

## The New Trend for New Energy Vehicle-Related Policies and The Challenges for Taiwan

*Shih, Hui-Tzu* | Research Fellow, The Regional Development Study Center

Driven by the energy transformation policies and the gradual improvement of matching environmental construction, global new energy vehicle sales have increased rapidly, with new energy vehicle sales reaching 10.6 million units in 2022 (annual growth rate of 57.4%). In terms of the penetration rate of new energy vehicles (the proportion of new energy vehicle sales in overall vehicle sales), it has also climbed from 1.8% in 2016 to 5.65% in 2022. If we look at passenger cars, the most popular type of new energy vehicle sales, its penetration rate reaches 17.7%. It is obvious that the progress of de-oiling passenger cars is higher than that of other types of vehicles.

As the penetration rate of international new energy vehicles increases, the strength of government policies for new energy vehicles in various countries and the number of countries that propose them have also increased. According to information from the International Energy Agency (IEA), as of August 2023, a total of 92 countries had proposed 525 policy documents related to the vehicle industry. According to policy type, it can be divided into four major categories: legislation, proposals, targets or ambitions. Among them, except for ambitions, which are unofficial goals, the other three, it may have been included in government regulations, or is being planned to be included in future policies, goals, or included in government legislation, budget, or electric vehicle strategy. Policies related to legislation, proposals, and targets (hereinafter referred to as "government policies") account for 67% of all vehicle industry-related policy documents, showing that it attaches great importance to the promotion and implementation of this issue. It is not just a declaration.

In addition, observation of the sales market shows that new energy vehicles are obviously concentrated in those countries, that actively promote the application of new energy vehicles, such as mainland China, the European Union, and the United States. The three together account for 87% of the global new energy passenger vehicle market in 2022, and the policy intensity of these countries is also above 55% (see Table 1). This is consistent with the findings of previous studies, that is, the establishment of new energy vehicles (electric

vehicles) depends on government policies. Meckling and Nahm (2019) also pointed out that compared with just issuing a ban on the sale of fuel vehicles, the government actively promotes new energy vehicles. Policies are the credible "signal" that the ban on sales can be implemented. In other words, in addition to the vision, other "government policies" that may have been incorporated into government regulations, or are being planned to be incorporated into future policies, goals, or incorporated into government legislation, budgets, or electric vehicle strategies are important drivers of the development of new energy vehicles.

Based on the data from the latest government-related vehicle industry policy documents, many emerging developing countries are included in the list, such as India, Mexico, Thailand, Indonesia, Vietnam, Philippines, Malaysia, South Africa, Chile, Brazil, Argentina, and other countries (see Table 2). As more emerging countries implement their policy on new energy vehicles, their development of new energy vehicles will be strengthened. In the meantime, along with the original production supply chain and potential consumer market of these emerging developing countries, will bring new challenges for Taiwan, as join the international new energy vehicle industry supply chain.

As more developing countries begin to include the goal of vehicle decarbonization, promote the transformation of the vehicle industry and build their own supply chains, and gradually strengthen the support of government policies, Taiwan need to implement more policies to cope with the new challenges, although the vehicle components and information electronics industries are highly competitive in Taiwan. According to IEA data, there're only one Taiwan policy on the list and Taiwan's 2050 net-zero emission policy proposed by the National Development Council in 2022 is listed as ambitions.

Compared with the strength of vehicle-related policy support in the countries, include in the IEA policy table, Taiwan's government policies are relatively inadequate. It is an issue worthy of attention. Improving the intensity and breadth of policies and expanding policy coverage for the environment, transformation, manpower and other issues of industry-related development should be concern in the future vehicle-related policy.

**Table 1 : Relevant Vehicle Policies and Intensity in Major Electric Vehicle Sales Countries**

Unit : Units / Ten Thousand Vehicles

	Number of Announcements	Government Policy Intensity	2022 Electric Vehicle Sales
China	48	79.2%	198.0
America	37	86.5%	99.0
Germany	7	57.1%	83.0
United Kingdom	14	57.1%	37.0
France	17	76.5%	34.0
Norway	8	50.0%	16.6
Sweden	8	62.5%	16.3
South Korea	7	100.0%	13.1
Canada	25	76.0%	11.4
Italy	10	90.0%	11.4
Netherlands	14	57.1%	10.7
Japan	8	62.5%	10.2
Belgium	12	83.3%	9.7
Spain	10	80.0%	8.2
Switzerland	4	50.0%	5.9
Denmark	9	66.7%	5.7
India	35	77.1%	4.8
Austria	13	46.2%	4.7
Portugal	6	50.0%	3.4
Finland	10	60.0%	3.1

Note 1 : The table contains colored backgrounds, indicating that the countries highlighted in this way are within the top ten rankings for the respective indicator.

Note 2 : "Government Policy Intensity" refers to the proportion of the total number of relevant policies within the country that are already established as government regulations or are planned to be incorporated into future policies, goals, government legislation, budgets, or electric vehicle strategies related to the vehicle industry.

Data Source : International Energy Agency, IEA ; Compiled by the author.

**Table 2 : Policy Intensity and Development Potential of Emerging Developing Countries in the Vehicle Sector**

Unit : Units / Ten Thousand Vehicles

Countries	Policy Support		Automotive Supply Chain	Automotive Market Opportunities	Development Potential	Electric Vehicle Market
	Number of Announcements	Government Policy Intensity	2022 Production	2022 Sales		2022 Sales
India	35	77.1%	545.7	472.5	●●●●●	4.8
Mexico	9	66.7%	350.9	113.4	○●●●	0.8
Thailand	8	25.0%	188.4	84.9	○○●○	
Indonesia	6	33.3%	147.0	104.8	○○●●	
Chile	6	66.7%		42.7	○●○○	
Vietnam	3	100.0%	23.2	33.0	○●○○	
Philippines	2	100.0%	9.2	35.9	○●○○	
South Africa	2	100.0%	55.6	53.0	○●○○	0.1
Malaysia	1	100.0%	70.2	60.7	○●○○	
Brazil	3	100.0%	236.98	210.4	○●●●	
Argentina	2	50.0%	53.69	40.8	○●○○	

Note : The cells in the table have colored backgrounds, indicating that these countries are among the top ten in that specific indicator.

● Indicates a higher performance in a certain indicator ; ● Indicates a medium performance in a certain indicator ; ○ Indicates a lower performance in a certain indicator.

Data Source : International Energy Agency, IEA. ; International Organization of Motor Vehicle Manufacturers, OICA ; Compiled by the author.

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