



經濟部能源局

Bureau of Energy,
Ministry of Economic Affairs

2050 Net-Zero Strategy

“Strategic Plan of Energy Saving”

**Bureau of Energy/
Ministry of Economic Affairs**

December, 2022



LIST OF ACRONYMS AND ABBREVIATIONS

BAT	Best Available Technology	IDB	Industry Development Bureau
BOE	Bureau of Energy	MOC	Ministry of Culture
BOFT	Bureau of Foreign Trade	MOE	Ministry of Education
BSMI	Bureau of Standard, Metrology and Inspection	MOEA	Ministry of Economic Affairs
COA	Council of Agriculture	MOHW	Ministry of Health and Welfare
DOC	Department of Commerce	MOI	Ministry of the Interior
DoIT	Department of Industrial Technology	MOND	Ministry of National Defense
ESCO	Energy Service Company	MOTC	Ministry of Transportation and Communications
EPA	Environmental Protection Administration	NSTC	National Science and Technology Council
EPZA	Export Processing Zone Administration	SME	Small and Medium Enterprise
FSC	Financial Supervisory Commission	SMEA	Small and Medium Enterprise Administration

1. Energy Efficiency Status in Taiwan

- **Current Status:** All citizens possess consensus on energy conservation, and **energy efficiency** has been significantly improved by **2.22% annual** rate.
- **Emerging Problems :** Following global net-zero trend, it's necessary to keep promoting energy conservation, and lower CO₂ emission in fastest and most efficient way. This leads us facing 7 issues of our energy-saving policies:

Keep promoting energy conservation behavior

Behavioral changing is an important pillar of net-zero emission. We need keep citizens understanding the importance of energy saving and then change the energy using behavior.

Enhance governance capability of energy conservation

Review regulation and mechanism of energy management, intensify local government to participate energy governance.

Keep equipment efficiency standard inline with global pace

Technological evolution drives the improvement of equipment efficiency, hence the equipment efficiency standard should be reviewed and revised refer to international trends and industrial development.

Improve and promote building energy efficiency standards

Continue promoting building efficiency labeling system. Let public understand building energy efficiency, and promote innovative building technology to achieve building energy conservation.

Expand to promote successful energy conservation experiences

Many successful energy conservation cases has been established. It is necessary to replicate and spread the cost-effective successful energy conservation experience to the whole country.

Increase energy conservation responsibility of enterprise

Referring to the international net-zero emission trend, corporate energy-saving goals and energy management levels need to be adjusted. And extend to supply chain and small and medium-sized enterprises.

Continuous research and development to intensify the energy-saving effect

For long-term net-zero target, it's necessary to continue to invest in research and development, hence to accelerate the mass production and expansion of new energy-saving technologies and products.

2. Plan Targets and Path

- **Target** : **Maximizing Energy Efficiency** through the effort of public and private sector.
- **Path** : “Strategic Plan of Energy Saving” covers **energy saving programs in industry, commercial and residential sectors, and vehicle area, to integrate and apply the advance energy technology simultaneously.**

2025

- Gradually replacing process equipment
- 50% of the energy consumption of large energy users is included in ISO 50001
- 700 new green buildings per year
- HVAC and refrigerating equipment to be 1st energy-efficacy level. Introducing efficiency optimizing of HVAC.
- Residential building envelope efficiency increase 5%
- Retail lamp 100% be LED.
- Including light-duty trucks over 2.5 tons into vehicle energy efficiency management

2030

- Implement high efficiency, low emission equipment to industry
- 60% of the energy consumption of large energy users is included in ISO 50001
- 800 new green buildings per year
- New public building be efficiency level 1 or ZEB.
- 30% of commercial large energy users adopt efficacy level 1 HVAC and refrigerating equipment. 100% lighting in commercial building be LED.
- Residential building envelope efficiency increase 10%
- MEPS of air conditioner and refrigerator reach level 3
- Energy efficiency of new car increases by 30%

Industrial energy saving

- Industry process improvement
- Counselling energy-saving measures
- Raise corporate energy-saving target and efficiency improvement

Commercial energy saving

- Improve equipment operation behavior
- Low-carbon business model **transition**
- green building

Residential energy saving

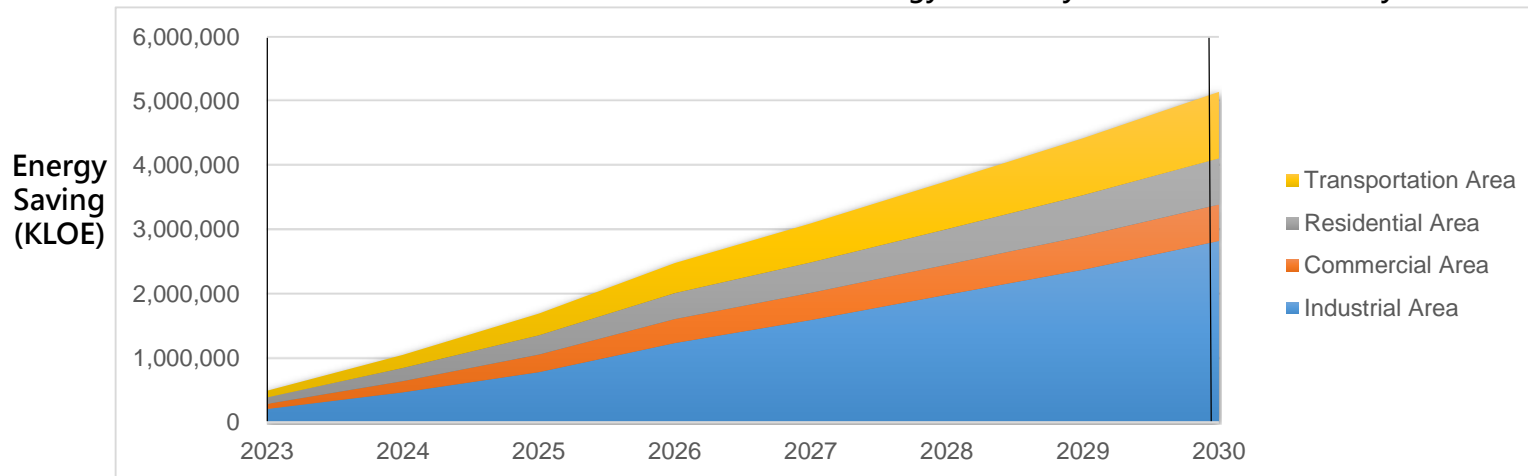
- **Improve** new/existing buildings efficiency
- Improve home appliances efficiency
- Social advocacy and communication

Vehicle energy saving

- Expand the scope of vehicle energy efficiency management
- Change fleet driving behavior
- **Strengthen vehicle energy efficiency classification**

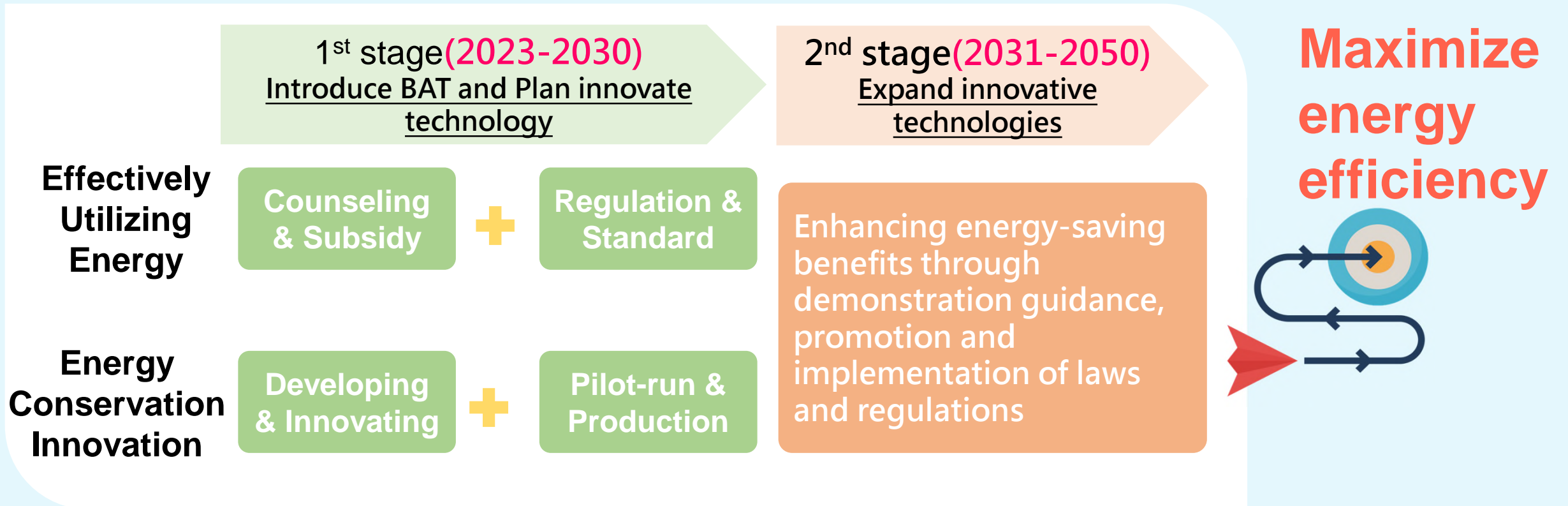
Advance energy saving technology

- Innovate manufacturing process
- High efficiency equipment R&D
- Integrate energy management system



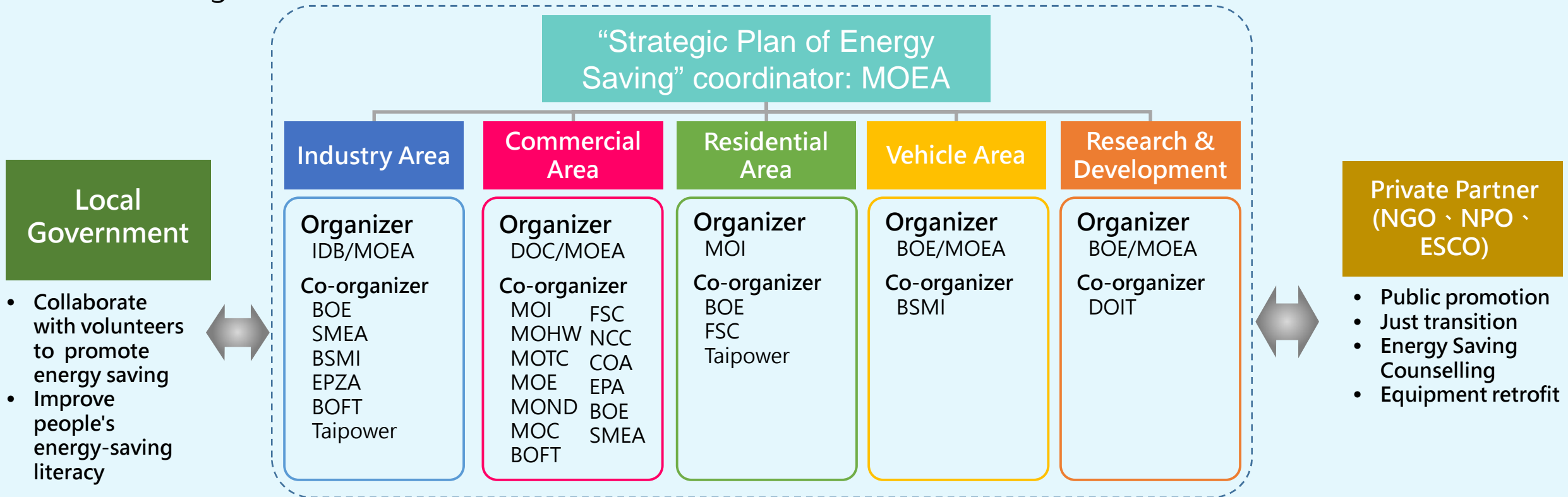
3. Plan Stage

- There are two stages of “Strategic Plan of Energy Saving”
 - 1st stage(2023~2030) : Introduce best available technology(BAT) to utilize energy in most efficient way, and develop innovative technology for further energy conservation in 2nd stage.
 - 2nd stage (2031~2050): Expand application of innovative technology in 1st stage for further energy conservation.



4. Participated Agency and Responsibilities

- **Participated Central Agencies** : The plan was **coordinated by MOEA**, and collaborate with MOI, MOHW, MOTC, MOE, MOND, MOC, FSC, NSTC, COA, and EPA to join the plan.
- **Local government cooperation**: Cooperated with local government to build-up the governance capability of energy saving .
- **Private participation** : Collaborate with ESCO to assist in energy-saving diagnosis and technology counseling.



5. Strategies of Plan

- Implement **48 energy-saving measures** in the area of **industry, commercial, residential, and vehicle, and technology development** through **7 strategies**.



Promote knowledge to drives social energy-saving actions

Plan **5 measures**, including energy-saving knowledge promotion, energy information data visualization, and electricity-saving incentives, public awareness of energy conservation enhancing.



Promote successful experience in energy saving

Plan **13 measures**, integrate existing energy-saving guidance and successful energy-saving experience, replicate and spread experiences through cost-effective business models.



Promoting Building Energy Efficiency Classification and Net Zero Buildings

Plan **10 measures** to establish a building energy efficiency grading system and promote green building materials and construction process.



Establish energy-saving and governance ecosystem

Plan **4 measures** to expand the scope of energy management, establish a fair verification mechanism, promote energy conservation in residential and commercial sectors and SME by ESCO.



Request enterprise to take energy-saving responsibility

Plan **2 measures**, set corporate energy-saving goals, set high level crew as energy manager. Encourage corporate and supply chain to set sustainability certification target.



Equipment efficiency in line with international standards

Plan **8 measures** to improve the efficiency benchmarks of major energy-consuming equipment (air conditioners, refrigeration and motors, etc.) and the penetration rate of high-efficiency equipment



Smart Energy Conservation and Technological Innovation

Plan **6 measures**, implement intelligent technology to enhance energy-saving applications, invest in energy-saving technology research and development, and establish future energy-saving capability.

6. Plan Measures (1/4)

Strategy	Area	Measure	Responsible Department
1. Promote knowledge to drives social energy-saving actions	Residential Area	1.1 Intensify energy-conservation information promoting	BOE/MOEA
		1.2 Collaborate regional human resource and volunteers to promote energy saving	BOE/MOEA
		1.3 Execute local power saving project and promote the legalization of local energy governance	BOE/MOEA
		1.4 Promote smart power meter and electricity data visualization	Taipower
		1.5 Conduct and promote energy conservation activities	Taipower
2. Establish energy-saving and governance ecosystem	Industry and Commercial Area	2.1 Discuss amending the regulation to expand the scope of energy conservation management	BOE/MOEA
		2.2 Strengthen local government capacity of energy conservation , and import private capability	BOE/MOEA
		2.3 Promote successful case, and raise crew level of corporate energy manager	BOE/MOEA
		2.4 Collaborate with education organization and associations to train energy certification manpower	BOE/MOEA
3. Equipment efficiency in line with international standards	Industry Area	3.1 Equipment efficiency in line with international standards	BOE/MOEA
	Commercial Area	3.2 Expand the energy-efficiency regulation coverage of equipment	BOE/MOEA
		3.3 Increase efficiency of commercial air-conditioning systems	BOE/MOEA
		3.4 Subsidize service industry to replace low efficiency lighting and air-conditioning equipment	DOC/MOEA
		3.5 Counsel enterprises to improve low efficiency equipment, establish low-carbon business model	DOC/MOEA

6. Plan Measures (2/4)

Strategy	Area	Measure	Responsible Department
3. Equipment efficiency in line with international standards	Residential area	3.6 Improve energy efficiency of home appliance	BOE/MOEA
	Vehicle area	3.7 Strengthen vehicle energy efficiency management	BOE/MOEA
		3.8 Build performance and safety verification system of energy-saving tire	BOE/MOEA
4. Promoting Building Energy Efficiency Classification and Net Zero Buildings	Commercial Area	4.1 Subsidize local governments to entrust professional organizations or institutions to conduct green building audits and spot checks	CPA/MOI
		4.2 Encourage commercial buildings to apply for green building labels	ABRI/MOI
		4.3 Promote energy saving and carbon reduction in new commercial buildings	CPA/MOI
	Residential area	4.4 Establish building energy efficiency assessment and labeling system and promote net zero transition	ABRI/MOI
		4.5 Encourage accommodation buildings to apply for green building labels	ABRI/MOI
		4.6 Strengthen the design regulations related to energy conservation in buildings	CPA/MOI
		4.7 Subsidize the private sector to improve the energy efficiency of existing buildings	CPA/MOI
		4.8 Encourage companies to add building energy efficiency into corporate social responsibility	FSC
		4.9 Implement innovative energy-saving technologies into building construction	ABRI/MOI
		4.10 Subsidize the energy-efficiency and net-zero demonstrating measures for existing public buildings and shelter spaces	ABRI/MOI

6. Plan Measures (3/4)

Strategy	Area	Measure	Responsible Department
5. Promote successful experience in energy saving	Industry and Commercial Area	5.1 Encourage the industry to improve the efficiency of public systems	BOE/MOEA
		5.2 Process improvement in the petrochemical industry	IDB/MOEA
		5.3 Process improvement in the electronics industry	IDB/MOEA
		5.4 Process improvement in the steel industry	IDB/MOEA
		5.5 Process improvement in the cement industry	IDB/MOEA
		5.6 Process improvement in the textile industry	IDB/MOEA
		5.7 Process improvement in the paper industry	IDB/MOEA
		5.8 Promote ISO 50001 energy management system	IDB/MOEA
		5.9 Counsel energy-saving in the industrial sectors	IDB, SMEA, EPZA, BOFT
	Commercial Area	5.10 Counsel energy-saving in the commercial sectors	MOI、COA、FSC、MOE、MOHW、MOTC、BOFT、NCC、MOND
		5.11 Promoting just-comfort temperature of air-conditioning in business premises	BOE/MOEA
		5.12 Promote energy conservation service in small and medium-sized company	SMEA/MOEA
	Vehicle area	5.13 Improving Energy Efficiency of Heavy truck	BOE/MOEA

6. Plan Measures (4/4)

Strategy	Area	Measure	Responsible Department
6. Request enterprise to take energy-saving responsibility	Industrial and commercial area	6.1 Increase corporate energy-saving target	BOE/MOEA
	Commercial area	6.2 Improve electricity efficiency in the public sector	BOE/MOEA
7. Smart Energy Conservation and Technological Innovation	Commercial area	7.1 Implement smart energy technology in equipment	BOE/MOEA
		7.2 Conduct intelligent control and management of livelihood pollution sources project	EPA
		7.3 Subsidize schools to build smart electricity management	MOE
	Technology research	7.4 Develop innovative manufacturing process	DOIT/MOEA
		7.5 Develop key technology of high efficient equipment	BOE/MOEA
		7.6 Develop smart energy management system	BOE/MOEA

Key Performance Index

Area \ Year	2025	2030
Industry Area	<ul style="list-style-type: none"> Gradually replacing process equipment 50% of the energy consumption of large energy users introduce ISO 50001. 	<ul style="list-style-type: none"> Implement high efficiency, low emission equipment to industry 60% of the energy consumption of large energy users introduce ISO 50001.
Commercial Area	<ul style="list-style-type: none"> 400 new green buildings per year 70% lighting will be LED, and 30% HVAC will adopt optimization operation technology. 	<ul style="list-style-type: none"> 450 new green buildings per year 100% lighting will be LED, and 60% HVAC will adopt optimization operation technology. New public building be efficiency level 1 or ZEB.
Residential Area	<ul style="list-style-type: none"> Efficiency of residential building envelope increasing 5% Retail lamp 100% will be LED 300 new green buildings per year 	<ul style="list-style-type: none"> Efficiency of residential building envelope increasing 10% MEPS of air conditioner and refrigerator reach level 3. 350 new green buildings per year
Vehicle Area	<ul style="list-style-type: none"> Including light-duty trucks over 2.5 tons into vehicle energy efficiency management 	<ul style="list-style-type: none"> Energy efficiency of new car increases by 30%.
Technology Development	<ul style="list-style-type: none"> Develop low emission process for electronics and steel industry, and develop rare earth compound purification technology. Develop key components, liquid dehumidification materials and air compressor adsorbents for level 1 energy-efficient chillers with low-GWP refrigerant. Develop power supply by adopt new-wide-bandgap device, with 96% power efficiency of 96%. And develop technology to reduce 30% cost of energy management system. 	<ul style="list-style-type: none"> Electronics and steel low-carbon process be deployed in mass production line, and rare earth production line deployed in pilot run stage. The efficiency of domestic low-carbon refrigerant, efficiency-level 1 chiller increased by 15%. High-humidity outside air process by dry-wet separation technology to reach energy saving 15~30%. Increase power supply (with new-wide-bandgap device) efficacy to be 98% power efficiency. 10% of energy management system adopt digital twin technology.

Budget Plan

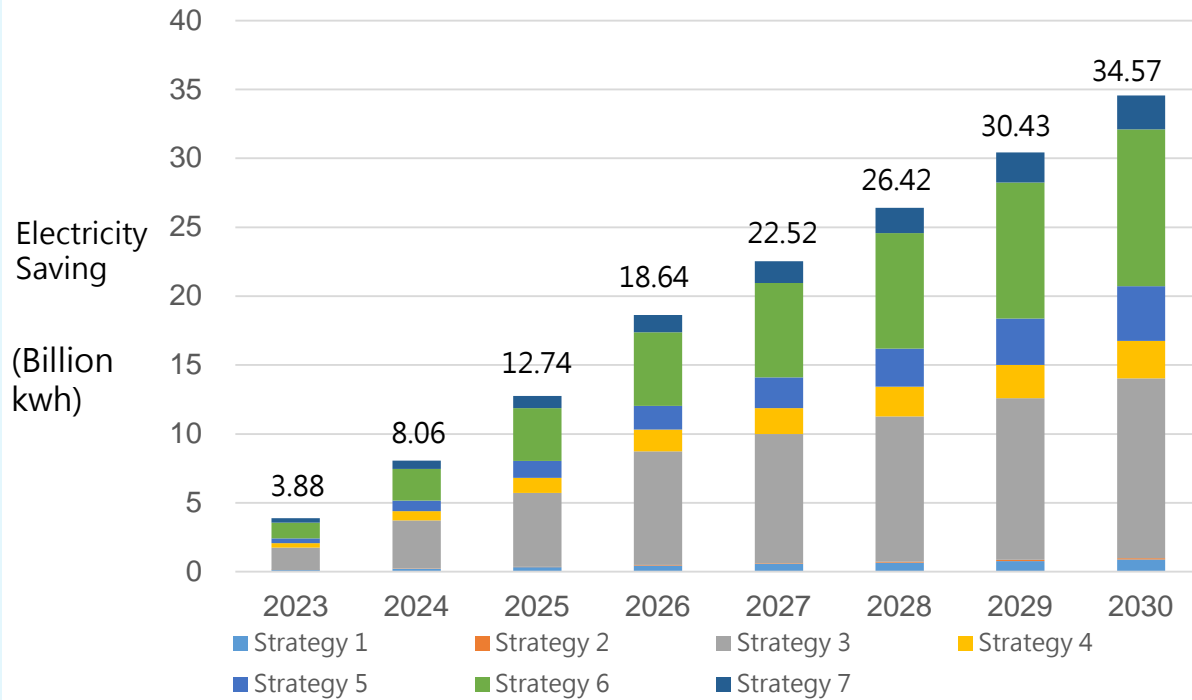
Million NTD

Strategy \ Year	2023	2024-2025	2026-2030	2023-2030
Promote knowledge to drives social energy-saving actions	222	429	995	1,646
Establish energy-saving and governance ecosystem	57	120	378	555
Equipment efficiency in line with international standards	4,056	940	9219	22,715
Promoting Building Energy Efficiency Classification and Net Zero Buildings	196	1,439	874	2,509
Promote successful experience in energy saving	2,744	4,783	17,158	24,685
Request enterprise to take energy-saving responsibility	136	272	680	1,088
Smart Energy Conservation and Technological Innovation	1,407	3,614	9,175	14,196
Total	8,818	20,097	38,479	67,394

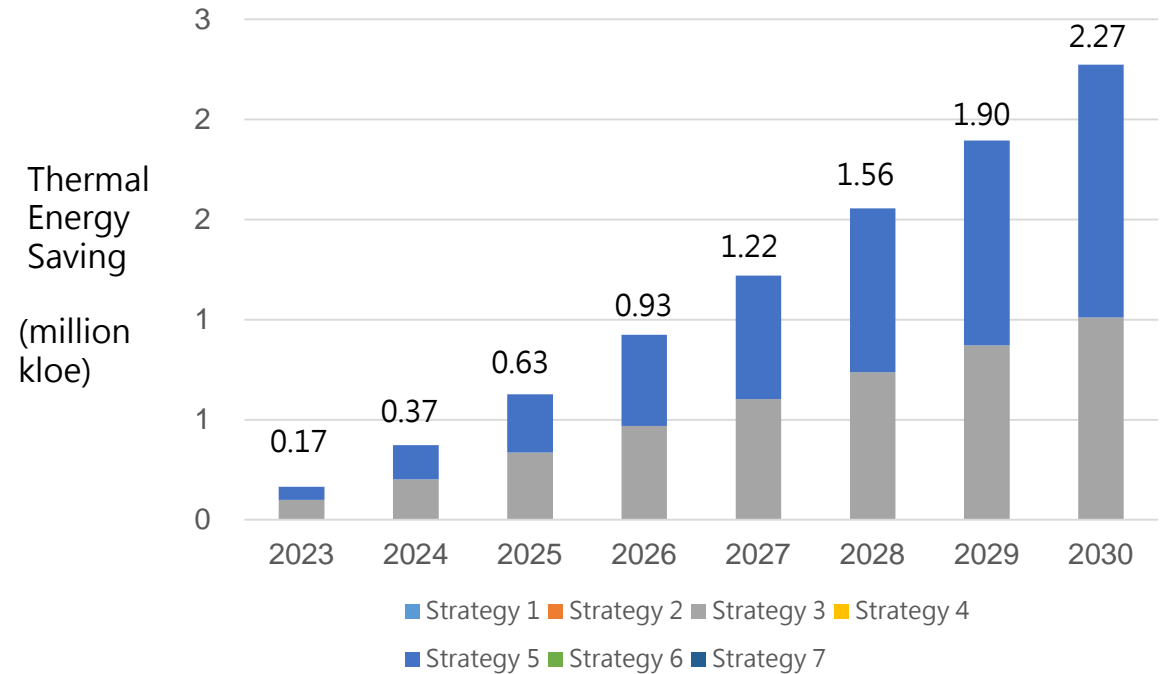
7. Benefits – Energy Saving

■ Through implementing 7 promoting strategies of “Strategic Plan of Energy Saving”, it is estimated to save 34.57 billion kWh of electricity and 2.27 million kloe of thermal consumption.

Saving of Electricity

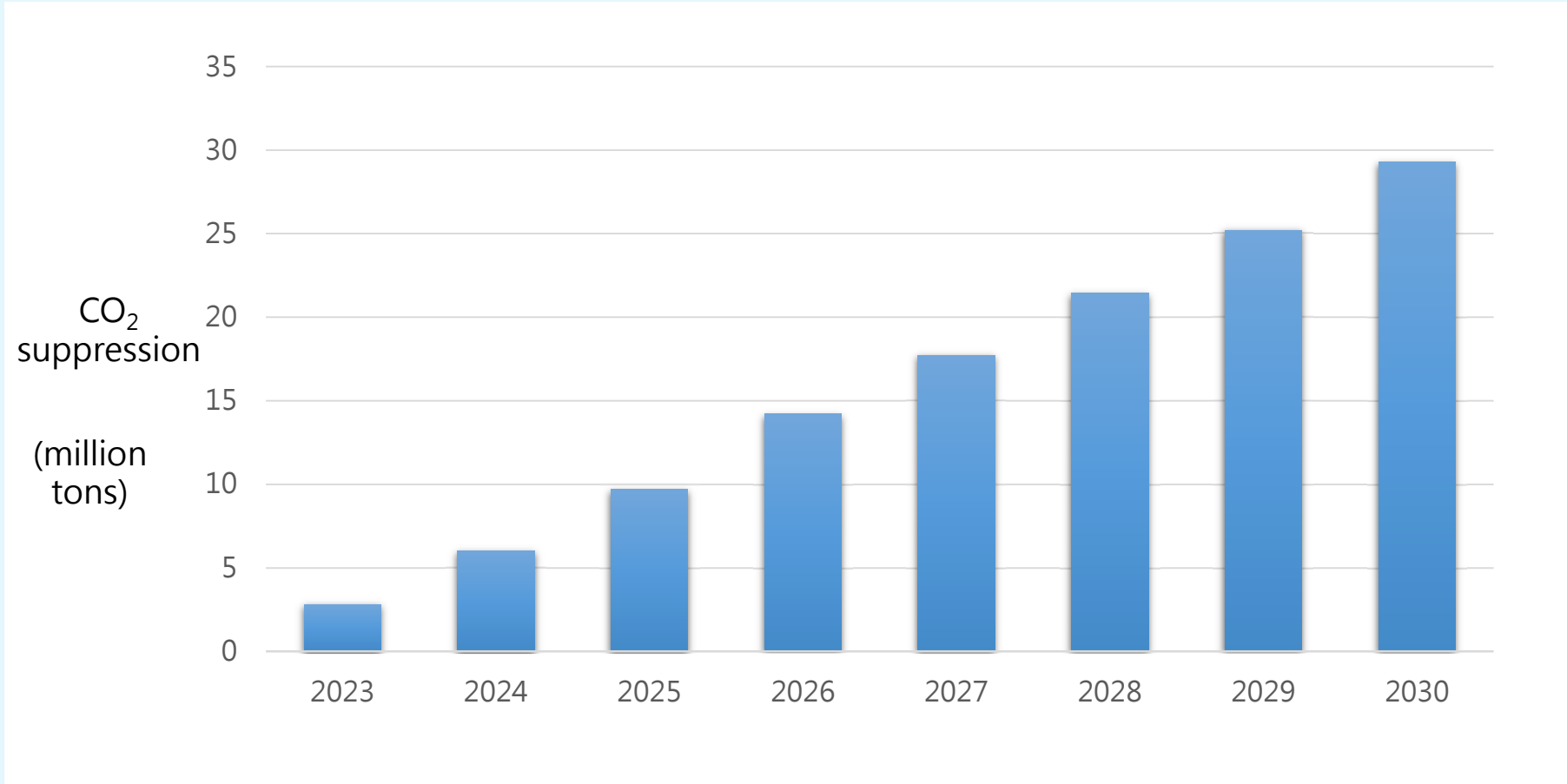


Saving of thermal consumption



7. Benefits – CO₂ Suppression

- Compare with 2022, the suppression of CO₂ emission contributed to “Strategic Plan of Energy Saving” is estimated to be **29.3 million tons**.



8. Just Transition

- There are lot's of SME (about 1.5 million). When promoting energy-saving and net-zero transformation, SME face difficulties in lack of funds, lack of energy-saving knowledge, and investment hesitation.
- The competitiveness of SME is affected by issues such as CBAM and substitution of green or high-efficiency products.
- Vulnerable groups have less energy and willingness to invest in energy-saving equipment, and may lose opportunities to participate in incentives or subsidy programs related to net zero carbon.

Strengthen SME counseling

- Encourage large users to collaborate with SME.
- Establish energy-saving service group to provide assistants for SME.
- Collaborate with professional association to enhance energy-saving capability of SME by providing consulting and diagnosis services.
- Support SME to learn about regulation or measure related with carbon-reduction and CBAM in the international market.
- Establish the " Diagnostic Service Team for Export Carbon Reduction "

Provide subsidies and incentives for SME

- Increase subsidy up to 30% to encourage SME to improve efficiency of public systems such as air conditioning, air compressors and sewage treatment.
- Set equipment replacement subsidy measures for SME in service industry to replace low efficient lighting and air-conditioning equipment.

Assist vulnerable family with local energy-saving project

- Provide local government resources to help them training manpower to jointly promote energy-saving projects.
- Take care of vulnerable group when promoting execute energy efficiency measures in local district.
- Accelerate local government experience the benefits of energy saving, and promote the legalization of power saving governance.



Thank You