showroom at business outlets.
- Setting up toll-free energy conservation hotline to provide professional counseling service.
- Stepping up visit to large energy users to provide professional counseling service.
- Advising users with less than 80% power to upgrade their equipment

Rainwater Recovery

Precipitation in Taiwan averages 2,500 mm a year, which is considered abundant. But due to uneven distribution of rainfall in both time and space, usable river runoff amounts to only 18%. Given Taiwan's dense population and well-developed industrial installations, the country's average available water yield is only one seventh of the world average, which turns Taiwan into a water stressed country.

Rainwater retention and utilization is a substitute water source that does not consume energy. It is also pollution-free, easy to access, free of water right dispute, and provides fine quality of water. Overall, it is an economical and practical water development option. The rainwater system collects water from rooftops and grounds. It is a multi-purpose system that can replenish water supply for households, industrial zones, and fire fighting, and help reduce the peak load of cities during a flood.

Zero Discharge of Wastewater

Being conscientiously aware of the importance of water resources, Taipower has been committed to the efforts of water conservation and pursuing the goal of "zero discharge of wastewater." In action, Taipower embarks on rainwater collection and wastewater reutilization projects, including collecting rainwater in plant compounds and analyzing wastewater suitable for recovery to cut down the use of tap water for power plant operations. Taipower's 2005 target plan formulated at the end of 2004 also included the installation of rainwater recovery facilities, the Taichung and Tunghsiao Power Plants Rainwater Recovery Facilities Plan (proposed under government directive, which entails integrated planning for the recovery of rainwater around plant compound and in dormitory area, and domestic and industrial water), implementation of rainwater recovery at new establishment (e.g. Datan Power Plant), and evaluation of installed rainwater recycling facilities at Hsinta Power Plant.

Take the example of Hsinta Power Plant, in 2006, its wastewater treatment system for generating units recycled 76.84% of wastewater (about 350 tons a day, excluding FGD wastewater), and its domestic wastewater treatment system recycled 86.65% of wastewater (about 37 tons a day). Rainwater collected in the plant compound averaged 418 tons a day. The water recycled from generating units and boilers totaled 222,930 tons, representing 8.89% of the plant's water consumption for the year.

Benefit Analysis

1. Investment in generating unit wastewater recovery equipment: NT$8,114,285 (date completed: 2000.02.10); amount of water recycled in 2006: 127,890 tons; cumulative amount of water recycled from 2000 to 2006: 618,975 tons.
2. Investment in domestic wastewater recovery equipment: NT$500,000 (date completed: 2003.03.28; amount of water recycled in 2006: 13,616 tons; cumulative amount of water recycled from 2003 to 2006: 36,387 tons.
3. Investment in rainwater recovery equipment: NT$41,523,810 (date completed: 2002.12.15; amount of water recycled in 2006: 155,753 tons; cumulative amount of water recycled from 2004 to 2006: 362,577 tons.
4. Boiler water recovered in 2006: 95,010 tons.
5. Cost Saving Analysis: (calculated by NT$11.5 per ton of water)

Project	2006 performance (tons)	Savings in water charges (NT$)
Recovery of generating unit wastewater	127,890	1,470,735
Recovery of domestic wastewater	13,616	156,584
Recovery of rainwater	155,753	1,791,160
Recovery of boiler water	95,010	1,092,615
Total	392,269	4,511,094

Water Conservation Performance of Hsinta Power Plant

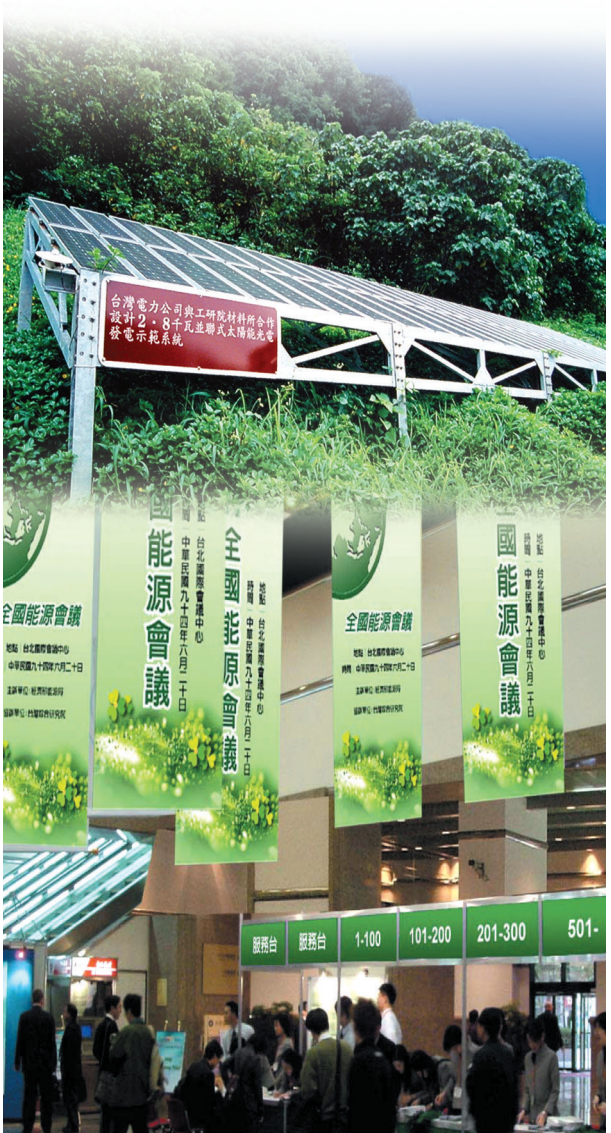
Project	Water consumption			Economic benefit		
	Before improvement (M^3/month)	After improvement (M^3/month)	Water conserved (M^3/year)	Savings (NT$/year)	Investment (NT$)	Payoff period (months)
Wastewater reutilization Rainwater	294,000	240,000	648,000	7,452,000	8,614,285	13.8
reutilization (estimated)	—	—	584,000	6,716,000	41,523,810	74.2

Note:1US$≒34NT$

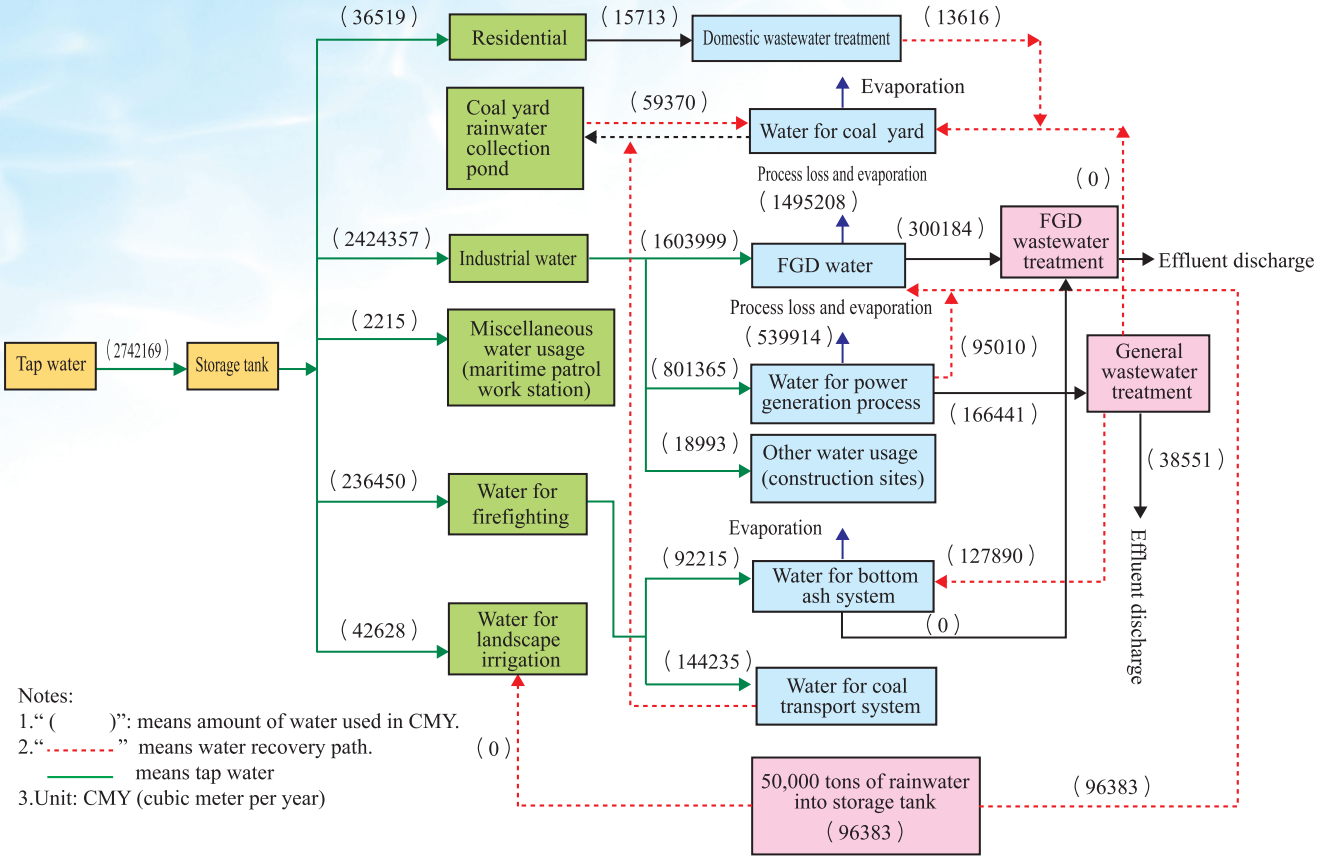
Topic

Excellence in Water Conservation

The Hsinta Power Plant was named outstanding unit in water conservation by the Water Resources Agency, Ministry of Economic Affairs in 2003. This affirmation is a boost to the morale of Taipower in the work of water conservation and sets higher expectations of Taipower's future undertakings in wastewater recovery and rainwater reutilization.



Hsinta Power Plant's Water Consumption in 2006



Notes:
1.“ ( )”: means amount of water used in CMY.
2.“ ” means water recovery path.
means tap water
3.Unit: CMY (cubic meter per year)

Water Conservation

Hsinta Power Plant's water conservation efforts and equipment management achieved the following results in 2006:

- Discharged boiler water was used by FGD equipment, saving 524 tons/day of tap water.
- Treated wastewater from generating units, general wastewater, and combined cycle wastewater recovered totaled 456 tons a day, of which, 252 tons/day were supplied to SSC system, and 204 tons/day were sent to the water pond of coal yard for treatment and reutilization.
- 37 tons/day of recovered domestic wastewater were supplied to coal yard for sprinkling purpose.
- The rainwater collection equipment has been installed, which is expected to save 426 tons/day of water for use by FGD system, coal yard sprinkling, landscape, and toilets.
- Ditches and sump tanks are installed for rainwater collection throughout the plant compound. The use of automated control system facilitates the water conservation efforts.
- Instrument control protection device is installed for the recycled water tank of boiler SSC system.

勞工安全衛生

電力不但與民眾日常生活息息相關，也是工商業活動所必需，經濟的繁榮、生活品質的提升，都要靠穩定可靠的電力來供應。在過去40多年台灣產業發展過程中，台電公司提供穩定且充分可靠的電力，而這些成果皆是來自台電公司辛苦的員工。因此對於這些工作人員，更是要注重他們的人身安全。

每年台電公司都希望能達到零傷亡的目標，但無可避免還是會有工安事故發生，近兩年的工安績效，2004年總和災害指數爲16.19，2005年災害指數降爲11.51，2006年災害指數爲5.55，顯示台電公司工安績效的提升。

台電公司爲降低工安事故風險，積極輔導各單位建置以預防管理爲基礎的OHSAS 18001職安衛管理系統，已通過驗證之單位爲：2005年台中發電廠及明潭發電廠，2006年電力修護處、林口發電廠、通霄發電廠、第二核能發電廠、高屏供電處及放射實驗室共8個單位。

OHSAS 18001 系統驗證有哪些好處

- 減少意外事故發生機率
- 減少停工時間和相關費用
- 證實守法
- 向股東證實公司對安全衛生的承諾
- 證實是符合世界潮流的
- 增加接觸新客戶和商業夥伴的途徑
- 更好地管理當前和未來的安全衛生風險
- 減少公共責任保險成本

Industrial Safety and Health

Electricity is indispensable in modern life, also a requisite for commercial and industrial activities. Economic prosperity and improvement in quality of life are dependent on stable power supply. In the past fortyish years, Taipower has been able to ensure adequate and reliable power supply for the development of Taiwan's industries. We invest as much as possible to protect the safety and health of the hardworking employees of Taipower company.

Taipower aims for zero accident, but invariably experiences some incidents of work accident each year. Taipower's frequency-severity indicator (FSI) was 16.19 in 2004, which dropped to 11.51 in 2005, and went further down to 5.55 in 2006, showing an improvement in industrial safety performance.

To minimize occupational hazard, Taipower has been advising all units to establish the prevention-based OHSAS 18001, the International Occupational Health and Safety Management System. The Taichung and Mingtan power plants passed the OHSAS 18001 certification in 2005. Another six units, Department of Maintenance, Linkou Power Plant, Tunghsiao Power Plant, 2nd Nuclear Power Station, Kaohsiung-Pingtung Power Supply Branch, and Radiation Laboratory were certified in 2006.

The Benefits of Being OHSAS 18001 Certified

- Reduce the chance of accident.
- Reduce the work stoppage time and associated expenses.
- Demonstration of compliance.
- Demonstrate to shareholders the company's commitment to work safety and health.
- Demonstrate conformity with world trends.
- Have a new channel to communicating with new clients and business partners.
- Better manage the current and future safety and health risks.
- Reduce the cost of public liability insurance.

緊急事件與應變

電力對於現代化的社會而言，是不可或缺的必需品，若短暫的失去電力，便會造成生活上的許多不便，對於公司企業更是造成莫大的損失。台電公司為全台電力之主要命脈，除了平時維護好其電力設備、設施，更要小心預防一些緊急事件，甚至是處理災害、重建措施等。

最常見的緊急事件一般為輸電線路災害，由於輸電線路鋪設遠至高山峻嶺或海邊，或經過河川灘地、陡峭山坡，藉由電桿、鐵塔、線路及變電設施等聯結成電力網，該設施如因地震、風災、水災侵襲，土石流、鹽霧害或意外事件而受損，易導致多數變電所無法受電，而使用戶電力中斷，甚至是影響重大。

因此為健全輸電線路災害防救體系，強化平時災害預防、災害應變及復原重建措施，並提供輸電線路災害防救相關計畫與執行災害防救之業務，台電公司對於緊急事件與應變上有其完善的一套標準，不僅是可以提升公司災害防救意識、減輕災害損失、更可以保障國人的生命財產安全。

除了上述事件外，緊急事件還包含了各類災害，如天然災害、生產事故、工安衛生災害、環保事件、勞資事件、其他重大事件等災害，若核能電廠發生重大異常事件，則依台電公司「核能發電廠緊急計畫」辦理。而以上各大項災害之防救權責單位除了工安衛生災害、環保事件為台電公司工安環保處負責外，其他皆為各主管處負責，其主要業務為防災教育訓練、防災業務整備及災害的應變。

災害等級

災害緊急事件發生時，必須迅速且精確的研判其災害的等級，再視其災害規模成立緊急應變小組，依災情嚴重性分別訂定搶修人力及動員級數，其主要分級依據說明如表「災害緊急事件等級區分及對應措施」。

▶ 災害緊急事件等級區分及對應措施

種類	主辦單位	等級	災害等級區分內容	對應措施
公用氣體、油料管線災害	經濟部及台電公司	中央災害應變中心開設時機	估計有15人以上傷亡、失蹤或是陸上污染面積達1平方公里以上者，或影響社會安寧者。	成立中央災害應變中心及經濟部緊急應變小組
	國營會及台電公司	甲級災害規模	造成10人以上傷亡、失蹤且情況持續惡化無法有效控制者。	通報行政院及行政院災害防救委員會、新聞局、內政部消防署
	國營會及台電公司	乙級災害規模	造成5人以上傷亡、失蹤且情況持續惡化無法有效控制者。	國營會及台電公司成立緊急小組
	台電公司	丙級災害規模	未達乙級災害規模，且情勢已控制不再惡化。	台電公司進行緊急應變
輸電線路災害	經濟部及台電公司	中央災變應變中心開設時機	估計有15人以上傷亡、失蹤、10所以上一次變電所（含配電變電所）全停電，預估在48小時以內無法恢復正常供電，且情況持續惡化，無法有效控制者。	成立中央災害應變中心及經濟部緊急應變小組
	國營會及台電公司	甲級災害規模	估計有10人以上傷亡、失蹤、10所以上一次變電所（含配電變電所）全停電，預估在24小時以內無法恢復正常供電，且情況持續惡化，無法有效控制者。	通報行政院及行政院災害防救委員會、新聞局、內政部消防署
	國營會及台電公司	乙級災害規模	估計有5人以上傷亡、失蹤、10所以上一次變電所（含配電變電所）全停電，預估在24小時以內無法恢復正常供電，且情況持續惡化，無法有效控制者。	國營會及台電公司成立緊急小組
	台電公司	丙級災害規模	未達乙級災害規模，且情勢已控制，不再惡化者。	台電公司進行緊急應變

Emergency Preparedness and Response

Electricity is indispensable in modern society. Even transient power outage could cause tremendous inconveniences to life and result in heavy loss for businesses. Taipower is the lifeline of country's power supply. Aside from maintaining the operations of its power equipment and facilities, it is imperative for Taipower to take precautions against emergencies and be prepared for disasters and reconstruction.

The most common emergency event in line of Taipower's works is associated with transmission lines. Transmission lines are installed in high mountains or along the coast, or passing through riverbanks and steep slopes to link power poles, pylons, and substations into a power grid. Damage to any of those facilities in earthquake, typhoon, flood, debris flow, salt pollution or accident could disrupt power supply to subscribers and result in serious consequences.

To put a comprehensive transmission line disaster prevention and mitigation system in place by stressing prevention, response and restoration, and for the planning and execution of disaster prevention and mitigation operations, Taipower has established a set of standards for emergency preparedness and response, which aims to raise employee awareness to disaster prevention and mitigation, reduce losses, and moreover, safeguard the lives and properties of the people.

Aside from transmission line emergency described above, emergency events also include all kinds of disasters, such as natural disaster, production accident, occupational safety and health disaster, environmental accident, labor management issue and other events of serious nature. Taipower also has a Nuclear Power Plant Emergency Plan in place in case major incident occurs at the nuclear power plant. The responsible unit for handling occupational safety and health disaster and environmental accidents is the Department of Industrial Safety and Environmental Protection. The other departments are responsible for handling emergencies associated with departmental business, including disaster prevention education and training, emergency preparedness and response.

Classification of Disasters

In the event of an emergency, Taipower will rapidly and accurately determine the type of disaster, and set up an emergency response team and determine rescue manpower and grade of mobilization by the severity of disaster and extent of damage. Emergencies and disasters are classified according to the Classification of Disasters and Response Measures below.

▶ Classification of Disasters and Response Measures

Type	In-charge Unit	Grade	Description	Response Measures
Public gas and oil pipeline disaster	Ministry of Economic Affairs and Taiwan Power Company	Time for the establishment of a Central Disaster Response Center	By estimation, more than 15 people are injured, dead or missing, or more than 1km^2 of land is polluted, or social wellbeing is affected.	Establishing Central Disaster Response Center and MOEA Emergency Response Team
	Commission of National Corporations and Taiwan Power Company	Grade A disaster	More than 10 people are injured, dead or missing and the situation continues to deteriorate that cannot be effectively controlled.	Notifying Executive Yuan, National Disaster Prevention and Protection Commission, Government Information Office, and National Fire Agency
	Commission of National Corporations and Taiwan Power Company	Grade B disaster	More than 5 people are injured, dead or missing and the situation continues to deteriorate that cannot be effectively controlled.	CNC and Taipower establishing emergency team
	Taiwan Power Company	Grade C disaster	Not reaching grade B scenario and the situation under control.	Taipower undertaking emergency response
Transmission line disaster	Ministry of Economic Affairs and Taiwan Power Company	Time for the establishment of a Central Disaster Response Center	By estimation, more than 15 people are injured, dead or missing, and more than 10 primary substations (including distribution substations) have power outage, normal power supply is not expected to be restored within 48 hours, and the situation continues to deteriorate that cannot be effectively controlled.	Establishing Central Disaster Response Center and MOEA Emergency Response Team
	Commission of National Corporations and Taiwan Power Company	Grade A disaster	By estimation, more than 10 people are injured, dead or missing, and more than 10 primary substations (including distribution substations) have power outage, normal power supply is not expected to be restored within 24 hours, and the situation continues to deteriorate that cannot be effectively controlled.	Notifying Executive Yuan, National Disaster Prevention and Protection Commission, Government Information Office, and National Fire Agency
	Commission of National Corporations and Taiwan Power Company	Grade B disaster	By estimation, more than 5 people are injured, dead or missing, and more than 10 primary substations (including distribution substations) have power outage, normal power supply is not expected to be restored within 24 hours, and the situation continues to deteriorate that cannot be effectively controlled.	CNC and Taipower establishing emergency team
	Taiwan Power Company	Grade C disaster	Not reaching grade B scenario and the situation under control.	Taipower undertaking emergency response

環境影響評估

基於企業環保形象及長期發展利益，並兼顧環境保護與經濟發展，台電公司在辦理各項電力設施計畫時，皆遵循環境影響評估法等相關規定，以達永續發展之目標。

環境影響評估作業流程

開發計畫經認定應進行環境影響評估者，開發單位於規劃階段應即辦理環境影響評估，並於申請許可前提出環境影響評估說明書，由目的事業主管機關轉送環保主管機關審查，審查結論認爲不須進行第2階段環境影響評估並經許可者，開發單位應舉行公開說明會。若審查結論認爲對環境有重大影響之虞，應繼續進行第2階段環境影響評估，則開發單位須將環境影響說明書陳列於開發場所附近適合地點，以供公眾閱覽，並於陳列期滿後，舉行公開說明會，再由環保主管機關邀集學者專家，有關機關代表及當地居民團體進行現場勘察及辦理公聽會，做成記錄後併同環境影響評估報告書初稿轉送環保主管機關審查，審查結果即做爲目的事業主管機關是否許可開發的依據。

▶ 台電公司2006年環境影響評估之成果

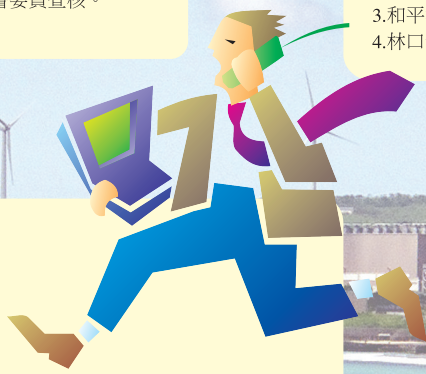
核能四廠環境保護監督委員會監督工作

＊ 須定期（每3個月1次）提報核四環境保護工作執行情形報告（包含環境影響評估報告審查結果執行情形及環境影響減低對策執行狀況查核表）與相關會議資料（含監督委員意見的答覆說明及簡報資料），以供環保署及監督委員查核。

環境影響評估監督、追蹤查核

2006年度配合行政院環境保護署及經濟部國營事業委員會辦理4項：

1.新武界隧道及栗栖溪引水工程
2.澎湖尖山火力電廠擴建計畫（5至12號機組）
3.和平溪碧海水力發電計畫
4.林口發電廠二期灰塘工程



持續辦理中之環境影響評估工作9件

1. 林口電廠更新擴建計畫第2及第3部機環境影響說明書
2. 彰工火力1、2號機發電計畫環境影響評估報告書初稿
3. 核能一廠用過核燃料中期貯存計畫環境現況差異分析及對策檢討報告暨變更內容對照表
4. 核二～仙渡345kV線經陽明山國家公園段之預先評估環境影響工作
5. 仙渡～陽明161kV第11號鐵塔之預先評估環境影響工作
6. 大林電廠更新改建計畫環境影響說明書
7. 高原複循環機組發電計畫環境影響說明書
8. 王功與永興風力發電計畫環境影響說明書
9. 大甲溪發電廠青山分廠復建計畫環境影響說明書

主管機關審查通過之計畫4件

1. 林口電廠更新擴建計畫環境影響說明書
2. 深澳電廠更新擴建計畫環境影響說明書
3. 雲林四湖風力發電計畫環境影響說明書
4. 大潭燃氣火力發電計畫廢水回收計畫變更內容對照表

環境影響評估作業現況

現階段台電公司對於新興電力設備及核能等相關設施的開發計畫，除依計畫特性擬定周詳的評估工作計畫外，對於相關之環境污染防治法規、自然保護法規、景觀視覺、古蹟遺址或是社會經濟等各方面亦會進行詳細之規劃及環境保護減低對策之研擬。若是關鍵之環境課題，更是委託專業機構進行相關專題研究，使其評估結果能更客觀、更周全。

而爲使計畫內容能兼顧民眾需求，並求環境影響評估報告能確實反映開發計畫對於周遭自然、人文、生態、社會及經濟的影響，通常都會大量徵詢政府機構、學者專家、民意代表、民間團體及計畫區內民眾意見，以達完備。

迄2006年12月底止，台電公司經環保主管機關完成審查的計畫共計46項，歷年通過環境影響差異分析報告審查的計畫共計40項，而各項計畫於執行階段亦能按環評的承諾辦理，再經環保主管機關追蹤考核，結果均能獲得好評。

▶ 台電公司2006年辦理之規劃研究工作

類別	工程名稱	規劃、研究目的
空氣品質及污染控制	「通霄電廠更新擴建計畫」暨「高原燃氣複循環發電計畫」空氣品質擴散模擬研究工作	提供規劃「通霄電廠更新擴建計畫」暨「高原燃氣複循環發電計畫」可行性研究報告所需資料
	大林發電廠更新改建計畫空氣污染物增量模擬研究	提供規劃大林發電廠更新改建計畫可行性研究報告所需資料
	綠島電廠機組汰換工程空氣品質擴散模擬暨氮氧化物排放濃度限值建議分析工作	提供綠島電廠機組汰換工程規劃所需資料
	大林發電廠更新改建計畫煤灰處置規劃	規劃大林發電廠更新計畫煤灰處置方案供開發單位參考
海洋污染控制	通霄發電廠更新擴建計畫溫排水擴散研究	提供通霄發電廠更新計畫之溫排水排放方案以供可行性及環評參考
	大林發電廠更新擴建計畫溫排水擴散研究	提供大林發電廠更新計畫之溫排水排放方案以供可行性及環評參考
水文生態研究	「濁水溪上游栗栖溪河川生態研究及魚類保育計畫」第3階段研究工作	研究濁水溪上游栗栖溪河川生態研究及魚類保育計畫以做爲運轉之參考
	南澳南溪河川生態資源調查研究	提供規劃仲岳水力發電計畫可行性研究報告及環評工作所需資料
	彰濱地區鳥類生態之調查分析研究	調查彰濱地區鳥類以評估風力機組對鳥類生態之影響
其他	2005年澎湖尖山發電廠防風林監測	瞭解尖山發電廠運轉前後鄰近地區防風林生長情形以做爲運轉之參考
	鹽寮海岸短期性養灘之監督工作	監督鹽寮短期養灘工作後沙灘之變動情行以評估是否持續辦理養灘參考

Environmental Impact Assessments

As a responsible corporate citizen and for long-term business development, Taipower gives equal emphasis on economic development and environmental protection. When undertaking power projects, Taipower complies with the environmental impact assessment requirements in the pursuit of sustained development.

Environmental Impact Assessment (EIA) Process

If environmental impact assessment is required for a development project, the developing unit shall undertake EIA in the planning stage, and prior to permit application, submit the EIA report to the environmental authority for review through the designated industry authority. If the environmental authority determines that stage 2 EIA is not required and gives its approval, the developing unit should hold a public presentation. If the review concludes that the project might have major impact on the environment that a stage 2 assessment should be conducted, the developing unit shall display the EIA report at an appropriate site in the vicinity of the development site for public perusal, and hold a public presentation after the required display period expires. Then the environmental authority will invite scholars, experts, representatives from relevant agencies, and local residents to join the site inspection and hold a public hearing. The public hearing record together with the draft of EIA report will be submitted to the environmental authority for review. The designated industry authority will decide whether to issue a permit for the development project based on the review result.

Environmental Impact Assessment Work in 2006

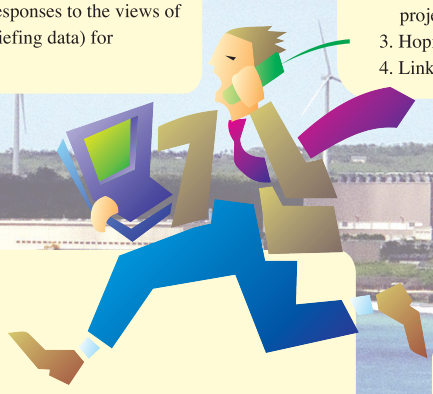
Supervisory Work of 4th Nuclear Power Station Environmental Protection Committee

*Periodically produce a report (once every three months) on the status of environmental protection of 4th Nuclear Power Station (including the status of implementation based on the results of EIA review and checklist for implementation status of environmental impact mitigation measures) and related meeting data (including responses to the views of the Environmental Protection Committee and briefing data) for examination by EPA and committee members.

EIA Supervision and Follow-up Audit

Taipower conducted EIA follow-up audit of four projects in conjunction with the EPA and Commission of National Corporations under MOEA:

1. New Wuchien tunnel and Lisai Creek water diversion project.
2. Penghu Jianshan Thermal Power Plant expansion project (units 5 ~ 12).
3. Hoping Creek Bihai Hydro power generation plan.
4. Linkou Power Plant Phase II project.



Ongoing EIA Projects:

1. EIA report on units 2 and 3 of the Linkou Power Plant expansion project.
2. EIA draft for units 1 and 2 of Changgong Thermal Power Plant.
3. Environmental analysis report on mid-term storage of spent nuclear fuel of 1st Nuclear Power Station and change reference table.
4. Preliminary EIA study on 2nd Nuclear ~ Hsiandu 345kV line passing Yangmingshan National Park.
5. Preliminary EIA study on Hsiandu ~ Yangming 161kV No. 11 pylon.
6. EIA report on Talin Power Plant upgrade project.
7. EIA report on Kaoyuan combined cycle power project.
8. EIA report on Wankong and Yonghsing wind power project.
9. EIA report on Chingshan plant of Tajia Creek Power Plant restoration project.

Approved EIA Reports:

1. EIA report on Linkou Power Plant expansion project.
2. EIA report on Shenao Power Plant expansion project.
3. EIA report on Yunlin Sihu wind power project.
4. Reference table for changes made to the wastewater recovery project of Datan gas-fired power project.

Current Status of Environmental Impact Assessment (EIA) Operation

For development projects involving new power and nuclear energy facilities, Taipower will draw up a comprehensive assessment plan and undertake detailed planning with respect to pollution control regulations, nature protection regulations, landscaping, historic site, socioeconomic impact and impact mitigation. If environment is a key issue in the development project, Taipower will enlist the service of professional institutions to conduct related studies to render the assessment results more objective and thorough.

To make sure the development project also accommodates public needs and the EIA report truthfully reflects the impact of project on surroundings, humanity, ecology, society and economy, Taipower will usually consult extensively the views of government agencies, scholars, experts, people's representatives, non-government organizations, and residents within the project area in the evaluation stage.

As of year-end 2006, Taipower have had 46 projects that have passed the review of environmental authority and 40 projects that have passed the review of analysis report on the difference of environment impact. Taipower has also been keeping its promises made in the environmental review in the execution of each project and received good comment from the environmental authority in the follow-up audit.

Planning and Study Projects Undertaken in 2006

Type	Project name	Objectives
Air quality and pollution control	Air quality dissipation simulation study for Tunghsiao Power Plant expansion project and Kaoyuan gas-fired combined cycle power project	Providing data necessary for the feasibility study report on Tunghsiao Power Plant expansion project and Kaoyuan gas-fired combined cycle power project
	Air pollutant increment simulation study for Talin Power Plant upgrade project	Providing data necessary for the feasibility study report on Talin Power Plant upgrade project
	Air quality dissipation simulation and NOx emission limits analysis study for Green Island generating unit replacement project	Providing data necessary for the planning of Green Island generating unit replacement project
	Coal ash disposal plan for Talin Power Plant upgrade project	Proposing coal ash disposal plan for the reference of development unit of Talin Power Plant upgrade project
Ocean pollution control	Cooling water discharge dissipation study for Tunghsiao Power Plant expansion project	Proposing cooling water discharge plan for the feasibility and EIA study of Tunghsiao Power Plant expansion project
	Cooling water discharge dissipation study for Talin Power Plant upgrade project	Proposing cooling water discharge plan for feasibility study and environmental review of the Talin Power Plant upgrade project
Hydro-ecological study	Phase III study under the Lishi Creek (upstream of Chuoshui creek) research- grade fish conservation project	Undertaking the Lishi Creek (upstream of Chuoshui creek) eco study and fish conservation project as reference for plant operation
	Study on the river eco-resources of Nan-ao-nan Creek	Providing data necessary for the feasibility and EIA study of Chongyue Hydro power project
	Study on the bird ecology in Changhua coastline area	Investigating birds in Changhua coastline area to assess the impact of wind turbines on bird ecology
Others	2005 Penghu Jianshan Power Plant wind breaks monitoring	Understanding the growth of wind breaks in the neighborhood before and after the operation of Jianshan Power Plant as reference for plant operation
	Short-term beach nourishment monitoring along Yenliao Coastline	Monitoring the variation of beach after the short-term beach nourishment work at Yenliao to determine whether to continue the beach nourishment

生態保育

台灣沿海漁業資源日漸減小，台電公司體認全民對海洋資源的依賴，基於回饋地方、增進地方繁榮、保護海洋生態環境及善盡社會責任，近年來積極參與台灣沿海漁業資源的培育及復育工作。台電公司本著推動資源回收再利用及漁業永續經營之理念，使用水泥電桿人工魚礁再利用，復育珊瑚、魚苗放流及淨灘工作等活動，以增裕漁業資源，復育海洋生態。

再創絢麗的海洋—珊瑚復育

珊瑚礁是生物多樣性最高的海洋生態區，是提供許多種類海洋生物食物的來源，構築成一相當豐富的生態系，也提供許多種類海洋生物生長的棲所，孕育了許多生物資源，爲人類及其他生物所利用。

台電公司爲善盡社會責任，及基於關懷海洋生態之熱忱，防止珊瑚白化的程度加劇，同時也設法加速珊瑚群聚的恢復與重建，以挽救珊瑚礁這一脆弱但又複雜的生態系，避免其走向衰敗甚至滅絕之路。

魚兒魚兒水中游—魚苗放流

配合政府漁業政策擴大培育、復育漁業資源效益，積極配合漁政單位辦理魚苗放流工作，務期能增裕沿海漁業資源造福漁民，實現台電公司回饋地方之理念。

除了豐富核能電廠附近海域漁業資源外，中部之溪流河川，亦是台電公司水力發電最主要的樞紐，河川流域長期遭受違法濫捕，生態屢受嚴重破壞，淡水漁業資源日益枯竭，台電公司基於回饋地方及維護該流域生態，自電廠運轉後即持續努力實施魚苗孵育及放養工作，以維護生態平衡及善盡自然生態保護責任。

另外，每年亦於德基、日月潭等水庫辦理魚苗孵育及放養。除了順應自然的原則逐步復建遭受921大地震及颱風等各受災電廠之外，並積極配合政府復育山林的政策，做好水土保持及適度放養魚苗，恢復河川自然生態。

重現海岸新風貌—淨灘工作

美麗的海岸地區是台灣得天獨厚的休閒資源，台電公司除關注於電廠營運及建廠階段之環保工作，也相當關心全台灣整體環境之改善，因此自1994年起，每年均於濱海之電廠同步發起淨灘活動，藉由實際行動宣導環境保護的重要。由於結合當地民眾、地方政府及公益團體之參與，除有助於拉近台電公司與地方之距離，展現睦鄰、愛鄉之誠意，更提升台電公司重視環保、珍惜自然環境、善盡社會責任之企業形象。

綠意盎然—喬木植栽

爲響應推動植栽綠美化工作，同時達到降低溫室氣體排放量功用，台電公司大力執行推廣植栽與綠美化工作之無悔策略，於台中電廠、大潭等地都種植有大面積綠地。其間2006年於台中電廠空地完成45,000m²喬木種植，目前綠美化面積累計已達185公頃。由台灣區造紙同業公會統計顯示，每公頃之森林約可吸附12～15公噸二氧化碳，因此目前約降低2,220～2,775公噸二氧化碳。

Eco - conservation

Fish resources along Taiwan's coastline are diminishing, and Taipower realizes people's reliance on ocean resources. For the sake of giving the local residents something back, bringing prosperity to the local communities, protecting ocean eco-environment and fulfilling its duties as a corporate citizen, Taipower has been actively involved in the work of cultivating and restoring fish resources along Taiwan's coastline in recent years. With firm belief in resources recycling and reutilization and sustained operation of the fishing industry, Taipower undertakes activities including artificial reef reutilization, coral restoration, hatchery-reared fry release, and beach cleanup to enrich fishing resources and restore marine ecology.

Recreating the Magnificent of Ocean-Coral Restoration

Coral reefs are a part of ocean ecosystem richest in biodiversity that provide food sources and habitats for a wide variety of marine organisms. The bioresources fed by coral reefs are widely utilized by humans and other organisms.

In fulfilling its social responsibility and putting its enthusiasm and care for marine ecology into action, Taipower has been proactive in stopping the worsening of coral bleaching and speeding up the restoration and reconstruction of coral colonies in the attempt to save this fragile yet complex ecosystem from demise and even extinction.

Fish Swimming in the Water-Fry Release

In supporting government's fisheries policy of extending the cultivation and restoration of fishing resources and enacting Taipower's belief in giving back to the local communities, Taipower has been collaborating with the fishing administrations in the work of fry release in the hope to replenish fishing resources that will benefit the fishermen.

Besides enriching the fishing resources in the sea areas near the nuclear power plants, rivers in central Taiwan are the primary hub for Taipower's hydro-power generation. But those rivers have long been under the ravage of abusive fishing practices that severely traumatizes the ecosystem and depletes the freshwater fishing resources. In the efforts to upkeep the river basin ecology, Taipower has been carrying out fry breeding and release in the streams since the power plant starts operation to help maintain ecological balance and fulfill its responsibility of protecting the natural ecosystems.

Taipower also carries out fry breeding and release in reservoirs, including Techi and Sun Moon Lake every year. Aside from taking step-by-step approach to restoring power plants damaged by earthquakes and typhoons, Taipower also performs soil preservation in line with government's call for forest restoration and carry out pertinent fry release in the efforts to restore the natural ecosystems of rivers.

Bringing Back the Beauty of Coasts-Beach Cleanup

The handsome coastal areas are Taiwan's unique leisure resources. Taipower heeds the environmental protection work in the stages of power plant construction and operation. We also care about improving the overall environment of the country. Thus since 1994, power plants along the coast synchronously initiate the beach cleanup activity every year to advocate the importance of environmental protection. The beach cleanup activities are also participated by local residents, government and public interest groups. Thus they help close the distance between Taipower and the local community. Moreover, they enhance Taipower's corporate image as an enterprise that cares about environmental protection, cherishes natural environment, and actively fulfills its social responsibilities.

Luxuriant Green-Tree Planting

In response to the call for greening our environment and to reduce the emissions of greenhouse gases, Taipower has been engaging in extensive tree planting and greenery works that bring about large green area at Taichung and Datan power plants. In 2006, 45,000m^2 of vacant lot at Taichung Power Plant were planted with trees. So far, Taipower's greenery work covers 185 hectares of land. According to the statistics of Taiwan Paper Industry Association, every hectare of forest can adsorb 12 ~ 15 tons of carbon dioxide. Thus Taipower's greenery work has helped reduce 2,220~2,775 tons of carbon dioxide.

2007

全球暖化與溫室氣體管制

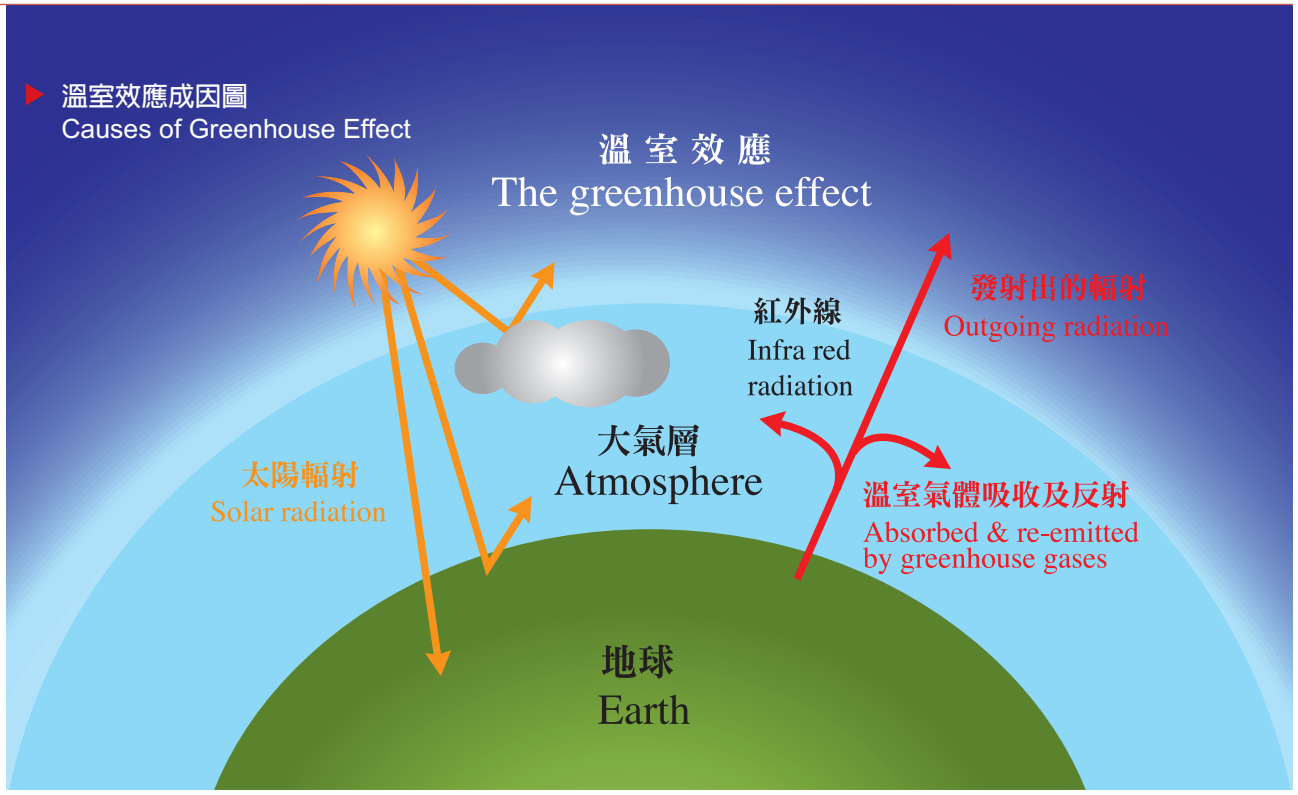
Global Warming and Greenhouse Gas Control

溫室效應與京都議定書

自從工業革命以來人類的經濟活動大量使用化石燃料，已造成大氣中二氧化碳等溫室氣體的濃度急速增加，產生越來越明顯的全球增溫、海平面上升及全球氣候變遷加劇的現象，對水資源、農作物、自然生態系統及人類健康等各層面造成日益明顯的負面衝擊。

爲了抑制人爲溫室氣體的排放，防制氣候變遷，聯合國於1992年地球高峰會舉辦之時，通過「聯合國氣候變化綱要公約（United Nations Framework Convention on Climate Change, UNFCCC）」，對溫室氣體排放做出全球性管制的宣示。爲落實溫室氣體排放管制工作，1997年12月於日本京都舉行聯合國氣候變化綱要公約第3次締約國大會時，通過具有約束效力的京都議定書（Kyoto Protocol），以規範工業國家未來之溫室氣體減量責任。

溫室效應成因圖
Causes of Greenhouse Effect



由於1990年代全球經濟持續繁榮，多數已開發國家的二氧化碳排放量持續成長，離減量目標越來越遠，例如美國與澳洲不願簽署議定書就是爲了經濟因素，只有德國因東西德合併後的東德經濟轉型而降低能源使用量，以及英國因爲大量使用天然氣發電及核能發電取代燃煤發電，所以能有效控制二氧化碳的排放量。而鄰近的日本政府雖規劃藉由碳匯、排放權交易、發展核能、再生能源、提高能源效率及其他京都議定書所規範彈性機制等方式來達成減量目標，卻仍不樂觀。

我國目前因特殊的國際處境無法參與UNFCCC，也未被京都議定書所規範，但二氧化碳排放約占全世界的1%，未來勢必將承受不小的國際壓力。爰此，政府於2005年6月召開第2次全國能源會議，除了檢討1998年第1次全國能源會議結論外，主要任務在研擬出符合國內現況及京都議定書最新趨勢之能源政策。但對照台灣的現況，能源高達98%仰賴進口，產業以耗能的傳統製造業爲主，人民的節約能源意識不足，都造成極端不利之局面。

京都議定書

- 明定在2008至2012年間溫室氣體排放量平均值必需比1990年減少5.2%
- 至少55個公約締約國批准
- CO_2合計量占UNFCCC附件一國家1990年總量至少55%
- 上述兩條件達到後90天起議定書生效
- 在2004年11月5日俄羅斯總統普丁簽署後，已於2005年2月16日正式生效

溫室氣體包含哪些？

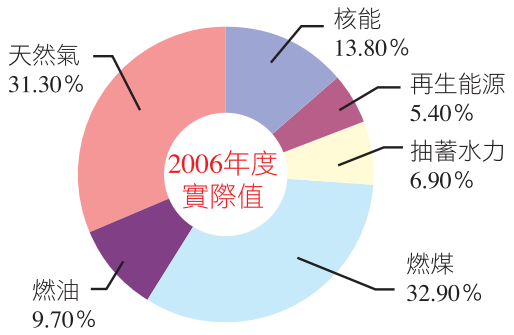
溫室氣體包括了最常聽到的二氧化碳（CO_2）及氧化亞氮（N_2O）、甲烷（CH_4）、六氟化硫（SF_6）、全氟碳化物（PFCs）、及氫氟碳化物（HFCs）等6類化學物質等。

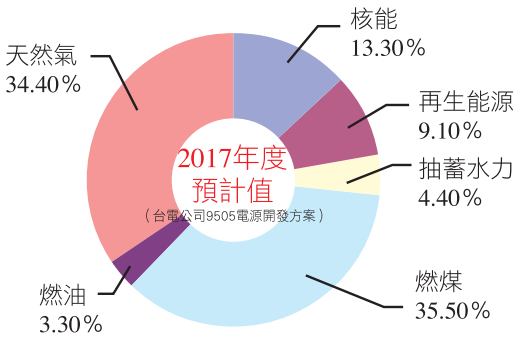
何謂全球暖化潛勢

係指一物質在與CO_2比較下會造成大氣溫暖化的相對能力。舉例來說，在將CO_2的GWP值設定為1的情況下，CH_4吸收的熱超過CO_2吸收的23倍，GWP值為23；N_2O所吸收的熱較CO_2多296倍，其GWP值即為296。溫室氣體的暖化程度即是依氣體種類而各不相同，不過由於CO_2含量遠大於其他氣體，因此它的溫室效應仍是最大。

台電公司身爲國內主要電力供應者，對於溫室氣體管制之努力責無旁貸，但是以國營事業的角色，必須依據國家能源政策，配合未來電力需求之成長，提出電源開發方案，因二氧化碳是燃燒的必然產物，目前尚無商業化可行之回收或控制技術，我國在無碳及低碳能源發展受限情況下，爲維持經濟成長，勢必由火力發電彌補供電缺口，而二氧化碳將相對增加。經考量現況與各類限制因素，台電公司已研擬溫室氣體管制策略，並積極實施各項行動方案，未來將隨國內外發展情勢及國家政策之變動予以修訂，例如核能政策調整、溫室氣體減量法公告實施、及二氧化碳控制技術成熟等。

▶ 我國電力系統裝置容量配比圖





Greenhouse Effect and Kyoto Protocol

Since the industrial revolution, petrochemical fuels have been used massively in the economic activities of mankind. As a result, the concentrations of carbon dioxides and other greenhouse gases in air rise sharply, leading to several increasingly conspicuous phenomena, including global warming, rising sea level and drastic climate change around the world. These phenomena have caused increasingly negative impact on planet earth, such as water resources, crops, natural ecosystems, and human health.

In the concerted efforts to suppress greenhouse gas emissions, the United Nations passed the United Nations Framework Convention on Climate Change (UNFCCC) in the 1992 Earth Summit to declare global control of greenhouse gas emissions. In order to implement the work of emission control, in the third conference of the parties to the UNFCCC held in Kyoto Japan in December 1997, the members passed the binding Kyoto Protocol to define the responsibility of industrial nations in greenhouse gas reduction.

While the global economy took off with sustained growth in the 1990s, the carbon dioxide emission by the majority of developed countries also grew and stayed farther away from the reduction target. The United States and Australia have not ratified the Protocol out of economic reasons. Germany is able to reduce the use of energy as the former East Germany underwent economic transformation after the unification. United Kingdom is able to effectively control its emission of carbon dioxide due to massive use of natural gas for power generation and replacing coal-fired power with nuclear energy. The Japanese government plans to achieve the reduction target through carbon sink, emissions trading, development of nuclear energy and renewable energy, improved energy efficiency, and other flexible mechanisms provided under the Protocol. But the outlook is not optimistic.

In the current international political situation, Taiwan is unable to join the UNFCCC and hence not bound by the Kyoto Protocol. However, with carbon dioxide emission accounting for 1% of world emission, Taiwan is expected to be under considerable international pressure to take actions. Thus in the second national energy conference held by the government in June 2005, the participants were assigned the mission of drafting an energy policy that accommodates both the current status in the country and the latest trends of Kyoto Protocol. Taiwan relies heavily on imports to meet its energy demand (up to 98%) and energy-consuming manufacturing accounts for a bulk of its industrial structure. Average citizens also lack a strong sense of energy conservation. These situations are adverse to the efforts to cut down greenhouse gas emissions.

Kyoto Protocol

- Countries are required to reduce their emissions 5.2% below their 1990 baseline over the 2008 to 2012 period.
- At least 55 signatory countries ratify the Protocol.
- At least 55% CO_2 emissions by UNFCCC Annex I parties' 1990 standards.
- The Protocol enters into effect in 90 days after the two conditions above are met.
- Russian President Putin signed the Kyoto Protocol on November 5, 2005, and the Protocol takes effect on February 16, 2005.

What are the Greenhouse Gases?

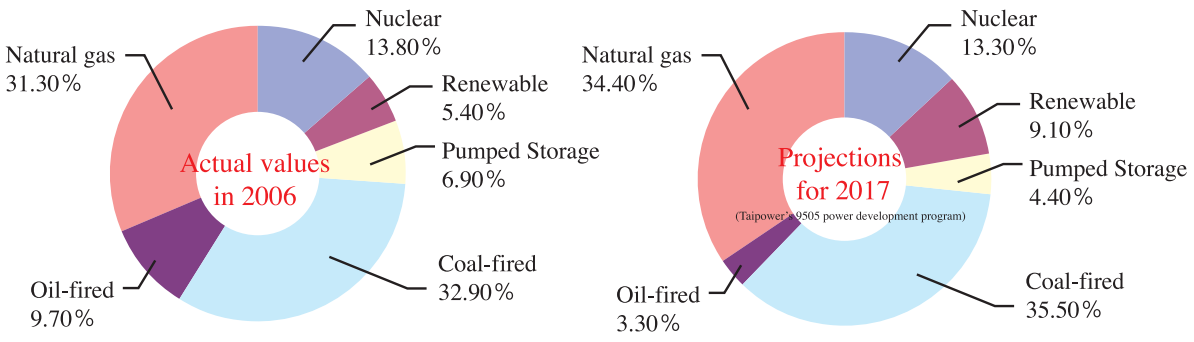
Greenhouse gases include primarily carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), Sulfur hexafluoride (SF_6), perfluorinated compounds (PFCs), and Hydrofluorocarbons (HFCs).

What is Global Warming Potential (GWP)

Global warming potential is a measure of how much a given mass of a substance is estimated to contribute to global warming as compared to the same mass of CO_2. For example, by setting the GWP value of CO_2 as 1, the heat absorbed by CH_4 is 23 times that of CO_2. Thus the GWP of CH_4 is 23. The heat absorbed by NO_2 is 296 times that of CO_2. Thus the GWP of NO_2 is 296. The warming effect of greenhouse gases varies depending on the type of gas. But as the content of CO_2 in atmosphere is far greater than the other gases, it is the biggest culprit in greenhouse effect.

As the principal power supplier in the country, Taipower has the inescapable duty to join in the efforts of greenhouse gas control. On the other hand, Taipower is a state-run enterprise and obliged to propose power development plans in conjunction with the national energy policy to meet the growth of power demands. Carbon dioxide is a by-product of burning fossil fuels. Currently there are no commercially viable CO_2 recovery or control technologies. While the development of carbon-free and low-carbon energy is confined in Taiwan, we are left with little choice but to use thermal power to fill the gap in power supply as we strive to sustain economic growth. Under the circumstances, carbon dioxide emission is expected to increase. After evaluating the current status and all kinds of constraint factors, Taipower has come up with a greenhouse gas control initiative and various action plans, which will be adjusted in line with the development at home and abroad as well as the change of national policy, for example, the adjustment of nuclear energy policy, promulgation of greenhouse gas reduction regulations, and the maturing of carbon dioxide control technology.

▶ Installed Capacity of Taiwan's Power System by Forms of Energy



台電公司溫室氣體排放現況

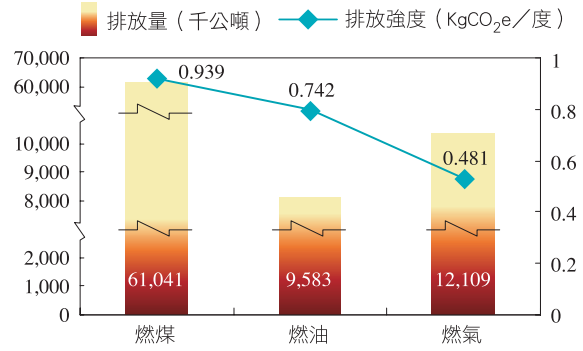
電力供應是現代化經濟發展的重要基礎，而近10年來隨著經濟發展及消費結構的改變，用電需求量逐漸成長。由於目前發電系統之能源供應以火力發電為主，燃燒過程中產生大量CO_2，為瞭解日後進行減量之效益，必須進行溫室氣體排放盤查作業。

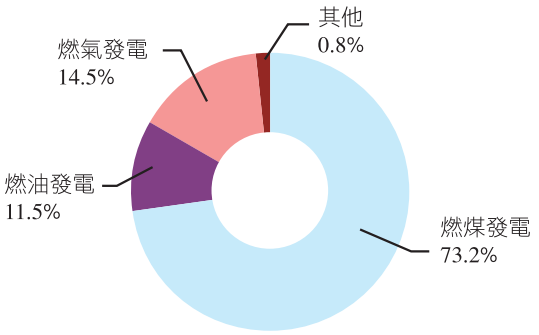
台電公司各火力發電廠隨我國電力發展需求而於不同時期設立，其設立時間、發電機組類型、使用燃料及操作方式各不相同，GHG排放情形亦不相同。

溫室氣體盤查工作於2004年在台電公司工安環保處大力推動之下組成「台灣電力公司溫室氣體盤查小組」，更於2005年建置「溫室氣體資訊管理系統」，以利各單位進行溫室氣體排放申報作業。

電力業的溫室氣體來源包括火力發電製程、堆煤場溢散、機動車輛與小型引擎耗油設備、電力開關絕緣氣體SF_6逸散，及冷凍空調之冷媒逸散等。2006年度溫室氣體盤查結果，全年度排放量約83,389千公噸，其中火力發電占99.2%。

▶ 台電公司2006年度不同燃料所造成之二氧化碳排放量與排放強度





排放強度

$$\text{CO}_2\text{排放強度}\ (\text{kg-CO}_2\text{e／kWh}) = \frac{\text{CO}_2\text{排放當量}\ (\text{kg-CO}_2\text{e})}{\text{發電量}\ (\text{kWh})}$$

- 每產生的1度電力所排放出的CO_2當量數稱為CO_2排放強度。
- 排放強度可以用來評斷其溫室氣體減量政策是否有達到其效果。
- 我國電力排放係數：依據經濟部能源局估算2005年度電力排放係數為0.62 kg-CO_2e／度。

Current Status of Greenhouse Gas Emissions by Taipower

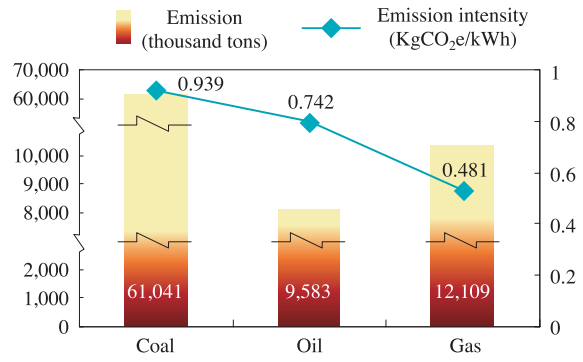
Power supply infrastructure is critical to economic development. In the past ten years along with economic growth and changing consumption structure, power demands rose. Thermal power is the major source of energy supply in our current power generation system, which produces large amount of CO_2 in the process of combustion. To assess the benefit of emission reduction efforts, it is necessary to first take a greenhouse gas (GHG) emissions inventory.

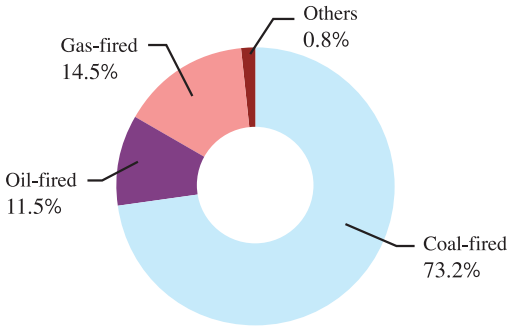
Taipower's thermal power plants were constructed in different periods in line with the country's power demands. The type of generating units, fuel and operating methods used by each thermal power plant differ. As a result, GHG emissions by each thermal power plant varies.

For the GHG emissions inventory work, Taipower's Department of Industrial Safety and Environmental Protection set up a Greenhouse Gas Inventory Taskforce in 2004. Furthermore in 2005, the Greenhouse Gas Information Management System was established to facilitate the reporting of GHG emissions by different units.

The GHG emissions of power industry include dissipation from coal yard, motor vehicles, small engines, gas-guzzling equipment, power switches, SF_6 dissipation, and dissipation of coolant in air conditioning system. The GHG inventory taken in 2006 found annual emissions of 83,389 tons, of which, emissions from thermal power generation accounted for 99.2%.

▶ Taipower's CO_2 Emissions from Different Fuels and Emission Intensity in 2006





Emission Intensity

$$\text{Kg-CO}_2\text{e/kWh} = \frac{\text{kg-CO}_2\text{e}}{\text{Electricity generated (kWh)}}$$

- CO_2 emission intensity is defined as the CO_2 equivalent emitted for every kWh of electricity generated.
- Emission intensity is used to determine whether the GHG reduction policy achieves the desired effect.
- The CO_2 emission intensity of Taiwan's electric sector by the estimation of Bureau of Energy, MOEA was 0.62 Kg-CO_2e/kWh in 2005.

溫室氣體排放管制策略

電力業與鋼鐵、水泥、石化等行業同屬能源密集基礎工業，且據環保署估計，前30大企業集團之溫室氣體排放量即占工業部門的90%，在國內經濟成長、用電量逐年上升之情況下，電力業占溫室氣體排放之首位。為降低企業日後溫室氣體排放風險，同時提升良好環保形象，台電公司已積極推動各類與溫室氣體減量相關之措施。

溫室氣體管制策略

台電公司依據目前國內外情勢，參考國際間先進國家電力事業之作法，規劃溫室氣體管制策略包括7項策略內含13項行動方案，未來將依據各行動方案研訂細部執行計畫。

限制因素分析

一、能源政策

台電公司遵循政府既定之非核家園能源政策，規劃逐步降低核能發電之比例，因而限制了選用無溫室氣體排放之核能燃料做爲減量之工具。

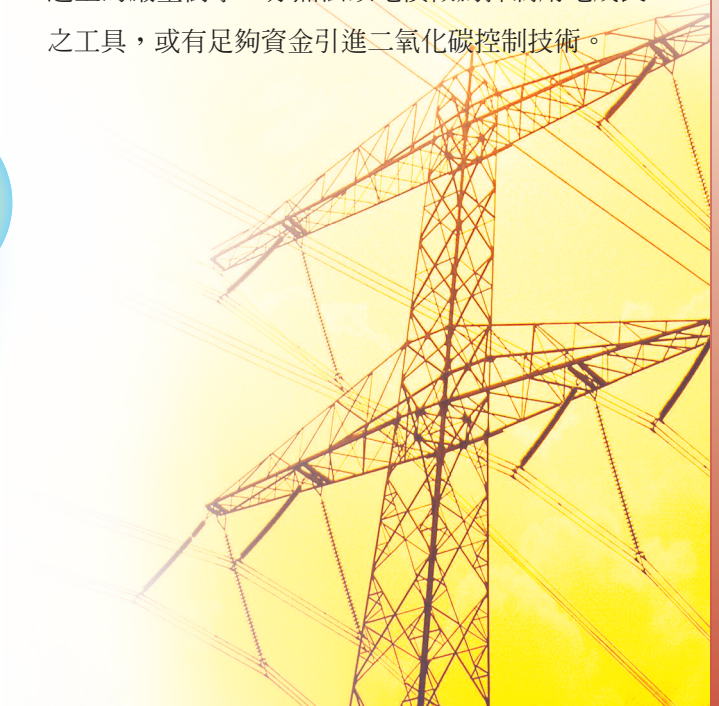
▶ 台電公司溫室氣體管制7大項策略圖

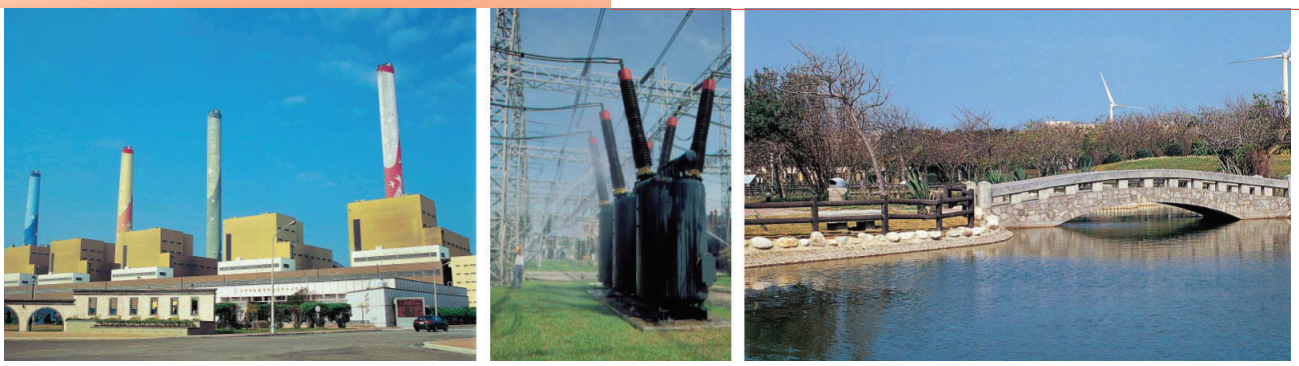
二、再生能源供電穩定度與天然氣源不足

再生能源如風力、太陽能等必需仰賴天候狀況，對於我國發展高科技產業需求穩定電力並無法有效供應。另因國際間不願意承諾供氣，中油公司預估2007年LNG供應缺口將達66萬公噸，2008年將擴增至200萬公噸。據此，台電公司欲以再生能源或天然氣發電來減少二氧化碳排放，將面臨能源安全問題，未來欲達成擴大使用天然氣發電目標，應搭配氣候穩定及儲氣系統設備足夠之規劃。

三、電價調整限制

依照目前電價，未來若核能除役，欲擴大使用天然氣或再生能源，以及引進「碳捕捉與儲存」技術，或課徵能源稅等，均會造成發電成本逐步墊高；若電價仍然調整不易，勢必造成台電公司在營運上的嚴重衝擊，亦無法以電價做爲抑制用電成長之工具，或有足夠資金引進二氧化碳控制技術。





▶ 面對全球暖化與溫室氣體減量，台電公司已制定減排因應期程。

規劃目標

由於溫室氣體減量工作必須兼顧經濟發展、環保及能源安全，台電公司現階段推動之管制策略中，包括發展再生能源、節約能源、使用二氧化碳較少的天然氣，及高效率的超臨界燃煤發電機組等。在各項限制條件及供應端管控措施下，至2016年時，估計二氧化碳排放強度可維持在0.53公斤／度以內。

爲因應溫室氣體減量，台電公司正全力推行各項相關措施，然而這些努力更需要大家攜手合作，爲美好的環境及未來共同努力。

未來展望

一、台電公司將強化溫室氣體盤查技術，以配合政府未來驗證制度之實施，並適時發布溫室氣體報告書。

二、落實所規劃之溫室氣體管制策略及各項行動方案，如提升能源使用效率、推廣節約電力措施、進行新能源、再生能源及二氧化碳回收與再利用等相關研究。

三、持續關注京都議定書之發展，並收集國際排放交易等發展現況，以避免溫室氣體減量之制裁，以利企業永續發展。

四、配合政府加強對能源需求端之管理，以減少供應端之產出。

五、促請政府訂定減量目標時，能考量能源價格及市場機制。

▶ 溫室氣體管制策略與行動方案一覽表

溫室氣體管制策略	行動方案
一、能源供應端管理	1.新設機組採最佳可行技術 2.提升既有火力發電機組平均效率 3.開發適當天然氣發電比例 4.增加再生能源比例
二、能源需求端管理	5.推廣節約用電降低發電負載
三、輸配電系統改善	6.改善輸配電效率，減少線路損失 7.加強SF_6管控，減少逸散發生
四、管理監督查證	8.加速推動溫室氣體管理系統建置能力建構及訓練機制 9.建置環境會計制度
五、技術研發	10.發展溫室氣體減量與再生能源技術
六、加強植栽	11.持續推廣植栽與綠美化工作
七、國內／國際合作	12.與政府部門簽訂合作備忘錄 13.參與國內／國際減量計畫

Greenhouse Gas Emissions Control Strategies

Electric industry, like steel, cement and petrochemical industries, is an energy intensive infrastructure industry. By the estimation of Environmental Protection Administration (EPA), GHG emissions by the top 30 enterprises in Taiwan represent 90% of emissions by the industrial sector. As the economy grows and power consumption increases every year, the electric industry becomes the top GHG emitter. To reduce the risk associated with GHG emissions and to enhance the corporate image as an environmentally conscientious enterprise, Taipower has been actively promoting all kinds of initiatives relevant to GHG reduction.

Taipower's Greenhouse Gas Control Strategies

In consideration of the situations at home and abroad and in reference to the practices of power companies in advanced nations, Taipower has formulated a GHG control initiative which includes 7 strategies and 13 action plans. Detailed execution plans for respective action plan will be drawn up in the future.

Analysis of Constraint Factors

1. Energy policy

In compliance with government's "non-nuclear homeland" energy policy, Taipower is gradually lowering the share of nuclear energy in its power supply scheme, which thus rules out the non-GHG emitting nuclear fuel as a tool for GHG reduction.

2. Stability of renewable energy supply and inadequate natural gas supply

Some forms of energy, such as wind power and solar energy, are dependent on climate conditions, thus making them unreliable sources of power supply and unsuitable for the development of high-tech industries as in the case of Taiwan where stable power supply is a prerequisite. On the other hand, we have not been able to sign long-term natural gas supply contracts with natural gas producing countries. According to the forecast of China Petroleum Corporation, Taiwan's LNG supply will be short by 660,000 tons in 2007 and by 2,000,000 tons in 2008. Under the circumstances, If Taipower plans to rely on renewable energy or natural gas for power generation to reduce carbon dioxide emission, the country will be faced with energy security problem. Any future planning of Taipower to expand the use of natural gas for power generation must take into account climate stability and adequate natural gas storage facilities.

3. Restriction of electricity rates adjustment

Based on the current electricity rates, the decommissioning of nuclear power plants, the extended use of natural gas or renewable energy, the import of carbon capture and storage know-how, or the imposition of

▶ Taipower's GHG Control Strategies

energy tax in the future will drive up the costs of Taipower. If the electricity rates stay unchanged, it will have severe impact on the operation of Taipower, keep us from using electricity rates as a tool to suppress the growth of power consumption or from having adequate funds to bring in new carbon dioxide control technologies.

Planning

The work of GHG reduction must also take into consideration economic development, environmental protection and energy security. The control initiative promoted by Taipower at the present stage encompasses: developing renewable energy, energy conservation, and using natural gas and high-efficiency supercritical coal-fired generating units. Under the constraint conditions and supply-side control, we project that our carbon dioxide intensity can be maintained under 0.53kg/kWh by 2016.

In the efforts of GHG reduction, Taipower is implementing various measures throughout the company. However, these efforts call for the cooperation of everybody as we strive for a beautiful living environment and better future.

Outlook

1.Taipower will step up the GHG inventory technique in conjunction with the implementation of validation system by the government in the future, and publish greenhouse gases report at an opportune time.

2.Taipower will implement its greenhouse gases control strategies and action plans, including improving the efficiency of energy use, promoting energy conservation, and conducting research in new forms of energy, renewable energy, and recovery and reutilization of carbon dioxide.

3.Taipower will watch closely the development of Kyoto Protocol and gather information on the current status of emission trading in the international community to avoid any international sanction and ensure sustained development.

4.Taipower will support government in demand-side management so as to cut down the output of supply-side.

5.Taipower will call the government's attention to energy prices and market mechanism when it sets reduction targets.

Greenhouse Gases Control Strategies and Action Plans

Control strategy	Action plan
1. Supply-side management	1. Adopting the best available technology for new generating units. 2. Improving the average efficiency of thermal power generating units. 3. Increasing the share of natural gas power. 4. Increasing the share of renewable energy.
2. Demand-side management	5. Promoting energy conservation to reduce power load.
3. Improving power transmission and distribution system	6. Improving transmission and distribution efficiency and reducing line loss. 7. Stepping up SF_6 control to cut down its dissipation.
4. Management, supervision and verification	8. Speeding up the acquisition of know-how for establishing the GHG management system. 9. Creating the environmental accounting system.
5. Research and development	10. Developing the technologies for GHG reduction and renewable energy.
6. Increasing plantation	11. Continuing the planting and greenery work.
7. Domestic/international cooperation	12. Signing cooperation MOU with government agencies. 13. Participating in domestic/international reduction programs.

再生能源技術研發

台灣地區自產能源貧乏，絕大部分能源消費均仰賴進口，而且環境保護意識日益覺醒，使得開發自產能源、利用綠色能源的重要性日益彰顯。因此政府當局已擬訂台灣地區再生能源發展政策，台電公司並配合進行系列之開發與研究發展計畫。

政府在1998年5月召開第1次全國能源會議，宣布至2020年時新能源規劃要達到1～3%占比的目標，經濟部能源局擬訂了我國各項再生能源的發展目標，至2020年再生能源發電總裝置容量，占全國發電系統之10%爲目標。行政院2002年8月所通過之「再生能源發展條例」（草案），亦訂定再生能源發電容量獎勵總量爲650萬瓩，進一步宣示加強推動再生能源發電之政策。並對再生能源定義爲太陽能、生質能、地熱、海洋能、風力、非抽蓄水力或其他經中央主管機關認定之永續利用能源。

台電公司歷年來積極進行各類再生能源之應用評估，選擇其中較具發展潛力的小水力、風力、太陽光電、海洋溫差以及波浪發電等項目，進行調查與研究。其中小水力發電之開發工作，台電公司視之爲傳統電力資源而持續辦理。風力發電爲現階段成本較低廉之再生能源，爲開發重點；其他再生能源尚屬配合發展階段，零星而量少。因再生能源發電易受天候影響，發電量不穩定，故除水庫或調整池式水力、地熱及生質能外，僅能提供輔助性電源。

2006年底再生能源（含慣常水力）裝置容量爲200.7萬瓩，占系統裝置容量5.4%，淨尖峰能力爲101.3萬瓩，占系統淨尖峰能力2.7%。

	現況	未來展望	
風力發電	1.台電公司已於2001年9月13日起完成澎湖中屯8部風力發電機組，總裝置容量爲4,800瓩。 2.配合「風力發電10年發展計畫」，在2003年初辦理「風力一期計畫」，至2006年12月止完成石門、恆春、大潭及觀園32部機組，總裝置容量爲42,960瓩；其餘28部總裝置容量爲56,000瓩，預定2007年底前商轉。 3.「風力二期計畫」於2005年初展開，預定設置62部風力發電機組，總裝置容量爲124,000瓩。	擬定「風力發電10年發展計畫」，規劃於台灣西部沿海風能資源豐富地區優先辦理，未來10年內以至少設置200台風力發電機或總裝置容量30萬瓩以上爲目標。	
太陽能發電	台電公司自1993年及1999年開始於恆春及澎湖地區進行太陽日照量及氣象資料調查蒐集，以備日後評估設廠之可行性。	積極推動太陽光電系統，台電公司已在台北樹林電力綜合研究所內及台北市區營業處各興建1座20峰瓩的太陽光電示範系統。	
地熱發電	全台灣地區有近百處顯示具溫泉地熱徵兆，但較具開發地熱潛能者有26 處，理論蘊藏量約有100萬瓩，能克服地熱酸性成分高與蒸氣含量少兩項科技發展上之瓶頸，則地熱發電在台灣地區將會有較好的發展前景。	配合宜蘭縣政府之開發計畫，台電公司除無償提供清水地熱發電機組設備給宜蘭縣政府使用之外，並積極協助其辦理「清水地熱發電多目標利用計畫」，宜蘭縣政府將以BOT方式對外招商。	
生質能發電	台灣地區的生質能發電應用有垃圾焚化發電及沼氣發電2大類，前者以內湖焚化廠成效最好，連同其他垃圾焚化發電，總計裝置容量有54.76萬瓩。沼氣利用在農委會及農林廳的輔助下，爲豬糞尿厭氧消化處理研究首開其端，高雄立大農畜公司，建立200頭豬糞尿處理系統，產生的沼氣直接供燃燒及發電之用。	已有台北之山豬窟、福德坑、台中文山、高雄西青埔等垃圾掩埋場之沼氣發電廠順利併聯發電，合計裝置容量2.18萬瓩，台電公司並配合購電，未來則視成效逐步擴展至其他縣市。	

Research and Development of Renewable Energy Technologies

Taiwan's limited energy resources have rendered the country heavily dependent on imports to meet its energy needs. Increased environmental awareness has made people more cognizant of the need to develop additional domestic energy sources and make more use of environmentally friendly "green" energy. The government has already formulated a national renewable energy strategy for Taiwan; Taipower is playing an important role in the implementation of this strategy through its R&D and energy source development activities.

The government convened Taiwan's first National Energy Conference in May 1998. One of the major goals announced during the Conference was to have new energy sources account for 1~3% of Taiwan's energy supply by 2020. The Bureau of Energy, Ministry of Economic Affairs formulated development targets for each type of renewable energy. In the case of electricity generation, the objective was for renewable energy sources to account for 10% of Taiwan's total installed electricity generating capacity by 2020. In the Statute for Renewable Energy Development (Draft) passed by the Executive Yuan in August 2002, it sets out government incentive for up to 6,500MW of renewable energy, which further affirms government's resolve to push for the development of renewable energy. The Statute also defines renewable energy as solar energy, biomass energy, geothermal heat, ocean energy, non-pumped storage hydro and other sustainable forms of energy approved by the central competent authority.

Taipower has been evaluating the applications of different forms of renewable energy and identified a few items with greater development potential for investigation and research, including small hydro, wind power, photovoltaic, ocean thermal gradient, and wave energy. Taipower views small hydro power generation as conventional power resources and has been developing it on a continual basis. Wind power generation is a less costly approach at the present stage and a development focus. The other forms of renewable energy are in nascent stage of development with piecemeal projects. Renewable energy is susceptible to the influence of weather. Its power generation is largely unstable. Thus except for hydro power with reservoir or detention pond, geothermal and biomass energy, the other forms of renewable energy can only serve as auxiliary power source.

Taipower's installed capacity of renewable energy (including conventional hydro power) at the end of 2006 amounted to 2,007,000kW, accounting for 5.4% of system capacity; its net peaking capacity totaled 1,013,000kW, accounting for 2.7% of net peaking capacity of the system.

	Current Status	Future Prospect
Wind power	1.Taipower has installed eight wind power generators with total installed capacity of 4,800kW at Zhongtun penghu since sep. 13, 2001. 2.In coordination with the Ten years Wind Power Development Program, Taipower carried out Phase 1 Wind Power Project in early 2003, and has installed 32 generators with total installed capacity of 42,960kW at Shihmen, Hengchuan, Datan and Guanyuan by Dec. 2006; the other 28 units with installed capacity of 56,000kW are scheduled for commercial run before the end of 2007. 3.The Phase 2 Wind Power Project was embarked in early 2005. A total of 62 wind turbines with total installed capacity of 124,000kW are planned for installation.	Under the Ten years Wind Power Development Program, Taipower plans to install at least 200 wind turbines or 300,000kW capacity of wind power in the next ten years in predominantly areas along the western corridor of Taiwan with rich wind energy resources.
Solar energy	Taipower starts gathering sunshine and meteorological data at Hengchuan and Penghu in 1993 and 1999 respectively to prepare for feasibility study of plant construction at a later date.	Taipower will vigorously promote the photovoltaic system. So far, Taipower has set up a 20kWp photovoltaic model system at the Taipei Shulin Power Research Institute and Taipei Branch office.
Geothermal energy	There are close to 100 hot spring areas in Taiwan showing the sign of geothermal heat, but only 26 places with theoretical reserve of 1 million kW have development potential. If two technological bottlenecks-high acidity and low steam content of geothermal heat can be surmounted, the development of geothermal power generation will have a better prospect in Taiwan.	In support of the development plan of Ilan Government, Taipower provides geothermal generating units for its Ching-Shui project free of charge and renders assistance to its Ching-Shui Geothermal Power Project. Ilan Government plans to proceed with the project by BOT.
Biomass energy	Taiwan has two sources of biomass energy-refuse incineration and biogas. The former is best represented by the operation of Neihu Incineration Plant. The total installed capacity of generating units at Neihu Incineration Plant and other incineration plants amount to 547,600kW. With grants from the Council of Agriculture and Department of Agriculture and Forestry, the research of biogas utilization began with anaerobic treatment of hog excretions. Kaohsiung Lida Livestock Co. has established an excretion treatment system for 200 hogs and uses the biogas generated for burning and power generation.	The biogas power generation systems of landfills in Taipei (Shangzhuku, Fudekang), Taichung (Wen Shan), and Kaohsiung (Shi Ching Fu) with total installed capacity of 21,800kW have tied in to the Taipower system. Taipower has committed to purchase electricity generated by the biogas systems and plans to extend the project to other cities.

2007

核能發電與永續管理

Nuclear Power and Sustainable Management

營運管理狀況

目前台電公司共有3座核能發電廠，於供電系統中擔任基載任務，總裝置容量達514.4萬瓩，2006年發電量爲383.2億度，約占全國總發電量19.5%；另有施工中的核四「龍門計畫」。台電公司的核能營運績效在世界各國中屬中上水準，2006年年平均異常事件爲4件／廠、違規案件2.3件／廠，而自動急停次數爲0.3次／機組，比起先進國家更是毫不遜色。此外，低放射性固廢棄產量爲54.5桶／機組，亦是歷年來最佳成績。

任重道遠的核四工程

行政院於2000年10月宣布停建核四，之後於2001年2月宣布復工。未來核四的完工將配合國家長期經濟發展，遵循多元化政策，達到持續擴充電源，提供優質、廉價、可靠電力的目標。第一號機預計2009年商轉。

▶ 核能一、二、三廠工程概況

廠名	核能一廠發電廠		核能二廠發電廠		核能三廠發電廠	
廠址	台北縣石門鄉乾華村		台北縣萬里鄉國聖村		屏東縣恆春鎮	
機組數	2部（各636,000瓩）		2部（各985,000瓩）		2部（各951,000瓩）	
核反應器系統						
◦製造廠商	美國奇異公司		美國奇異公司		美國西屋公司	
◦型式	沸水式反應器（BWR）		沸水式反應器（BWR）		壓水式反應器（PWR）	
◦包裝容器	GE MARK-I		GE MARK-III		LARGE DRY TYPE	
◦核心最大熱功率	每部機1,775MWth		每部機2,894MWth		每部機2,785MWth	
汽輪發電機組						
◦製造廠商	美國西屋公司		美國奇異公司		美國奇異公司	
◦汽輪機型式	TC4F-40"		TC4F-44"		TC4F-44"	
◦發電機型式	氫氣內冷式		氫氣內冷式		氫氣內冷式	
◦發電裝置容量	每部機636MWe		每部機985MWe		每部機951MWe	
施工工期	一號機	二號機	一號機	二號機	一號機	二號機
◦開始建廠	1971.12	1971.12	1975.08	1975.08	1978.04	1978.04
◦商業運轉	1978.12	1979.07	1981.12	1983.03	1984.07	1985.05

註：1.核一廠風力發電機組總裝置容量3,960kW（660kW*6），於2004年12月30日併聯使用。

2.核三廠風力發電機組總裝置容量4,500kW（1,500kW*3），於2005年3月3日併聯使用。

Operation and Management

The three operating nuclear power plants of Taipower are assigned the duty of base load supply. With total installed capacity of 5,144,000kW, the three nuclear power plants generated 38.32 billion kWh of electricity in 2006, accounting for 19.5% of nationwide power generation. Taipower has another power plants, the 4th Nuclear Power station, dubbed the "Lungmen Project" under construction. Taipower's nuclear plant operation ranks at the upper intermediate level in performance as compared to nuclear installations in other countries. In 2006, Taipower recorded on average 4 incidentsplant, 2.3 violations/plant, and 0.3 times of automatic emergency shutdown/unit. Such records are on a par with those of advanced countries. The output of low-radioactive solid waste of Taipower's nuclear plants in 2006 was 54.5 flasks/unit, the best record over the years.

1st, 2nd and 3rd Nuclear Power Plants At a Glance

Plant	1st Nuclear		2nd Nuclear		3rd Nuclear	
Address	Chian Hua Tsun, Shihmen Hsiang, Taipei County		Guo Shen Tsun, Wanli Hsiang, Taipei County		Hengchuan Township, Pingtung County	
No. of units	2 (636,000kW each)		2 (985,000kW each)		2 (951,000kW each)	
Nuclear reactor						
○ Manufacturer	GE		GE		Westinghouse	
○ Model	BWR		BWR		PWR	
○ Container vessel	GE MARK-I		GE MARK-III		LARGE DRY TYPE	
○ Max. core power	1,775MWth per reactor		2,894MWth per reactor		2,785MWth per reactor	
Turbine						
○ Manufacturer	Westinghouse		GE		GE	
○ Turbine model	TC4F-40"		TC4F-44"		TC4F-44"	
○ Generator model	Hydrogen-cooled		Hydrogen-cooled		Hydrogen-cooled	
○ Installed capacity	636MWe per unit		985MWe per unit		951MWe per unit	
Construction	No. 1	No. 2	No. 1	No. 2	No. 1	No. 2
○ Commencement date	1971.12	1971.12	1975.08	1975.08	1978.04	1978.04
○ Commercial operation	1978.12	1979.07	1981.12	1983.03	1984.07	1985.05

The Burden-Laden Fourth Nuclear Project

The Executive Yuan announced the suspension of 4th nuclear station construction in October 2000 and subsequently announced the resumption of construction in February 2001. In support of long-term economic development and diversified energy policy, the 4th nuclear power station upon its completion will help achieve the goal of providing quality, affordable and reliable energy. The first generating unit of 4th nuclear station is slated for commercial run in 2009.

環境保護

核能電廠的興建與運轉對周遭環境生態所造成的影響，是一般大眾非常關心的問題，因此台電公司在核一廠廠址內成立「放射實驗室」，且依「環境輻射偵測規範」要求，評估核能發電廠所在地的氣象、水文、人口、分布等條件設置取樣站，並進行直接輻射、空氣、水、生物樣、土壤、岸砂等項目的輻射偵測。經評估對附近民眾劑量均遠低於法規限值（小於1%），且於天然輻射變動正常範圍內。

在核能電廠溫排水監測方面，台電公司則長期委託學術機構辦理「核能發電廠溫排水監測計畫」，監測結果，各核能電廠溫排水均符合「放流水標準」規定：放流口水溫不得超過42℃，且距排放口500公尺處之表面水溫差不得超過4℃。

▶ 2006年取樣監測分析樣品表

單位：樣次

廠別	加馬直接輻射	空氣樣	落塵	水樣	生物樣	累積效應	總計
核一廠	43,949	1,720	12	326	97	79	46,183
核二廠	43,769	1,186	12	328	81	88	45,464
核三廠	43,701	1,728	12	492	158	90	46,069
核四廠	35,175	336	12	408	176	58	36,165

▶ 核能電廠溫排水監測計畫成果

水溫	核一廠	核二廠	核三廠	法規限值
放流口水溫	夏季 32℃	夏季 32℃	夏季 31℃	42℃
	冬季 22℃	冬季 22℃	冬季 21℃	
距排放口500公尺溫升	ΔT<4℃	ΔT<4℃	ΔT<4℃	ΔT<4℃

▶ 核能電廠溫排水可供魚類養殖。

活跳跳的溫排水養魚

台電公司參考日本核能電廠的作法，並以「養魚即養水」觀念，利用核電廠溫排水進行馬拉巴石斑魚、紅色尼羅魚等的養殖。此舉不但有助民眾消弭對於電廠溫排水的各項疑慮，更與民眾搭起放流、餽贈、垂釣趣味的互動橋樑。

Environmental Protection

The construction and operation of nuclear power plant invariably impact the surrounding environment and ecosystems. It is also an issue of public concern. Thus Taipower has set up a Radiation Laboratory at the site of 1st Nuclear station, and in accordance with the requirements set forth in Environmental Radiation Detection Rules, has set up sampling stations around nuclear power plants according to the local meteorological characteristics, hydrology, population and distribution to detect direct radiation, and radiation in air, water, biological samples, soil and nearshore sand. The radiation dosages detected are far below the legal limit (<1%) and within the normal range of natural radiation.

In the monitoring of cooling water discharged from nuclear plants, Taipower enlists the service of academic institutions to conduct long-term monitoring, and finds that cooling water discharged by respective nuclear plants meets the "effluent" standard, that is, water temperature at the discharge point shall not exceed 42℃, and difference with the temperature of surface water at 500M from the point of discharge is not more than 4℃.

2006 Monitoring and Sampling Analysis

Unit: No. of sample

Plant	Direct gamma radiation	Air sample	Dust fall	Water sample	Biological sample	Cumulative effect	Total
1st Nuclear	43,949	1,720	12	326	97	79	46,183
2nd Nuclear	43,769	1,186	12	328	81	88	45,464
3rd Nuclear	43,701	1,728	12	492	158	90	46,069
4th Nuclear	35,175	336	12	408	176	58	36,165

Nuclear Plant Cooling Water Discharge Monitoring

Water temperature	1st Nuclear	2nd Nuclear	3rd Nuclear	Legal limit
Point of discharge	Summer 32℃	Summer 32℃	Summer 31℃	42℃
	Winter 22℃	Winter 22℃	Winter 21℃	
Difference with water at 500M from point of discharge	△T<4℃	△T<4℃	△T<4℃	△T<4℃

Raising Fish with Cooling Water Discharge

In reference to the practice of nuclear power plants in Japan, Taipower uses the cooling water discharged by the nuclear power plants to raise Malabar-reef cod and red tilapia. This undertaking helps remove people's concern over water discharge from nuclear plants and builds a bridge of interaction with the public by offering a venue for people to go fishing and release fish.

核廢料管理

各核電廠所產生的低放射性廢棄物，經焚化、壓縮減容或固化處理後，再以鍍鋅鋼桶盛裝，貯存於各貯存設施內嚴格管制。其中，固化廢棄物年產生量逐年下降，2006年總合計爲327桶，再創歷年新低紀錄，顯示廢棄物減量工作成效卓著，並邁向永續發展。

Spent Nuclear Fuel Management

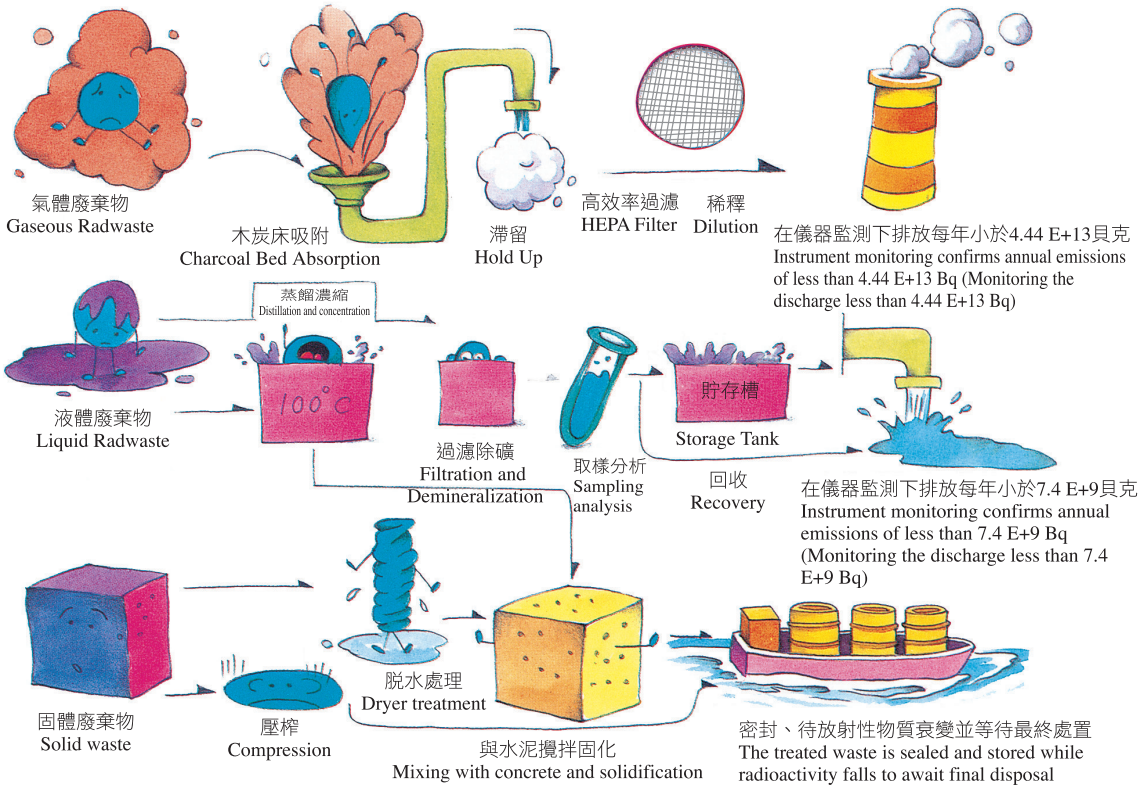
Low-radioactive wastes produced by the nuclear power plants are incinerated, compacted or solidified and placed in steel flasks before they are shipped to storage facility and put under rigorous control. The output of solidified nuclear waste from nuclear power plants has been dropping by the year and totals 327 flasks in 2006, which is a record low and indicates the success in Taipower's waste reduction efforts.

▶ 蘭嶼貯存場壕溝吊桶作業
Ditch bucket operation at Lanyu nuclear waste storage facility

▶ 低放射性廢棄物固化裝桶情形
Flasking solid low-radioactivity waste

▶ 核一廠現代化廢棄物貯存庫外觀
The modern-day waste storage container at 1st Nuclear Power Station

▶ 低放射性廢棄物處理程序
Processing Procedures for Low-level Radioactive Waste



核能安全

「核安管制紅綠燈」（績效指標）主要是表達出核能電廠各項安全系統，以確保民眾安全。綠燈表示無安全顧慮；白燈表示低微安全顧慮；黃燈表示中度安全顧慮；紅燈表示顯著安全顧慮。另外，行政院原能會的視察員也會到電廠現場視察驗證績效指標之統計結果及安全表現，並將視察發現公布於網站上。

▶「核安管制紅綠燈」（績效指標）

指標	機組	核一廠		核二廠		核三廠	
		1	2	1	2	1	2
肇始事件	臨界7,000小時非計劃性反應爐急停（自動或手動）	●	●	●	●	●	●
	非計劃性反應爐急停且喪失正常熱移除	●	●	●	●	●	●
	臨界7,000小時非計劃性功率變動＞20%額定功率	●	●	●	●	●	●
救援系統	高壓冷卻水系統（HPCI／HPCS）不可用率	●	●	●	●	●	●
	反應爐爐心隔離冷卻水系統（RCIC）不可用率或輔助飼水系統（AFW）不可用率（核三廠）	○	●	●	●	●	●
	餘熱移除系統（RHR）不可用率	●	●	●	●	●	●
	緊要柴油機（EDG）不可用率	●	●	●	●	●	●
	安全系統功能失效	●	●	●	●	●	●
屏障完整	反應爐冷卻水系統比活度	●	●	●	●	●	●
	反應爐冷卻水系統洩漏率	●	●	●	●	●	●

註：● 無安全顧慮　○ 低微安全顧慮　● 中度安全顧慮　● 顯著安全顧慮

Nuclear Safety

The "Rating Criteria for Nuclear Safety Performance" (performance indicators) is designed to illustrate the safety of nuclear power plant so as to ensure public safety. Green light represents no safety significance; white light means low-level safety significance; yellow light means medium-level safety significance; and red light represents high-level safety significance. The inspectors of Atomic Energy Commission (AEC) would visit the nuclear power plants to examine the statistical findings of performance indicators and inspect safety operations, and publish the findings on AEC website.

▶ "Rating Criteria for Nuclear Safety Performance" (Performance Indicators)

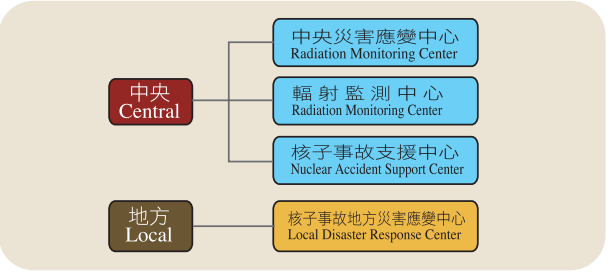
Indicator	Plant	1st Nuclear		2nd Nuclear		3rd Nuclear	
	Unit	1	2	1	2	1	2
Initiating Event	Unplanned Scrams per 7,000 Critical Hours (Automatic or Manual)	●	●	●	●	●	●
	Unplanned Scrams with Loss of Normal Heat Removal	●	●	●	●	●	●
	Unplanned Power Changes per 7,000 Critical Hours > 20% Rated Power	●	●	●	●	●	●
Mitigating System	Safety System Unavailability, High Pressure Injection System/High Pressure Core Spray System (HPCI/HPCS)	●	●	●	●	●	●
	Safety System Unavailability, Reactor Core Isolation Cooling System/Auxiliary Feed Water System (RCIC/AFW)	○	●	●	●	●	●
	Safety System Unavailability, Residual Heat Removal System (RHR)	●	●	●	●	●	●
	Safety System Unavailability, Emergency AC Power System (EDG)	●	●	●	●	●	●
	Safety System Functional Failures	●	●	●	●	●	●
Barrier	Reactor Coolant System Activity	●	●	●	●	●	●
	Reactor Coolant System Identified Leakage	●	●	●	●	●	●

Note: ● No safety significance　○ Low-level safety significance　● Medium-level safety significance　● High-level safety significance

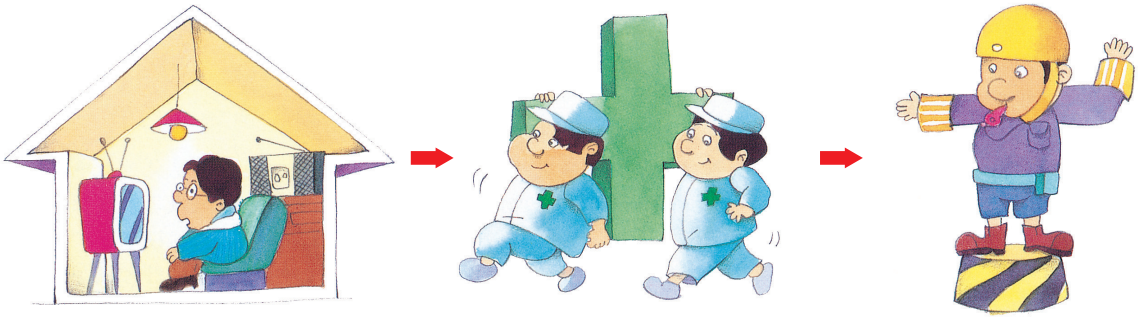
核子事故緊急計畫

「核子事故緊急應變法」於2005年7月正式實施，當有核子事故發生時，中央政府依法成立「中央災害應變中心」、「輻射監測中心」及「支援中心」，地方政府成立「地方災害應變中心」，負責核子事故緊急應變相關事務。目前台電公司3座核能發電廠固定每年定期舉行廠內演習外，亦輪流舉辦「核安演習」，展現各單位緊急應變平時整備與動員配合的能力，期將損害降至最小。

▶ 核子事故應變組織圖
Organizational Chart for Nuclear Accident Response



▶ 核電廠發生事故時民眾應配合事項
Instructions for members of the public in the event of an accident at a nuclear power plant



留在屋內或水泥建築內，保持鎮定，注意電視、收音機對事故的報導，等候進一步通知。

Remain indoors, or within a concrete structure. Stay calm. Use the TV or radio to obtain the latest information about the accident, and wait for further instructions.

醫護人員隨時待命，協助民眾防護及提供醫療服務。

Medical personnel should be on standby to help members of the public take protective measures and to provide medical treatment as needed.

民眾、人員在憲警指揮下進行疏散。

Evacuation of power plant personnel and members of the public is directed by the police or military police.

- 如果您是旅遊觀光客，有交通工具者請即離開事故地區或即請遵循憲警人員疏散指示。
- 核子事故最大的影響範圍，只到核能電廠周圍5公里。
- If you are a holidaymaker or tourist visiting the plant, if you have your own means of transport then leave the area immediately. Follow the evacuation instructions given by the police or military police.
- The area affected by an accident at a nuclear power plant would not extend beyond a 5-kilometer radius of the plant.

Emergency Plan for Nuclear Accident

Pursuant to the Nuclear Accident Emergency Response Act promulgated in July 2005, in the event of a nuclear accident, the central government will set up a Central Disaster Response Center, a Radiation Monitoring Center, and a Support Center, and the local government will set up a Local Disaster Response Center to be in charge of related affairs. The three operating nuclear power plants of Taipower conduct in-plant drill every year and take turns holding nuclear safety exercise to illustrate the preparedness and mobilization capability of various units in emergency response to nuclear accident in the hope to bring damages to the minimum.

電力小辭典

- **供電量**：供電量＝淨發電量＋購電量－抽蓄用電
- **發電量**：一般指「淨發電量」。淨發電量＝廠毛發電量－廠內用電量。
- **裝置容量（機組容量）**：即發電廠機組的裝置容量。如以系統而論，則爲該系統所有發電廠裝置容量的總和。
- **電力系統（電力網）**：聯結各發電廠傳送電力至各用戶之間的輸配電網路。
- **基載機組**：發電機組特性必須爲可長時間穩定運轉，且變動成本低。
- **機組熱效率**：表達發電機組能否有效運用燃料熱能的數據，熱效率愈高，表示機組運用燃料的效率愈高。
- **商轉**：新發電機組完成各項測試，取得相關單位的證照後，正式加入電力系統運轉。
- **併聯**：發電機組與電力網處於聯結的狀態。
- **時間電價**：依不同供電時間的供電成本分別訂價之電價制度。
- **跳電**：因用電設備故障，導致相關保護開關動作（如斷路器啓斷），而產生中斷供電的現象。
- **感電**：指接觸帶電體或因通電而使人體遭受衝擊的情況而言。
- **灰塘**：針對火力燃煤電廠發電產生的煤灰，除部分可再利用外，剩餘煤灰採用築堤的方式於岸邊形成一人工池，藉以沈澱煤灰，避免流入海域造成污染，此一人工池塘即稱爲灰塘。
- **潔淨能源（綠色能源）**：指對環境污染較少的能源。如風力、太陽能等再生能源發電、天然氣或沼氣發電、燃料電池發電等。
- **再生能源**：來自大自然且可重複使用的能源。
- **風場**：風場（Wind Farm或Wind Park），亦稱「風車園區」。指在風力資源良好的區域，集中設置多部風力機組，而形成一處兼具發電及觀光雙重功能的景點。
- **地熱發電**：利用地熱產生之蒸汽來發電的一種方式。
- **汽電共生**：能夠同時產生蒸汽與電力的能源供應系統，且具有能源利用率與經濟性提高、環境污染量減少等潛在效益。
- **環境輻射監測**：指爲瞭解核設施周圍環境中放射性物質的分布與累積狀況，並確認環境中輻射造成之民眾輻射劑量在法規限度下，考量重要輻射曝露途徑與環境生態，所進行之直接輻射、空氣、水、生物樣及岸砂等項目之輻射偵測。
- **放射性廢棄物**：俗稱「核廢料」或「核廢」，指具有放射性或受放射性物質污染的廢棄物。
- **急停**：因核子反應器保護系統動作，致使控制棒快速全部插入反應器爐心。若此時發電機正與電力系統聯結供電中，就會造成跳機停止供電。

Glossary of Electricity Terms

- **Amount of electricity supplied:** Amount of electricity supplied = net amount of electricity generated + amount of electricity purchased − electricity used by pump storage.
- **Amount of electricity generated:** It usually refers to net electricity generated. Net electricity generated = gross electricity generated − in-plant electricity consumed
- **Installed capacity (generating unit capacity):** The installed capacity of the generating units of power plant. The installed capacity of the system is the sum of installed capacity of all power plants.
- **Power system (power grid):** A network of electric power lines linking up the power plants to transmit and distribute power to users.
- **Base load generating unit:** A generating unit capable of operating steadily over a long period of time with low variation cost.
- **Unit thermodynamic efficiency:** The value indicating whether the generating unit uses the thermal energy of fuel efficiently; higher thermodynamic efficiency means more efficient use of fuel by the generating unit.
- **Commercial run:** A new generating unit joining the operation of power grid after completing all kinds of tests and acquiring necessary licenses.
- **Tie-in:** The state of a generating unit linking up with the power grid.
- **Time-of-use rates:** The electricity rate system that sets rates based on the cost of supply which varies at different hour.
- **Trip:** The phenomenon of power supply interruption due to equipment failure that leads to the activation of protection switch (e.g. circuit breaker).
- **Induction:** The condition of electric shock to human body upon contact with an electric energy source or due to the pass-through of electric current.
- **Ash pond:** Of the coal ash generated by a coal-fired power generation plant, part of it is utilized and the remaining is used to build in a manner of embanking into an artificial pond to precipitate the ash and prevent it from flowing into seawater to pollute the ocean. Such artificial pond is called ash pond.
- **Clean energy (green energy):** It refers to energy that is less polluting to the environment, such as wind power, solar energy, natural gas, biogas, and fuel cell.
- **Renewable energy:** Energy that comes from the nature and can be used repeatedly.
- **Wind Farm (wind park):** An area with abundant wind power resources and dense installation of wind turbines to turn into a scenic spot that also generates power.
- **Geothermal power generation:** A method of power generation using steam produced by geothermal heat.
- **Co-generation:** An energy supply system that generates steam and electricity at the same time and offers the underlying benefits of enhanced energy use and economic interest and reducing environmental pollution.
- **Environmental radiation monitoring:** Measuring direct radiation and radiation in air, water, biological samples and nearshore sand in consideration of the major path of radiation exposure and eco-environment to understand the distribution and accumulation of radioactive substance in the environment surrounding a nuclear facility and ensure that the environmental radiation people are exposed to is below the legal limit.
- **Radioactive waste:** Also called "nuclear waste", it refers to waste with radioactivity or contaminated by radioactive substance.
- **Scram:** An action of the nuclear reactor protection system that prompts the control rod to rapidly and totally insert into the reactor core. If the generator is tied in to the power system and in supply mode at the time, it will trip and stops power supply.