Energy Governance in Taiwan: policy transition and challenge

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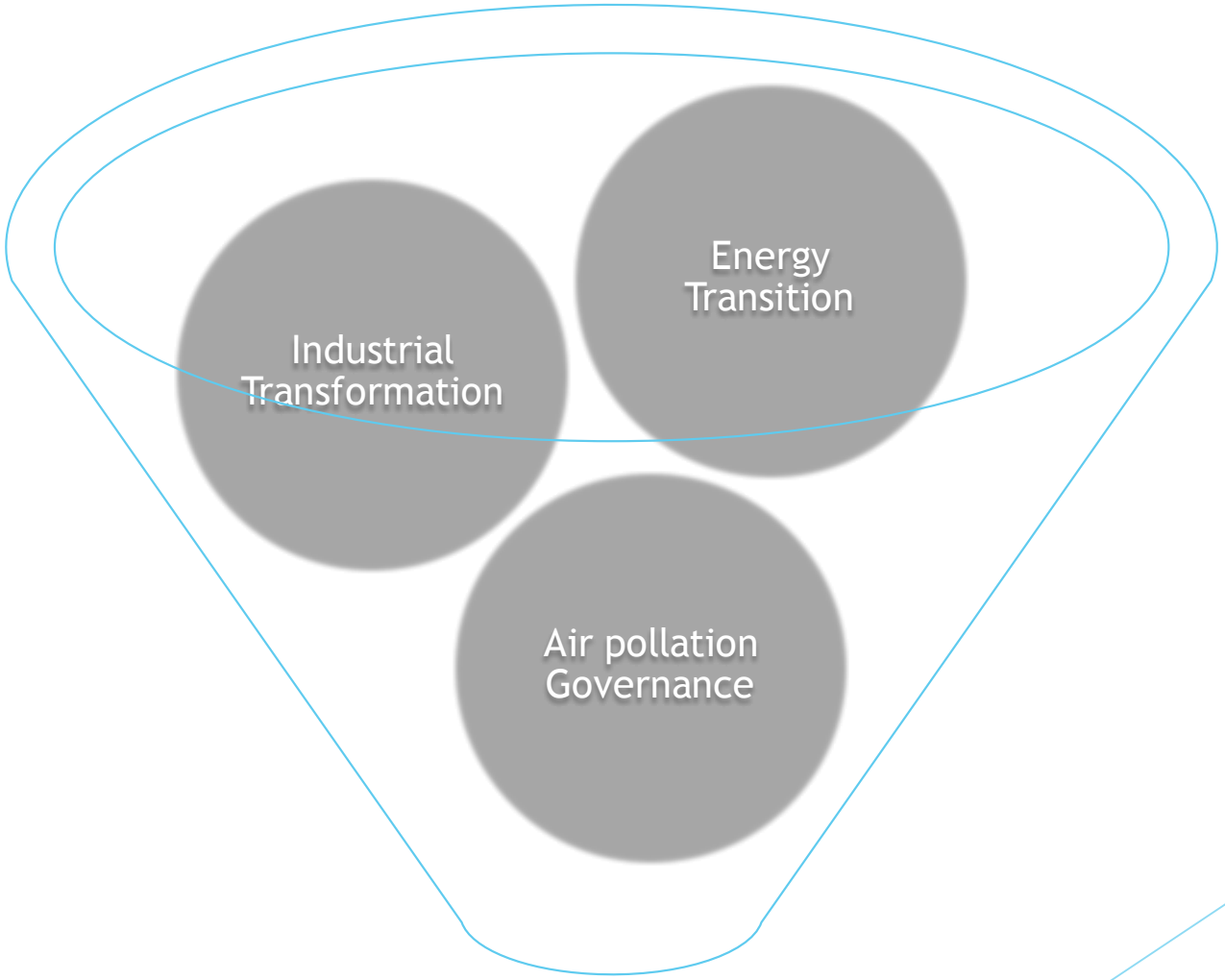
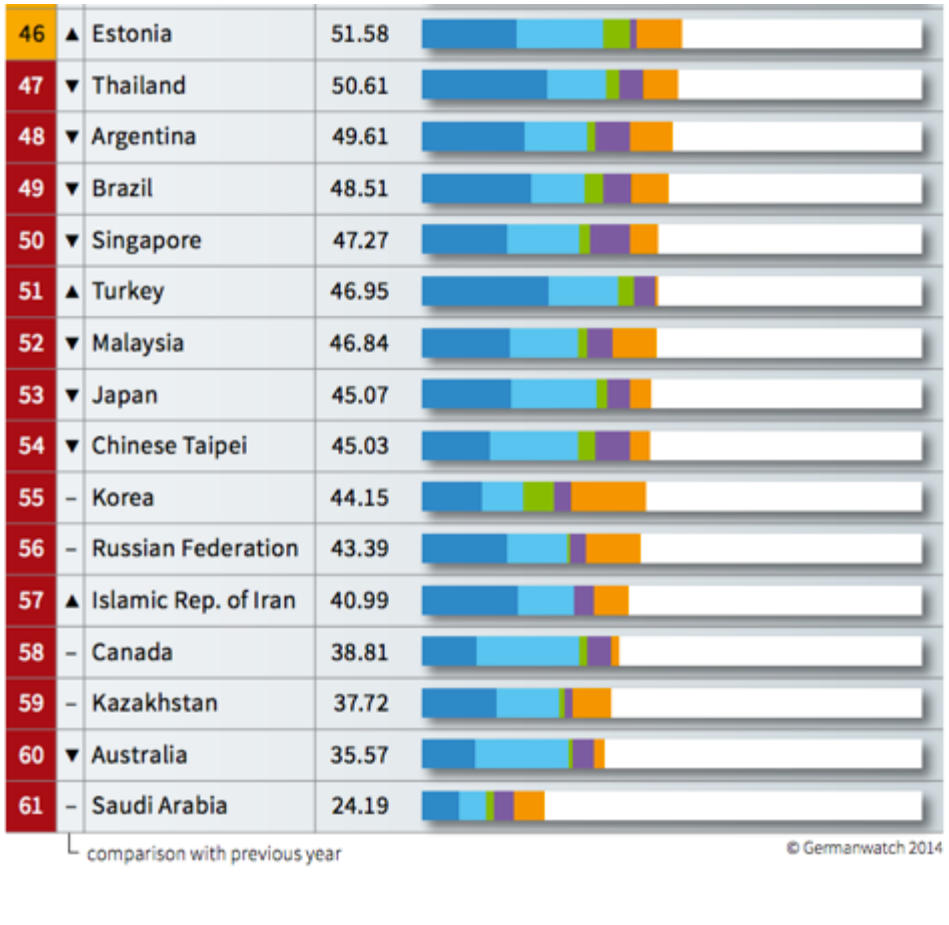
Energy Governance and Low Carbon Society

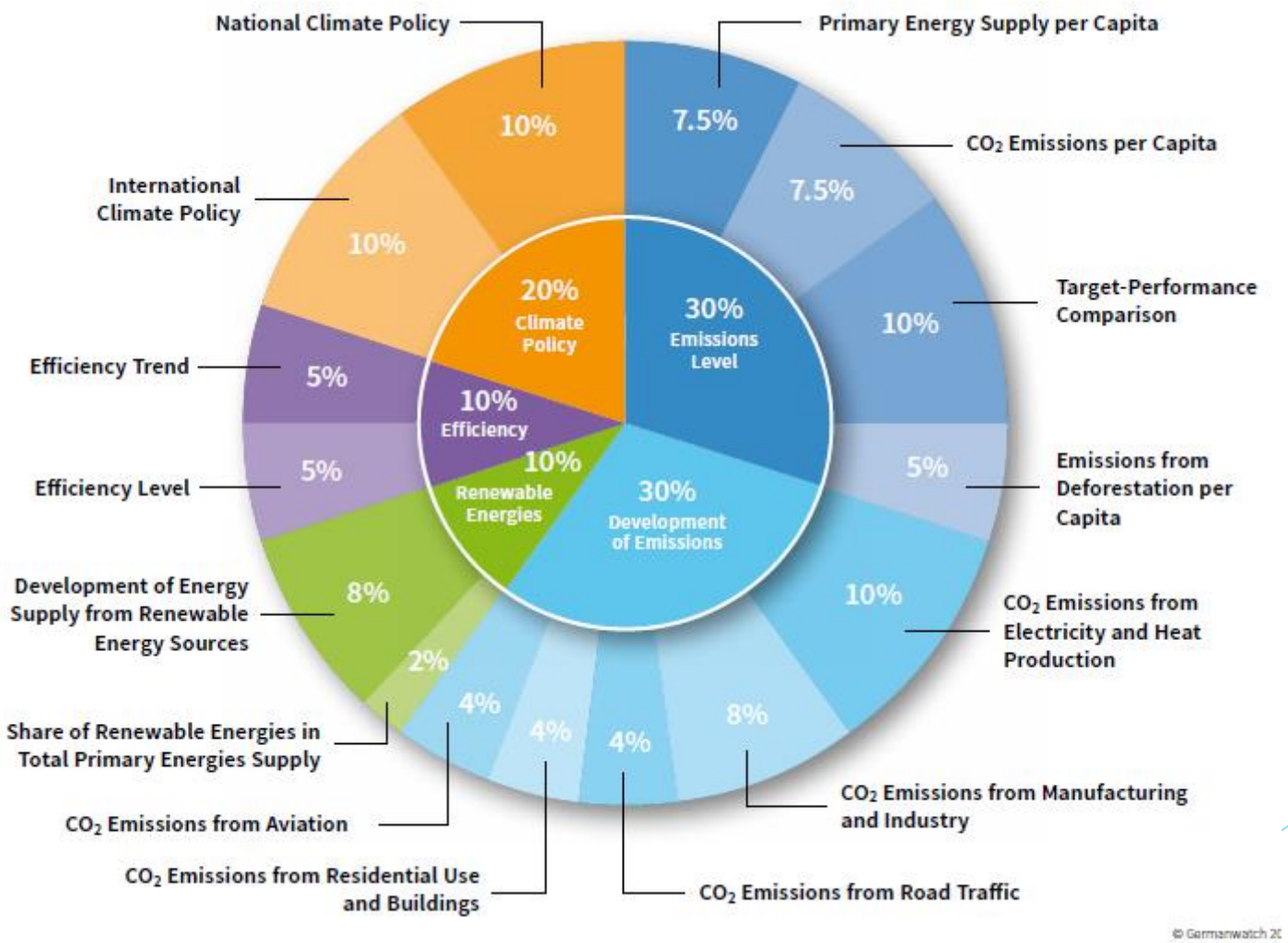


Climate Change Performance Index 2015



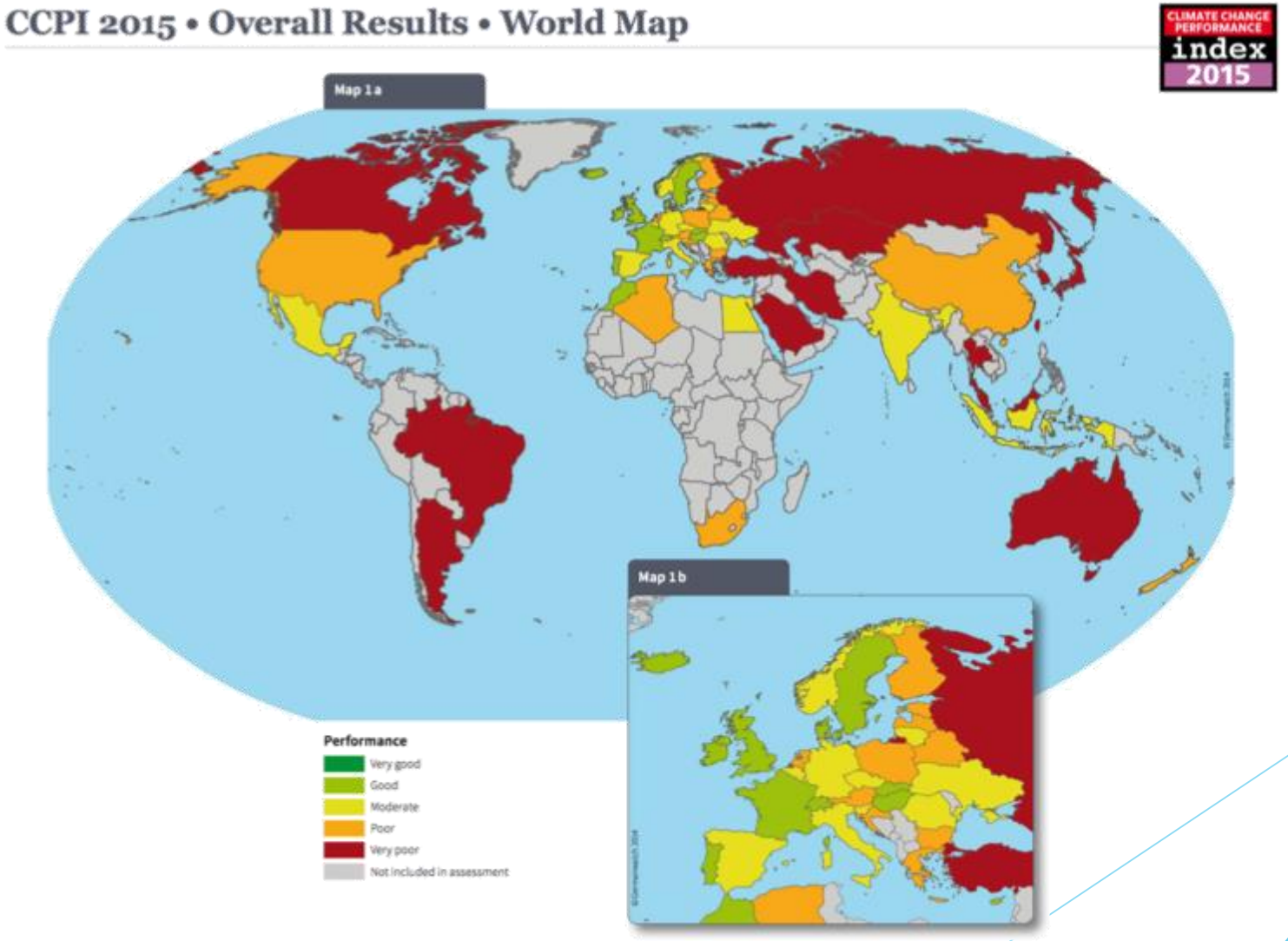
46	▲	Estonia	51.58
47	▼	Thailand	50.61
48	▼	Argentina	49.61
49	▼	Brazil	48.51
50	▼	Singapore	47.27
51	▲	Turkey	46.95
52	▼	Malaysia	46.84
53	▼	Japan	45.07
54	▼	Chinese Taipei	45.03
55	–	Korea	44.15
56	–	Russian Federation	43.39
57	▲	Islamic Rep. of Iran	40.99
58	–	Canada	38.81
59	–	Kazakhstan	37.72
60	▼	Australia	35.57
61	–	Saudi Arabia	24.19

54	▼	Chinese Taipei	45.03
55	–	Korea	44.15

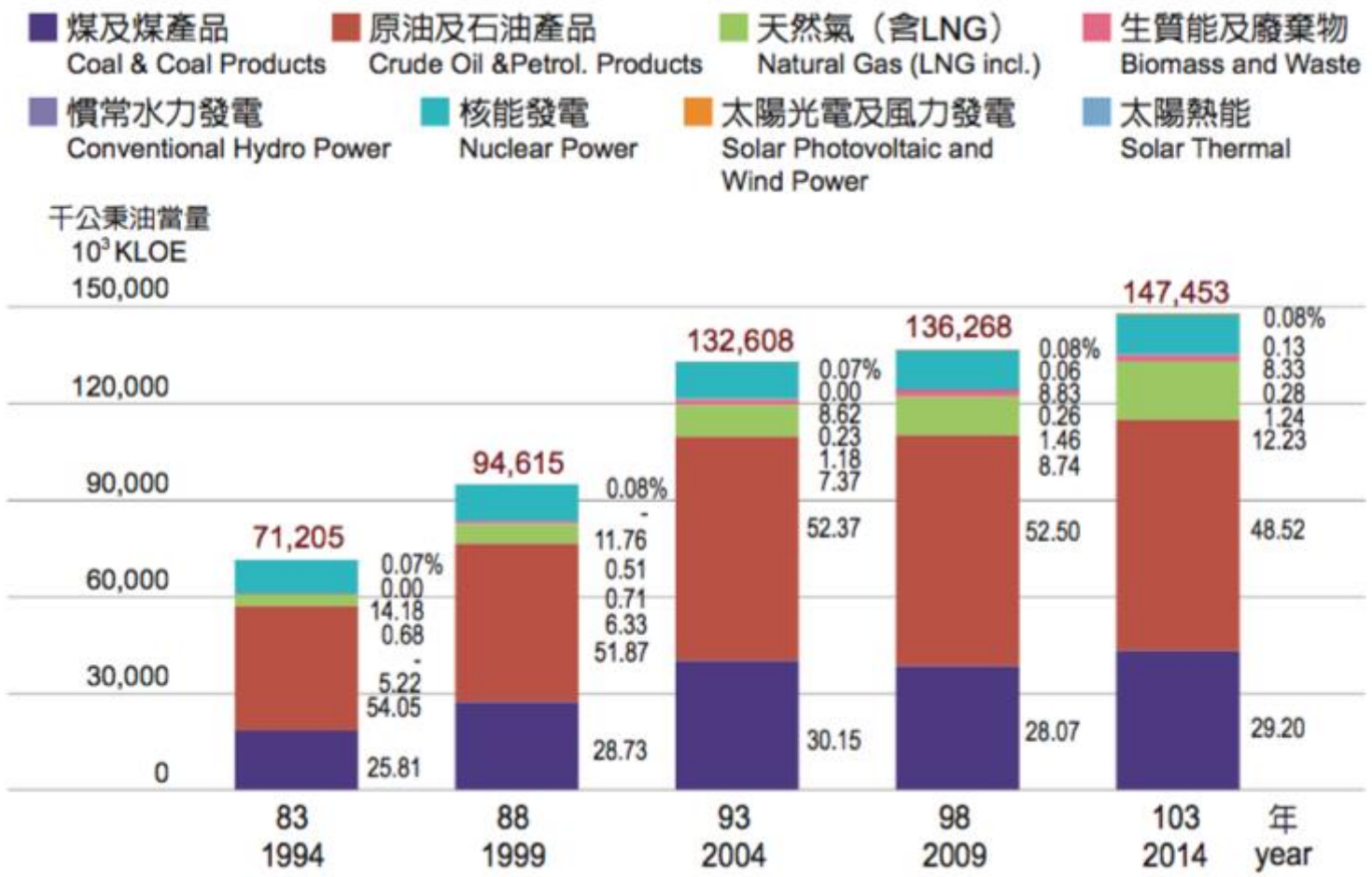


Key data for all countries covered by the CCPI

Country	CCPI Rank* 2015	CCPI Rank* 2014	Share of Global GDP	Share of World Population	Share of Global CO_2 Emissions**	Share of Global Primary Energy Supply
Chinese Taipei	54	53	0.97%	0.33%	0.76%	0.78%
Korea	55	55	1.69%	0.71%	1.75%	1.97%



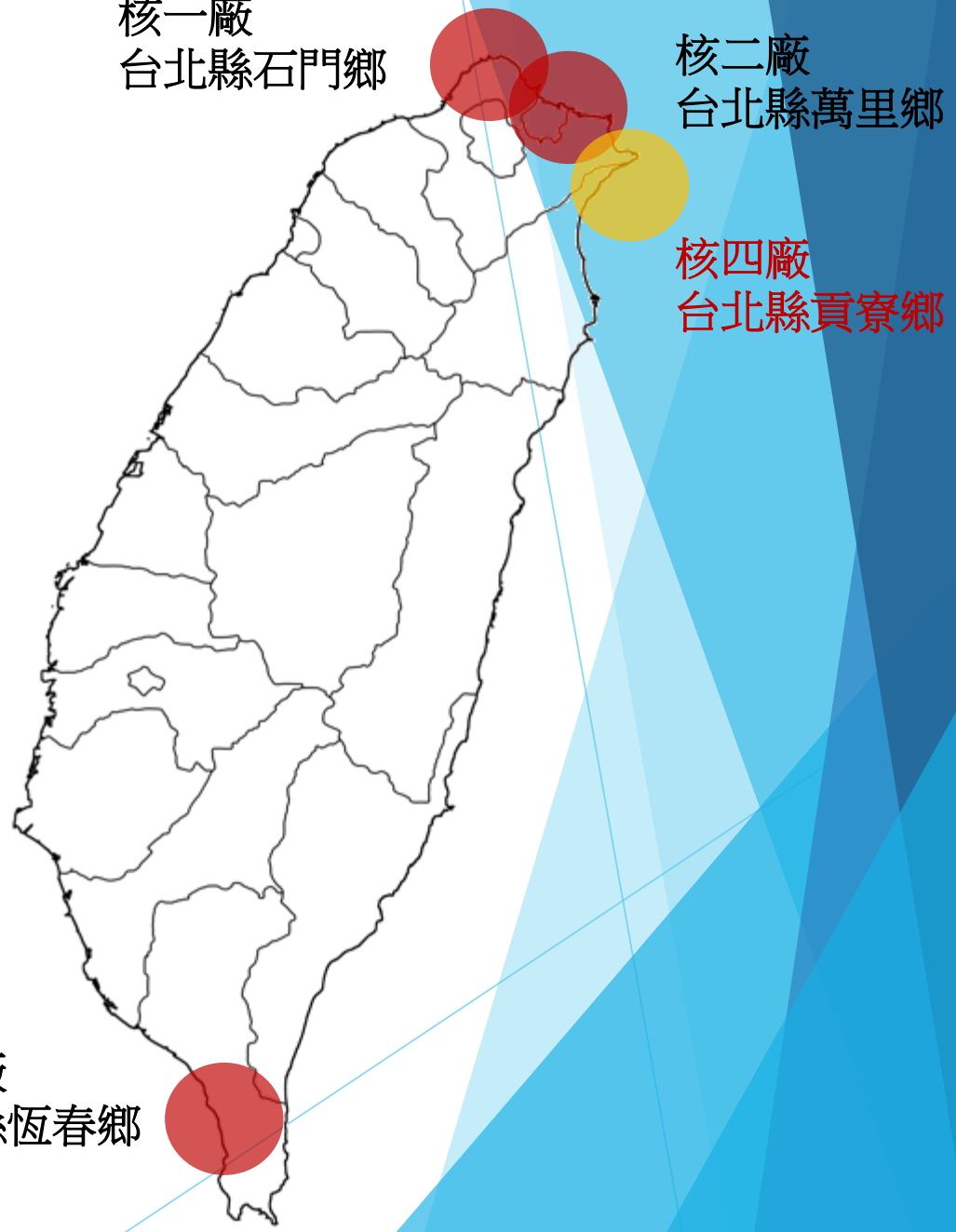
Energy Structure in Taiwan



year	Institution	year	Environmental Crisis and Movement
1998	National Energy Conference	1986	Anti-Dupont Movement
2001	National Council for sustainable development	late 1980s	Anti-nuclear movement
2005	The 2nd National Energy Conference	1995	Anti-Binnan Industrial Park
2006	National Sustainable Economy Conference	1998	Anti-Bayer Chemical Plant movement
2009	The 3rd National Energy Conference	2008	Taichung High-tech Park Pollution
2009	Green Economy and New Energy Industry Flagship Plan	2010	Anti- Kuokuang Petrochemical Plant movement
2010	Low Carbon Economy and Society Plan	2012	Taichung High-tech Park and water crisis
2012	Development Guideline for Energy Policy		
2012	National Climate Change and Adaptation		

Locations and Types of Power Plants

Nuclear Power



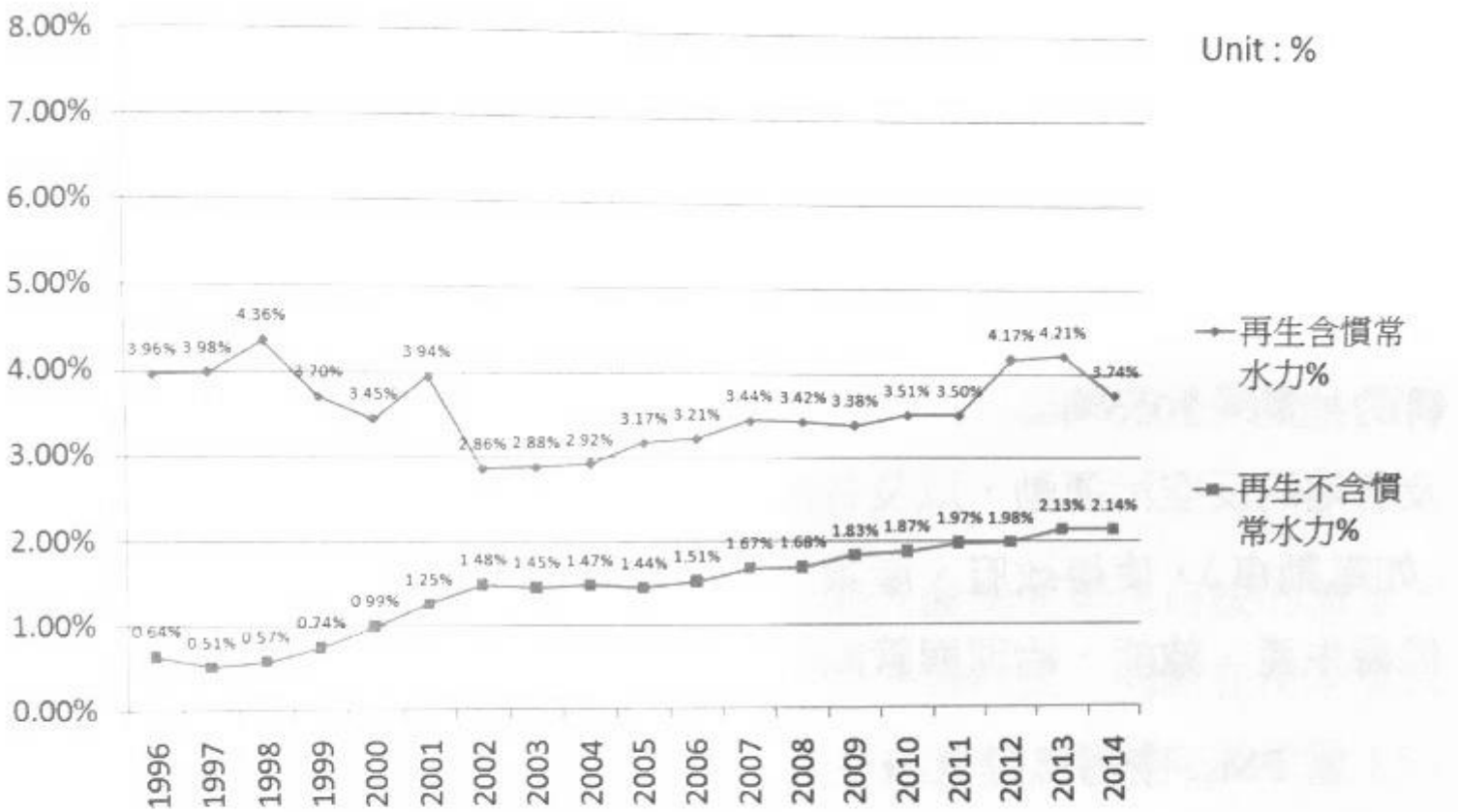
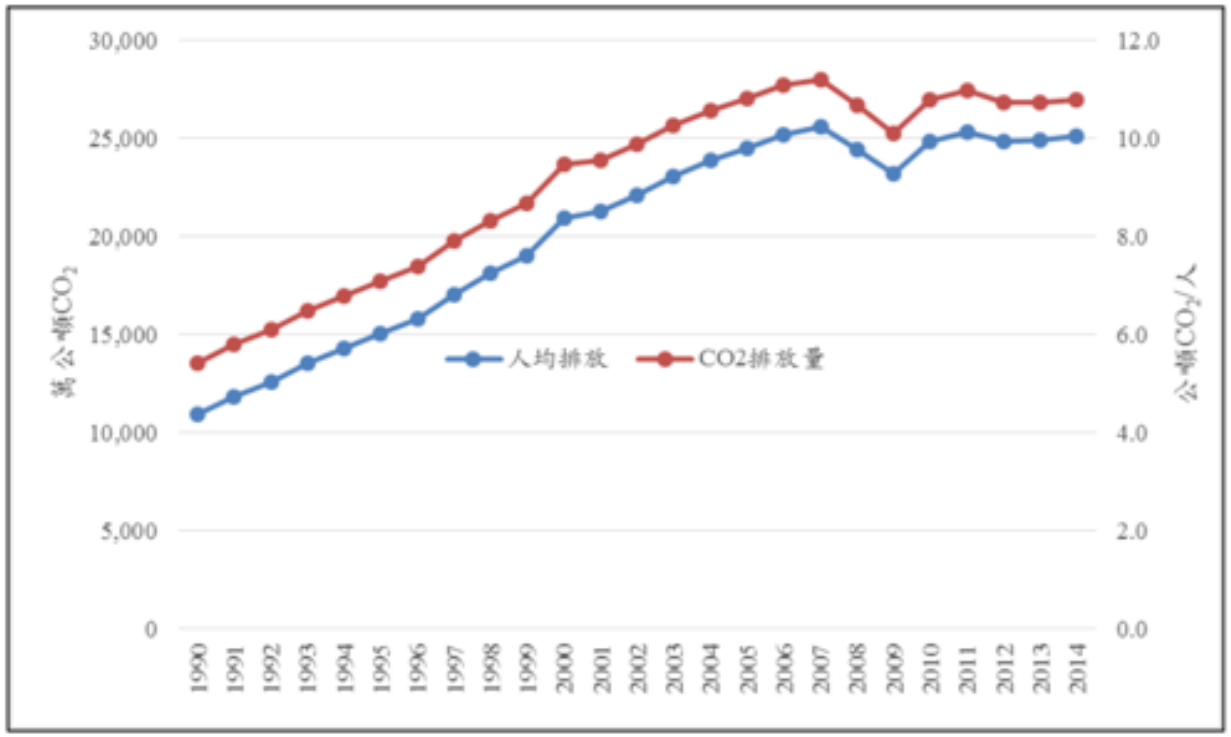


圖 1-2　歷年臺灣再生能源佔全國發電量比

資料來源：能源局（2015）。作者製表。

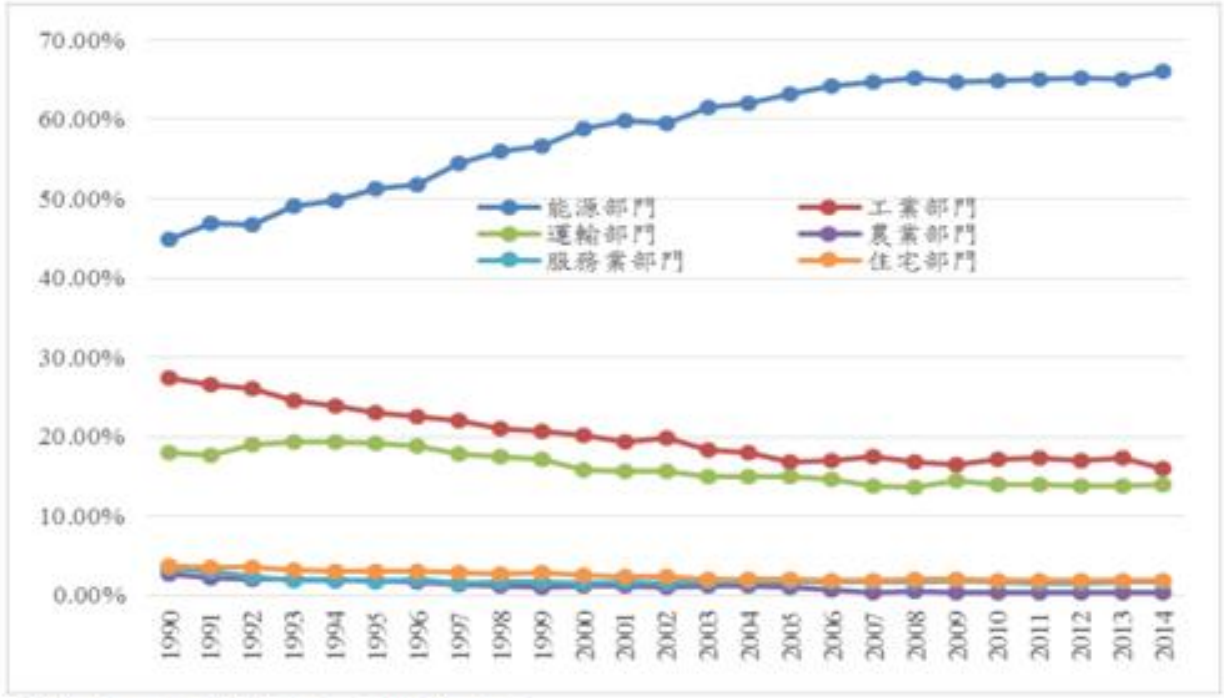
（三）沒有藍天：空污 $PM_{2.5}$、運輸、禁燒生煤衝突

GHG Emission



資料來源：經濟部能源局，2015 年 6 月。

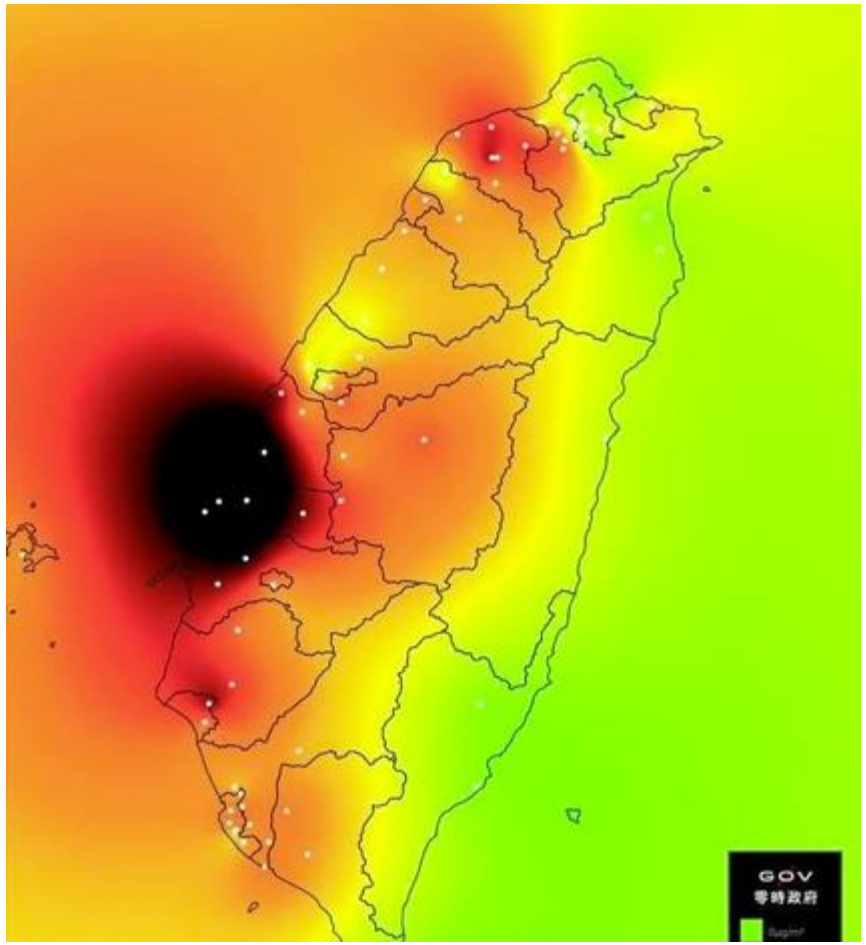
圖 1 燃料燃燒 CO_2 排放量與人均排放趨勢圖



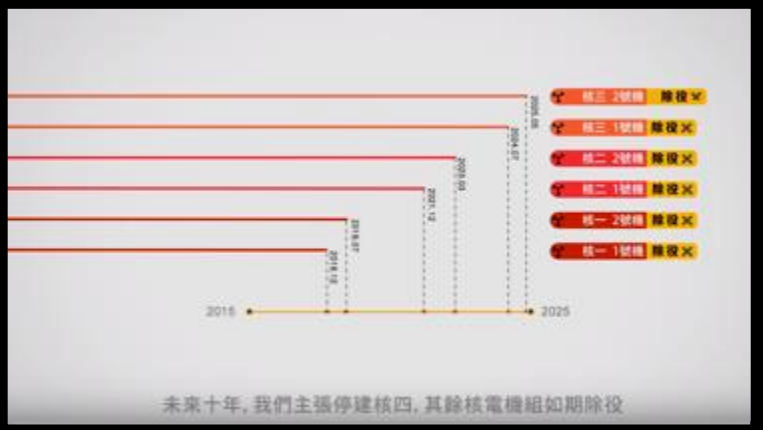
資料來源：經濟部能源局，2015 年 6 月。

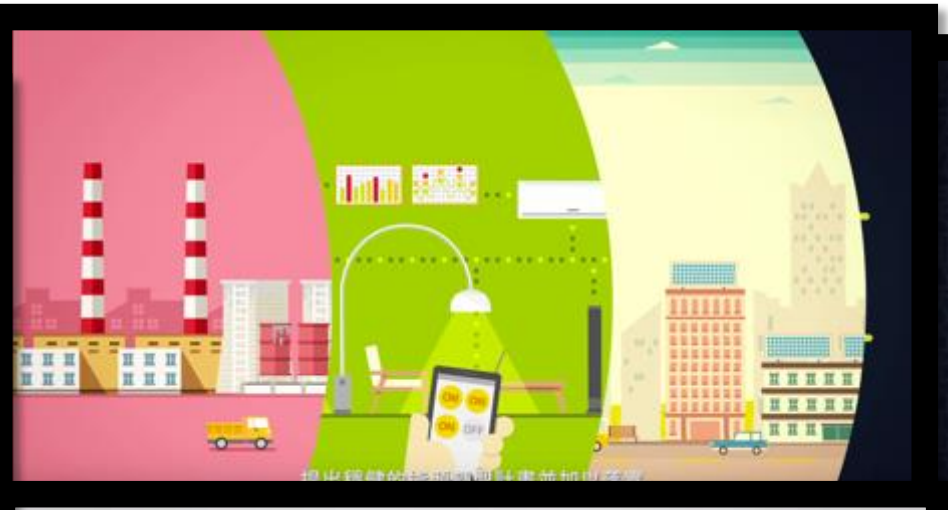
圖 3 各部門燃料燃燒 CO_2 排放量趨勢(不含電力消費排放)

PM 2.5

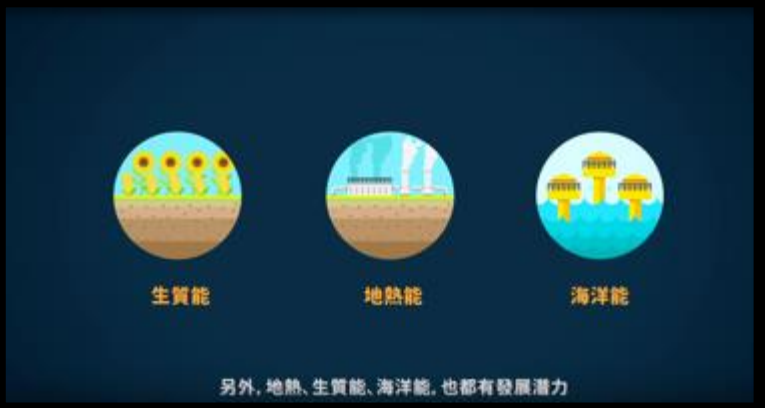



南風


核三 2號機 除役
核三 1號機 除役
核二 2號機 除役
核二 1號機 除役
核一 2號機 除役
核一 1號機 除役
2015
2025
未來十年，我們主張停建核四，其餘核電機組如期除役




2. 用電管理
1. 電源開發
3. 綠能產業
為了實現這個目標，蔡英文有三大策略


生質能
地熱能
海洋能
另外，地熱、生質能、海洋能，也都有發展潛力


2025
NO NUKE
2025非核家園，是我們不變的主張


燃氣
燃煤
增加天然氣發電比例，提高火力電廠效率，加嚴排放標準


我們也要推廣「智慧能源管理系統」的運用


時間電價
儲能設備
需量競價
如果能落實「時間電價」、「需量競價」，並搭配「儲能設備」，

Energy Governance at the Central Government Level

- Three decades of anti-nuclear movement represents ideological struggles without concrete progress for renewable energy
- Industrial transition: moving out to China replacing upgrading and innovation
- Energy democracy, decentralization or green empowerment issue hardly concerned

Taipei as a Compact City

- (1)High density, small blocks, mixed land-use,
- (2)Barrier free and friendly design for pedestrians and bikes,
- (3)Open spaces links to various type of activities

- Other strength:
  - Recycling policies,
  - Protection of trees, monuments and historical buildings

2012: Climate Change Adaptive Plan by the Council for Economic Planning and Development + Taipei city

- Approach: strategic planning, rolling wave planning, and bottom-up approach
- Goal:
- (1) to establish the climate change adaptation planning framework and platform;
- (2) to analyzes the trends and the impact of climate change;
- (3) to clarify the impact of climate change in key sector with the concept of vulnerability;
- (4) analysis the impact of climate change vulnerability;
- (5) analysis of the key issues;
- (6) review both policy and related programs; (7) proposal of climate change adaptation strategy and action plan.

Challenges for Energy Plan of Taipei

- Prone to flooding and landslide caused by frequent rainstorms
- Rising demand; stability of supply and diversity of sources
- Energy plan should be incorporated into urban planning development review and urban renewal review.

圖 3-6 脆弱度評估相關參考圖資

Taipei Green Boulevard

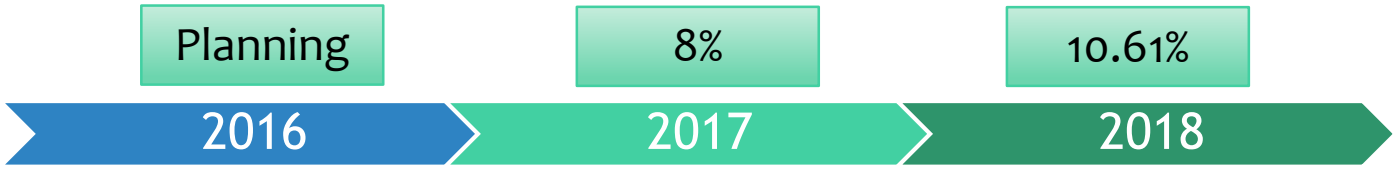
【羅斯福路-辛亥路段】

水波紋意象休憩廣場

Learning From Seoul

Reduce Nuclear Power Consumption Plan Taipei 2016

Saving energy consumption to 18.61% by 2018



New Energy 0.28%

Energy Saving 11.17%

Building Energy Efficiency 2.98%

Green Transportation 4.19%

18.61%

Green Transport in Taipei City: Mass Transit System

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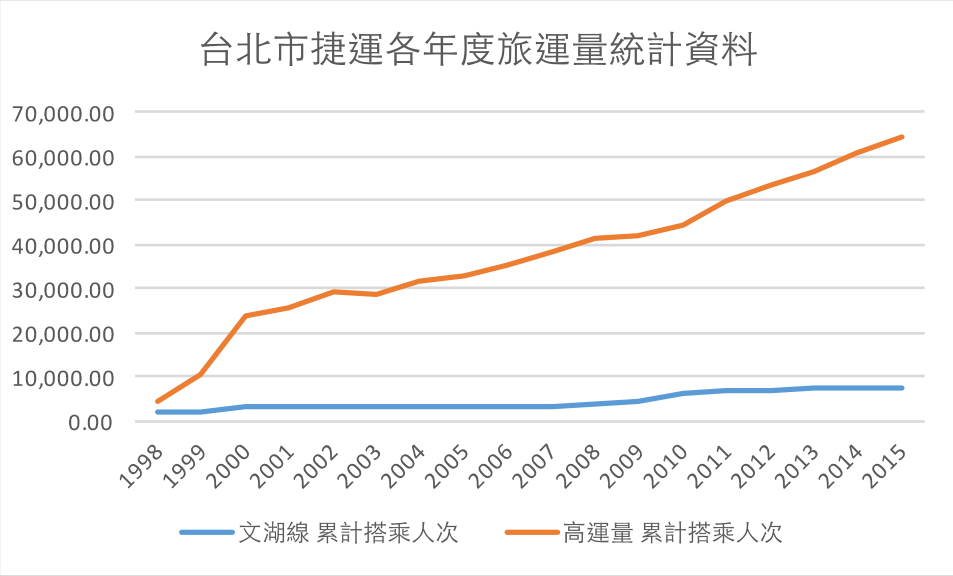


各年度旅運量統計資料（101年~104年）

年度		101年	102年	103年	104年
文湖線	累計搭乘人次	6,986.1	7,140.6	7,478.0	7,462.0
	平均每天搭乘人次	19.09	19.56	20.48	20.44
高運量	累計搭乘人次	53,233.9	56,355.5	60,472.6	64,289.2
	平均每天搭乘人次	145.45	154.40	165.67	176.13

各年度旅運量統計資料（95年~100年）

年度		94年	95年	96年	97年	98年	99年	100年
文湖線	累計搭乘人次	3,146.9	3,156.4	3,382.2	3,535.3	4,272.3	5,915.1	6,802.8
	平均每天搭乘人次	8.62	8.65	9.27	9.66	11.70	16.21	18.64
高運量	累計搭乘人次	32,926.0	35,238.3	38,240.7	41,467.2	41,974.9	44,631.6	49,837.7
	平均每天搭乘人次	90.21	96.54	104.77	113.30	115.00	122.28	136.54

各年度旅運量統計資料（87年~93年）

年度		87年	88年	89年	90年	91年	92年	93年
文湖線	累計搭乘人次	1,812.2	2,139.4	3,054.7	3,208.9	3,261.8	3,021.2	3,173.6
	平均每天搭乘人次	4.96	5.86	8.35	8.79	8.94	8.28	8.67
高運量	累計搭乘人次	4,261.6	10,555.8	23,817.0	25,755.4	29,181.6	28,597.7	31,840.6
	平均每天搭乘人次	11.68	28.92	65.07	70.56	79.95	78.35	87.00

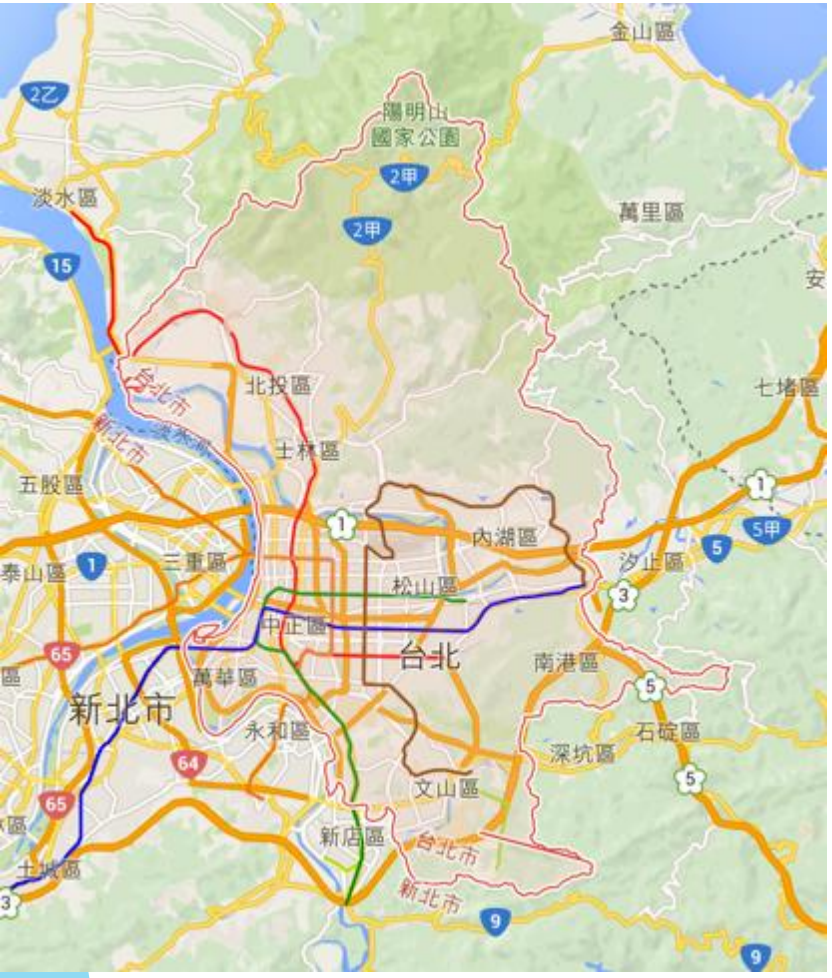
- 單位為萬人次
- 高運量包含淡水信義、松山新店、中和新蘆、板南線

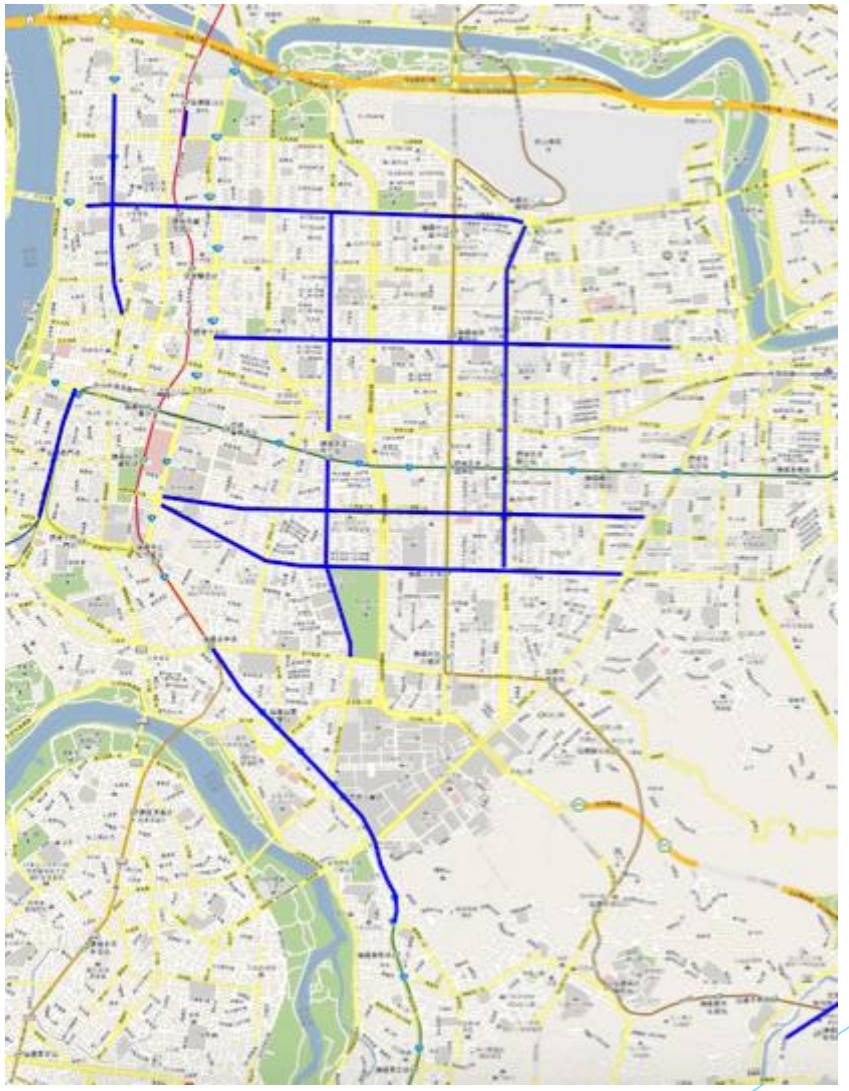
MRT Taipei

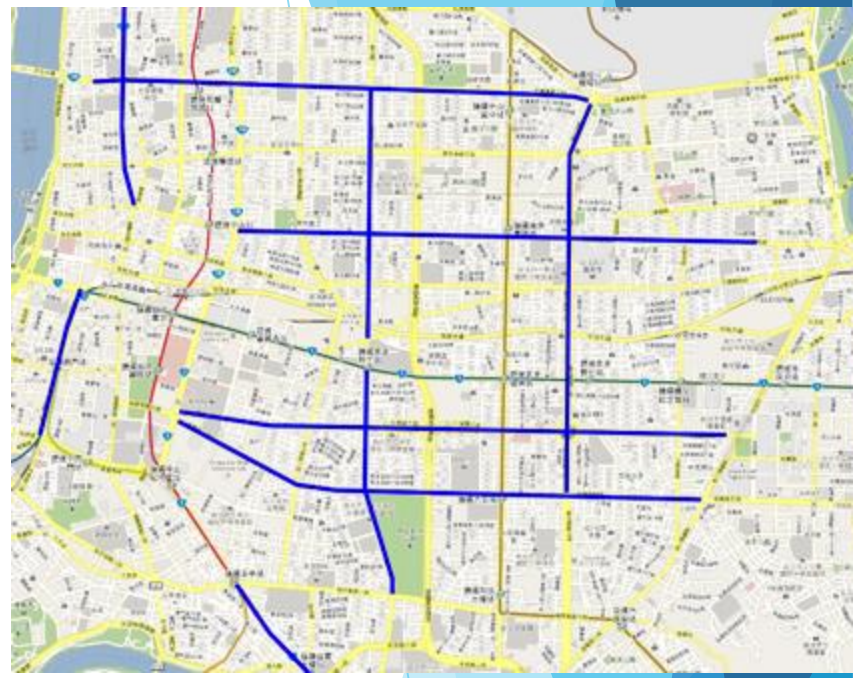
MRT Taipei

- 500 meter walk distance to MRT station

Bus Exclusive way





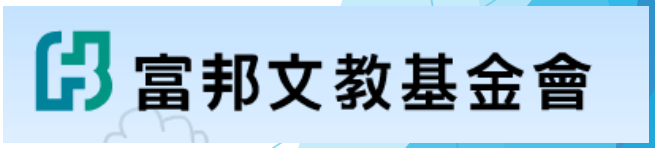


You-Bike

- You-bike成長以及使用
- 自行車專用道共：572條
- 總長度：379769公尺

2015-03-16	YouBike使用次數突破4000萬人次
2014-10-22	YouBike使用次數突破3000萬人次
2014-07-19	YouBike 完成163站 5350台車
2013-11-08	YouBike使用次數突破1000萬人次
2013-08-14	YouBike 突破100站
2013-06-28	YouBike使用次數突破500萬人次
2012-11-30	YouBike試營運期結束已超過百萬騎乘數
2012-08-30	「臺北市公共自行車租賃計畫營運」試營運啟動
2009-03-11	「臺北市公共自行車示範計畫營運」啟用

NGOs: multi-mobilization roadmap + social robustness



HAND e V.:
Citizen solar power plant

Energy Empowerment

Energy Governance in Taipei city

- Weak linkage between vision plan, action plans and policy
- Little cross-bureau collaboration within the government
- Not challenging developmentalist urbanization based on high energy consumption