

國際減碳趨勢之因應對策：

我國能源科技與產業低碳化轉型之發展建議

執行單位

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- 探討產業低碳化轉型之策略工具，如何搭配能源科技技術之發展，有效促進我國產業低碳化轉型，所提之策略建議將可提高能源科技技術之投資誘因，同時創造綠色就業。
- 評估產業政策、部門減量及能源轉型策略下，對我國未來產業低碳化轉型之助益，據此提出策略建議，將有利於減碳效果之擴大，亦兼顧經濟發展。

情境別	「五加二」產業創新計畫	製造業節能投資	運輸部門提升公共運輸和發展電動車	2025年能源轉型目標
S0				
S1	●			
S2	●	●		
S3	●	●	●	
S4	●	●	●	●

情境別	2015-2025 累計 GDP	2015-2025 累計 CO2		Δ GDP/ Δ CO2
S0	292364191	3659707608.30	-	-
S1	302271104	3844446942.74	S1 v.s. S0	0.054
S2	303091501	3832779999.48	S2 v.s. S1	-0.0703
S3	303095535	3832615148.22	S3 v.s. S2	-0.024
S4	301729028	3781681060.08	S4 v.s. S3	0.027

- 本計畫最終目標在考慮節能減碳目標、能源價格、以及未來能源消費結構趨勢下，檢視我國能源科技產業發展方向，對於環境永續、能源安全與能源公平、綠色經濟與產業競爭力等願景之貢獻，以便重新定位我國能源科技發展之優選策略。本計畫共規劃5年度(103-107)執行期程，106年度得3項成果如下：
- 藉國內外最新氣候與能源發展之追蹤，以研擬因應對策，如美國退出《巴黎協定》對台灣產生之影響及因應、我國《電業法》之改革將有助於促進綠能之發展，以及檢討我國階段性管制目標之設定。
- 在最小化電力部門總成本的目標下，於2025年並無法達成新政府提出之20-30-50 潔淨能源發電結構之願景；若以2025年達成再生能源為20%之目標，將會使發電成本增加，並產生較多的躉購支出，進而減少我國之GDP，但可有效降低電力部門碳排放量。
- 於「五加二」產業創新計畫的推動下可幫助產業高值化，惟能源消費量之成長亦隨著經濟成長迅速增加，即便推動部門減量與能源轉型策略，對於清潔化的改善幅度仍相當有限。

Toward the global decarbonization trend: the policy suggestions of the energy technology development and industrial transitions in Taiwan

Execution Unit

Taiwan Research Institute

Project Director

Chung-Huang Huang

- Exploring which policy tools for low carbon transitions can be used with the energy technology development to effectively improve the low carbon industry transition in Taiwan. The related strategies we proposed will increase investment incentives in energy technologies and green jobs.
- Evaluating the helpfulness of the low carbon industry transition in Taiwan under the industrial policy, the GHG reduction policy proposed by each sector for the GHG reduction target in the first phase, and the energy transition goal in 2025. The suggestion we proposed will be conducive to the expansion of the carbon reduction effect, and taking into account the economic development.

Scenario	The 5+2 Industrial Transformation Plan	Energy saving for manufacturing industries	Enhance public transport and the development of electric vehicles for transport sector	Energy transition target in 2025
S0				
S1	●			
S2	●	●		
S3	●	●	●	
S4	●	●	●	●

Scenario	2015-2025 accumulative GDP	2015-2025 accumulative CO ₂		ΔGDP/ΔCO ₂
S0	292364191	3659707608.30	-	-
S1	302271104	3844446942.74	S1 v.s. S0	0.054
S2	303091501	3832779999.48	S2 v.s. S1	-0.0703
S3	303095535	3832615148.22	S3 v.s. S2	-0.024
S4	301729028	3781681060.08	S4 v.s. S3	0.027

- The ultimate goal of this project is therefore to review the development direction of energy technology industry under considering their contribution to environment, energy security, energy justice, green economy and industry competitiveness with carbon reduction targets, energy prices, as well as future energy consumption trends. Finally, the roadmap and priority of development of energy technologies will be repositioned. This project has been planned three-year implementation period. The 3 achievements in 2016 are as follows:
- Analyzing the key phenomenon about the domestic and global climate change trend to recommend the policy suggestions, such as The United States withdrew from the "Paris Agreement" on Taiwan's Impact and response, the reform of the "Electric act" will help promoting the development of green energy, and the review of the setting of phased goals for GHG emission in Taiwan.
- The energy structure in Taiwan can't achieve the vision of 20-30-50 clean energy power generation in 2025 under the total cost minimization of power sector. If the share of renewable energy power generation in 2025 successfully reaches 20% in 2025, it will increase the generating cost and pay more FIT expenses. Thus the Taiwan's GDP will further impacted, however the carbon emissions of the power sector will be effectively reducing.
- Driving the 5+2 industrial transformation plan can improve high value-added for industries. However, the energy consumption is also increase rapidly with the economic growth. The improvement in cleaning production is limited even if the promotion strategy of carbon emissions in sectors and energy transition.