



興利 Promoting Benefits

綠色節能減碳為現今全球關注焦點，除為善盡保護地球責任外，也為國內經濟創造多元商機，開創新局；促進民間參與公共建設自91年大力推行至98年底止，已簽約案件共734件，民間投資金額達4,300億元，創造逾11萬個就業機會，開創政府、民眾、企業三贏局面。

Energy conservation and carbon reduction are the focus of global attention today; in addition to fulfilling the responsibility to protect the earth, this also creates new conditions for Taiwan's economy by creating a diversity of business opportunities. The vigorous promotion of Private Participation in Infrastructure Projects program from 2002 through the end of 2009 led to the signing of 734 contracts involving total private investment of NT\$430.0 billion and the generation of 110,000 jobs—a win-win-win situation for the government, the public, and the corporate sector.



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▲高雄巨蛋（BOT；97年9月）

綠能永續 促參三贏

Sustainable green energies Procure a triple-win situation

節能減碳 綠色能源

一、綠色能源

1.政府政策：

為落實節能減碳及配合政府推動「六大新興產業」，經濟部所定「綠色能源產業旭升方案」已將LED照明及太陽光電列為能源光電雙雄產業之一，並以擴大內需市場為主要驅動力。

2.便利機關採購：

為利各機關採購LED照明產品，已與廠商簽訂相關共同供應契約，提供各機關上網選購，詳如表1。



▲台中虹揚橋LED景觀照明。（台中市政府提供）

表 I：便利機關採購契約

Table 1: Facilities Agency

共同供應契約品項 Items in the inter-entity supply contracts	契約概述 Contract summary
LED交通號誌燈、出口標示燈及避難方向指示燈 LED traffic lights, exit lights and emergency direction lights	1.得標廠商計有70家，決標項次70項。 2.契約有效期自98年7月7日起至99年6月30日止。 1. Winning tenders consist of 70 suppliers, with 70 item categories. 2. The contract’s effective period is from 7th July 2009 until 30th June 2010.
LED路燈 LED street lights	1.得標廠商計有117家，決標項次35項。 2.契約有效期自98年12月18日起至99年11月30日止。 1. Winning tenders consist of 117 suppliers with 35 item categories. 2. The contract’s effective period is from 18th December 2009 until 30th November 2010.
高效率省能照明設施__LED室內照明 Highly Efficient and energy-saving lighting equipment (including indoor LED lighting)	1.得標廠商計有324家，決標項次35項。其中第五組LED室內照明部分決標11項。 2.契約有效期自98年12月29日起至99年9月30日止。 1. Winning tenders consist of 324 suppliers with 35 item categories. The indoor LED lighting (the fifth item category) consists of 11 items for tender. 2. The contract’s effective period is from 29th December 2009 until 30th September 2010.

Energy conservation with carbon emission reduction:Develop green energy

a. Green energy

1. Government policies: In order to achieve the objective of energy conservation and carbon emission reduction, as well as to assist the Government in promoting the ‘Six Emerging Industries Development Plan, the Ministry of Economic Affairs has drafted the ‘Dawning Green Energy Industry Program’. In this plan, LED industries is announced as one of the ‘Heroic Duo: Energy and Optoelectronics’. In addition,

the plan unveils the Government’s commitment to expanding domestic demands , a key strategy driving this initiative.

2. Expediency in agencies’ procurements: In order to make it more convenient for various Government agencies and organizations to purchase LED lighting products, beneficial terms have been negotiated with providers who have signed inter-entity supply contracts for the online procurement of LED lights. Details are illustrated in Table 1.

▼ 台中港中龍鋼鐵第二期廠



二、節能減碳

為因應全球經濟型態變化，刺激國內景氣與擴大就業，「綠色能源產業旭升方案」分為「能源光電雙雄」（包含了太陽光電、LED照明）、「能源風火輪」則是風力發電、生質燃料、氫能與燃料電池、能源資通訊與電動車輛。

每年高達5,000億元以上的公共工程，也應朝著節能減碳的方向發展。工程會配合國家發展綠能產業之政策，推動相關措施及理念宣導：

- 1.強化永續公共工程入口網的內涵與深度，廣蒐國內外新聞、活動訊息、專欄論文及案例報導，瀏覽人數39萬餘人次，為我國工程界永續及節能減碳的重要資訊平台。
- 2.辦理工程人員講習訓練及現地觀摩36班次，參訓人次達1,899人次。
- 3.於98年6月29日召開「依據再生能源發展條例—『公共工程優先裝置再生能源發電設備具體作法』研商會議」，並完成「公共工程或公有建築物設置再生能源設備規劃設計參考準則」。
- 4.函頒「公共工程或公有建築物設置太陽能發電系統參考資料彙編」，收集太陽能發電系統之定義、種類、組成原件、設置原則、招標注意事項、標準規範、驗收要求、諮詢窗口等資訊。
- 5.函頒「依政府採購法施行細則第63條辦理冷凍空調工程之參考方式」以提高空調系統能源使用效率。

而在推動重點方面，98年函頒「振興經濟擴大公共建設投資計畫落實節能減碳執行方案」及相關執行檢討作業要點，落實「綠色內涵」—綠色環境、綠色工法、綠色材料及綠色能源四大策略方向，要求採用綠色內涵經費應達工程經費比例10%以上，而其中綠色能源部分自99年度起則需以6%為目標。

▼ 台鐵大林站（綠建築）



▼ 桃園縣南園二路夜景（LED路燈）



b. Energy conservation with carbon emission reduction

In order to respond to the changing global economic environment, stimulate the domestic economy and increase job opportunities, the 'Dawning Green Energy Industry Program' has been designed. The program consists of two main components, namely the 'Heroic Duo: Energy and Optoelectronics' strategy (includes solar power and LED industry) and the 'Hot-wheel Energy' strategy (includes wind energy, biomass fuel, hydrogen energy and fuel cells, energy information communication as well as electric vehicle initiatives).

Construction projects that have purchasing values of more than NT 500 billion dollars per year, should also work toward energy conservation and carbon emission reduction. In accordance with the Government's policy to develop the green energy industry, the Public Construction Commission of the Executive Yuan continues to work incessantly to develop initiatives which promote the green energy concept. Listed below are examples of specific efforts in this regard:

1. In order to improve the content and expertise of the portal on sustainable public construction, a broad range of information has been collected and added to the website, including domestic and international news reports, activity news, column articles and case studies. To date, the site has had more than 390,000 visitors. The website is a crucial information platform in terms of energy conservation and carbon emission reduction for the country's construction and engineering industry.
2. Training for construction staff has been carried out with the delivery of 36 training sessions. A total of 1,899 people participated in the training sessions.
3. 'Standards of Practice for the Planning and Design of Renewable Energy Powering Equipments for Public Infrastructure Project or Public Building' have been completed and announced.
4. The 'Compiled Reference on Solar Power System for Public Infrastructure Project or Public Building' has been announced. This document includes



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information such as the definition of a solar power system, its types, components, installation principles, important notes on tendering, standards of practice, requirements of the review process and enquiry points.

5. The 'Example Method for Conducting Refrigeration and Air Conditioning Construction Projects' policy has been announced. The policy, which has been developed based on Article 63 of the Government Procurement Act, aims to increase the efficiency of air conditioning energies.

Furthermore, the 'Energy Conservation and Carbon Emission Reduction Implementation Plan for the Program to Expand Public Infrastructure for Economic Revival' has been announced. Key points for consideration concerning the execution of the plan have also been proposed. The concept of 'Green Culture' must be embedded into Government planning. Specifically, this includes employing the following four strategies: green environment, green construction, green materials and green energies. Moreover, it is now a requirement that the budget for implementing the 'Green Culture' concept ought to be at least 10% of the total budget for the construction project. Of this target budget, 6% was decided as the new target budget for green energies from 2010.

▼ 高雄市2009世界運動主場館（太陽光電）



促進民間參與 共創新局

行政院吳院長敦義：「BOT只要掌握三個原則，就可以推動：第一，目標要正確可行；第二，過程要合法透明；第三，效益要和全民共享，共創政府、企業及人民三贏的局面。」工程會職司促參政策與制度之研訂及政令之宣導，資訊之蒐集、公告及統計，專業人員之訓練，除積極建構完善的民間投資公共建設環境，並協助主辦機關慎選及推動適當的促參計畫，架設促參商機交流平台以吸引國內外投資人。

一、效益

1.已簽約促參效益

截至98年底，歷年成功簽約案件效益如表2。

2.成功案例介紹

促參與社會大眾生活習習相關，舉凡美食街、都市更新、轉運中心、學生宿舍、傳統藝術中心、體育園區、垃圾焚化廠、醫院、港口、免稅店等皆是，如桃園機場航空事業中心（含機場旅館）、台北縣八里垃圾焚化廠、雙和醫院、高速公路清水服務區、高雄巨蛋等公共建設皆是促參案件。

3.促參商機

99-100年預計開放民間參與之公共建設總額逾2,000億，各類別之民投金額如圖1，以交通建設為大宗，詳細資料可上本會促參專網下載2010招商手冊查詢（<http://ppp.pcc.gov.tw>）。

二、精進

鑒於BOT的生命週期很長，複雜度高，為完善促參推動環境，採修法及輔導雙管齊下手段。在修法方面，針對過去的缺失，於97年11月提出促參法修法草案，送請立法院審議中，強化缺失預防及財務評估等機制。另為提升機關辦理促參的能力及品質，工程會也採取到府服務的做法，以積極的輔導取代消極的列管，並推動各種支援措施（詳表3）。

表2：91～98年已簽約促參案件效益總表（統計時間：98.12.31）

Table 2. Benefits of Contracted Projects during 2002 to 2009.

年度 Year	件數 No. of Cases	計畫規模 (億元) Project Scale (NT\$ billion)	民間投資 (億元) Private Investment (NT\$ billion)	契約期間減少政府 財政支出(億元) Government Spending Reduced during the contractual period (NT\$ billion)	契約期間增加政府 財政收入(億元) Government Revenues Increased during the contractual period (NT\$ billion)	創造就業機會(名) No. of jobs created
91-97	656	4,092.71	3,786.82	5,706.17	3,483.55	88,924
98	78	541.64	528.13	563.49	464.52	25,317
總計 total	734	4,634.35	4,314.95	6,269.67	3,948.07	114,241

Procure a triple-win situation: Creating a new era through collaboration

Premier of the Executive Yuan Den-Yih Wu states, "So long as these three principles are adhered to, Build, Operate and Transfer (BOT) can be successfully implemented. First of all, the objectives must be accurate and feasible; secondly, the whole process must be legal and totally transparent; and finally, the efficiency and benefits must be shared by the people of Taiwan so the 'triple-win' situation for the Government, investor, and the community can be achieved." The Public Construction Commission of the Executive Yuan is responsible for reviewing and drafting regulations and policies, promoting implementation, collecting data, making public announcements, conducting statistics as

well as training professionals. The Public Construction Commission's efforts seek to proactively encourage the private sector to participate in infrastructure projects, assist the authorities in charge of choosing and promoting suitable plans and to develop a platform promoting interaction between businesses in order to attract domestic and international investors.

a. Benefits

1. Benefits of contracted projects

The table 2 summarizes the benefits of contracts signed up until the end of 2009.

2. Successful projects

Private Participation in Infrastructure Projects (PPIPs) such as the development of gourmet districts, urban

表3：促參新作為

Table 3. New actions in promoting private sector participation

修法 Regulation Amendment	契約概述 Guidance and Assistance
1.投資契約增訂如：規劃設計或執行不善之處理、營運品質管理、關係人介入、終止投資契約之條件等履約監督及品質把關事項。 Strengthening contracts standardization: The PCC is amending the contract and includes the items regarding contract-fulfillment supervision and quality control. Examples include the consequences of poor planning, design or implementation; operational management quality; the step-in right of the related parties; and conditions for terminating the concession agreement.	1.啟動促參專業輔導機制，已巡迴各地區辦理促參訓練及啟案輔導講習20場次，成功誘發14件、超過750億元的促參新案。 A new guidance mechanism for PPIPs has been initiated. To date, 20 training sessions and guidance seminars have been held across the country. As a result of this initiative, 14 new projects worth over NTS 75 billion have since been initiated.
2.增訂成立「民間參與重大公共建設計畫規劃內容審核委員會」，強化先期規劃內容(特別是財務計畫)之務實性及合理性。 Establishing the 'Plan Review Committee for the Promotion of Private Participation in Infrastructure Projects: The purpose is to strengthen the preliminary planning (in particular the financial plan) and ensure the practicality and rationality of the plan.	2.頒發「促參作業標準程序SOP及重要事項檢核表」，減少提案摸索時間，並做為各方共同檢視的平台。 With the announcement of the 'PPIPs Standard Operation Procedure and Important Items Checklist', time wasted on trial and error in conducting projects is minimized. This also provides a common review platform for all parties involved.
3.增訂「不當手段得標之廠商，應予撤銷其資格或解除終止契約」之規定。 The regulation has been amended to include a specific rule that states "any investor found to have won a tender by the use of unlawful acts shall be disqualified or have its contract terminated".	3.建置財務速算模式，並訓練基層同仁具有審查規劃技術顧問公司所做財務計畫的能力。 An efficient financial calculation model has been devised. In addition, training is provided to junior staffs to help them develop financial project review skills as possessed by professional consultancies.
4.增訂設置「促進民間參與公共建設爭議處理委員會」，提供履約爭議調解處理管道。 The Dispute Resolution Committee for Promotion of Private Participation in Infrastructure Projects' is established by the PCC to mediate contract disputes related to PPIPs.	4.修正促參作業注意事項，納入財務專家進行財務可行性評估及規劃報告審查，報告成果公開上網供全民檢視其合理性。 As the notice for PPIPs has been amended, a feasibility study on the financial plan and a review of the planning report by financial experts must be included. Results from the study and review must be published on the internet so the general public can also monitor the rationality of the project.
5.透過審核委員會監督及投資契約規範，如營運費率標準、調整時機及方式、風險合理分擔、環境影響分析以及住民意見之處理等，落實公共利益及環境生態保護。 The Plan Review Committee now oversees and defines standards to be included in investment contracts, such as the rates of operational costs, adjustment of timing and method, appropriate risk sharing, analysis of environmental impact, and dealing with resident's opinions. This way, the objective of promoting public welfare and the protection of the ecological environment can be better realized.	5.建置促參識別標誌，以利全民瞭解並監督促參案件執行成效。 A special identification logo has been designed for PPIPs in order to help the public to identify projects; enable the community to understand the process and supervise the progress and achievements of the initiative.

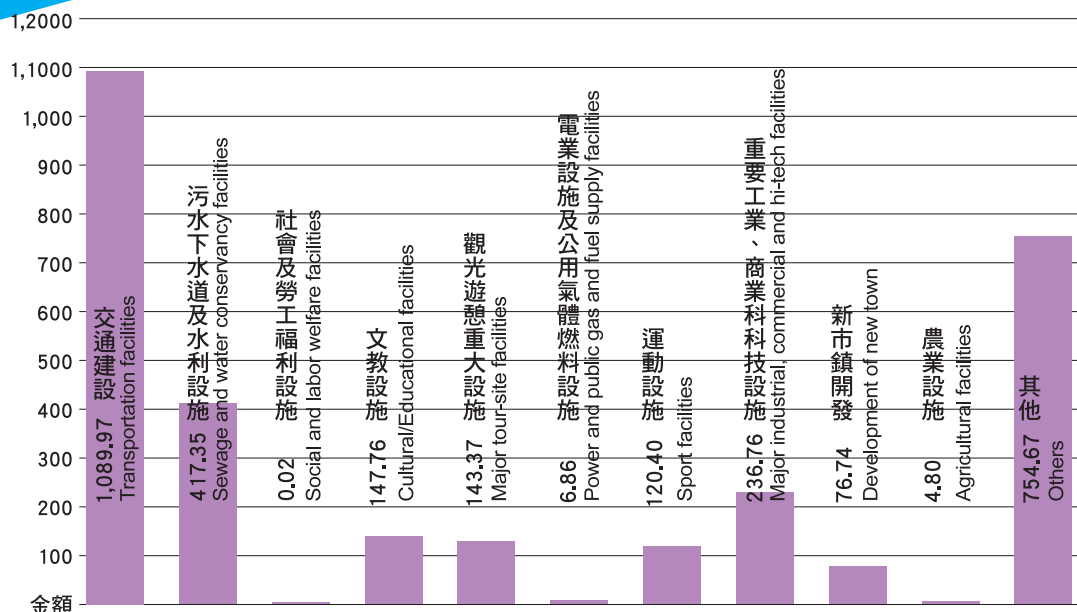


圖 I：99～100 年促參各類別商機統計圖

Chart 1 Business Opportunities Under Private Participation in Infrastructure Projects, 2010-2011, By Category

三、提升公共建設自償率

為增加民間參與公共建設之誘因及減低政府財政負擔，以自償率公式為基礎，由「開源」、「節流」來研議提高自償率，如表4。

表4：提升自償率作為及措施

Table 4: Actions and Measures to Enhance the Self-Compensating Ratio

作為 Methods	契約概述 Tangible Actions
1. 增加收入(開源) ● Increase revenue (broaden sources of income)	(1) 納入具商機之附屬設施及促參法第27條附屬事業開發 (2) 引導發展公共建設周邊地區土地開發 (3) 增加使用強度及使用項目，使公共建設多目標使用 (1) Include the ancillary facilities that provide business opportunities and develop the ancillary enterprises as stated in Article 27 of the 'Act for the Promotion of Private Participation in Infrastructure Projects'. (2) Help initiate the development of land around public construction. (3) Increase the utilization of public construction in terms of intensity and range so they are employed to achieve diverse objectives.
2. 降低投資成本 (節流) ● Reduce investment costs (reduce expenditure)	(1) 降低政府取得公共建設所需土地之費用（如運用聯合開發、權利變換、區段徵收或市地重劃……） (2) 檢討公共建設之最適規模，或分期分區開發營運 (3) 延長設備之使用年限 (4) 政府投資建設非自償部分 (1) Reduce the cost of acquiring land for public infrastructure projects (through joint development, rights transfer, zone expropriation, readjustment of urban land, etc.). (2) Ensure an appropriate scale for public infrastructure is agreed upon, or adopt phased and segregated development operations. (3) Extend the life cycle of facilities. (4) Government invest in part of the inadequate self-financing portion.



regeneration, transit centers, student dormitories, traditional arts centers, sports parks, refuse incineration plants, hospitals, harbors, duty-free shops and so on have become part of daily life of the people. Examples of such projects include the Aviation Business Operational Center of Taoyuan Airport (incl. Airport Hotel), Bali Incineration Plant in Taipei County, Shuang Ho Hospital, Cingshuei Service Area on the national freeway, and Kaohsiung Arena .

3. Business opportunities of PPIPs

The forecast of total investment of PPIPs is over NTS 200 billion during 2010 to 2011. The categories for private investments are shown in Figure 1 below.

b. Improvements

Due to the length of the BOT lifecycle and the complexity of the initiative, the ambidextrous approach of using both regulation amendment and guidance assistance has been adopted. In terms of regulations, the draft review of the Act for the Promotion of Private Participation in Infrastructure Projects in November 2008 has been proposed after reflecting on past oversights.

The proposal, which aims to prevent the potential for errors and strengthen financial evaluations, was presented to Legislative Yuan for review . In addition, as a means of improving the abilities and quality of work concerning the promotion of project participation by the authorities in charge, the Public Construction Commission of the Executive Yuan further implements an on-site service, replacing passive supervising with proactive guidance or assistance. An array of support measures are also put in place (detailed in Table 3):

c. Increase the self-liquidation ratio (SLR) of public infrastructure projects

In order to attract private sector participation in infrastructure projects as well as to lower the Government's financial burden, the SLR formula has been used as a basis for devising three broad strategies to augment the SLR. The three strategies include broadening sources of income and reducing expenditure.(see Table 4)