

THE PROCESS AND ANNUAL REVIEW REPORT OF TAIWAN ENERGY TRANSITION WHITEPAPER

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Overview

Taiwan relies heavily on imports for energy. In 2022, 98.06% of energy supply was imported. Taiwan generated 288.1 TWh of electricity in 2022, and 82.4% of electricity was generated by thermal power plants. Nuclear energy provided approximately 8.2%, whereas renewables provided 8.3%. In recent years, economic growth has resulted in increased energy consumption together with environmental impacts such as air pollution in Taiwan. To combat climate change, ensure sustainability, and enhance energy security, Taiwan must develop an action plan for energy transition. In 2016, the Taiwanese government announced its energy transition policy. By 2025, nuclear energy is to be phased out, and 20% of Taiwan's energy should be renewable. In 2017, the Guideline on Energy Development was amended to function as the guiding principles for Taiwan's government ministries in the implementation of energy policy, and the Energy Transition White Paper was the designated mechanism to develop action plans to realize the objectives of energy transition. In this paper, we introduce the multiphase public participation procedure and the indicators for annual review of the Energy Transition White Paper in Taiwan. The White Paper features 20 programs to implement the energy transition policy, which aims to shift our energy system to low-carbon emission and to achieve the target of 20% of renewable electricity generation by 2025.

Methods

Public participation was essential to the formulation of the Energy Transition White Paper in Taiwan. The drafting procedure comprised three phases in which members of the public gave feedback through preliminary meetings, task force collaboration, and citizen dialogue (see Fig. 1).



Fig. 1 Taiwan Energy Transition White Paper Drafting Procedure

Phase I: Preliminary Meeting. The goal of the preliminary meetings was to maximize public input and define the scope of the discussion. To ensure that participants were updated on current government policy, government representatives presented 19 key programs that were either already approved or in development. Public comments were then categorized and served as the basis for formulation of new programs.

Phase II: Task Force Collaboration. Five task forces including energy governance, electricity, energy conservation, renewable energy and green energy industry were established. Formulating the Energy Transition White Paper required diverse input from academics, policymakers, industry leaders, and the general public. Task force members were thus selected from civil society organizations, industry, academia, and government agencies, and each team comprised 12 members. In each team, two people cochaired collaboration meetings: one was a member of civil society, and the other was government representative. In Phase II meetings, task force members formulated key programs through collaborative discussion, considering the public input from Phase I meetings.

Phase III: Citizen Dialogue. The goals of Phase III were to engage the public in the transition to a sustainable energy system through extensive policy dialogue. The Ministry of Economic Affairs in Taiwan held forums for academia, industry, civil society organizations, and citizens. To ensure that the population was well represented, participants in a topical forum for citizen dialogue were drawn based on criteria including education level, age, gender, residence's level of urbanization, and region. Public feedback was also collected via the digital platform of National Development Council. Public feedback was categorized and discussed by the corresponding task force to finalize key programs.

Results

To maximize nationwide public participation nationwide, more than 2,000 people participated in the meetings, and approximately 1,400 comments were received through online and offline platforms. As a result, 20 key programs were established as action plans for implementing Taiwan's energy transition policy (see Fig. 2).

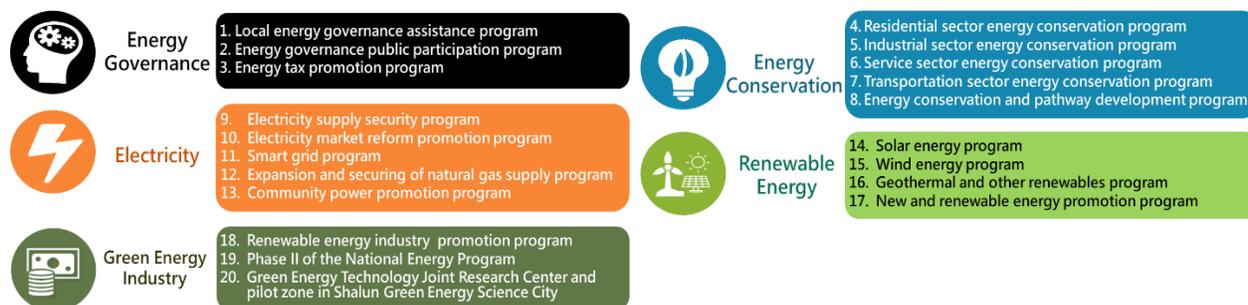


Fig. 2 20 Key Programs under the Energy Transition Whitepaper in Taiwan

To ensure that Taiwan's energy policy can be transparently and robustly implemented, 11 indicators (see Table 1) were established to annually review the progress of the Taiwan's energy transition. The framework of the indicators was intended to maintain a balance among four objectives of energy transition: energy security, green economy, environmental sustainability, and social equity.

Table 1 Energy Transition Indicators in Taiwan

No	Definition	Description	2021	Compared with 2020
1	Decreasing energy import proportion	Imported energy/Total national energy supply (%)	97.7	↓
2	Increasing the ratio of power supply adequacy	The number of days with sufficient power supply / the number of days in the year (%)	88	↓
3	Improving energy efficiency	Industrial energy intensity (LOE/103NT\$)	3.39	↓
		Service energy intensity (LOE/103NT\$)	0.46	↓
		Electricity Consumption Per Households (KWh)	3,756	↑
4	Promoting the development of renewable energy	Renewable energy installation capacity (MW)	11,584	↑
5	Promoting green economy	Green energy investment (Billion NT\$)	11.07	↓
		Green employment	1,307	↑
6	Lowering electricity emission factor	Electricity emission factor (kgCO ₂ e/KWh)	0.51	↑
7	Decreasing air pollution from power system	Air pollution from power system (Toe)	52,776	↓
8	Increasing green transportation	Number of electric vehicles/total vehicles (%)	3.51	↑
		Passengers in public transport (1,000,000 people)	1580	↓
9	Lowering nuclear dependency	Capacity of nuclear power plants (MW)	2,887	↓
10	Promoting energy awareness of public	The percentage of correct answers to the energy basic knowledge questions (%)	62.8	↑
11	Promoting the construction of smart meters	Number of low-voltage installed smart meters (Thousand)	1,501	↑

Conclusions

Taiwan Energy Transition Whitepaper is a National program of participatory governance aiming for energy transition in Taiwan. The White Paper features 20 programs that are developed after a multiphase procedure involving extensive public participation, paving the way for the collective realization of a sustainable energy system in Taiwan.

References

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