Meeting Minutes of the 2nd Meeting of the Office of the President National Climate Change Committee

Date: Thursday, October 24, 2024, 4:00 p.m.

Location: Reception Hall, Office of the President
Chair: Convener Lai Ching-te
Recorder: Ministry of Environment (MOENV)

Attendees: Deputy Convener Cheng Li-chiun (鄭麗君), Deputy Convener James C. Liao (廖俊智), Deputy Convener Tung Tzu-hsien (童子賢), Advisor Lee Yuan-tseh (李遠哲) (on leave), Advisor Eugene Chien (簡又新).

Committee Members: Liu Chin-ching (劉鏡清), Wu Cheng-wen (吳誠文), Liu Shyh-fang (劉世芳), Chuang Tsui-yun (莊翠雲) (on leave), Kuo Jyh-huei (郭智輝), Chen Shih-kai (陳世凱), Chen Junne-jih (陳駿季), Peng Jin-lung (彭金隆), Paul Peng (彭双浪), Lai Po-szu (賴博司), Terry Tsao (曹世綸), Tseng Wen-sheng (曾文生), Sophia Cheng (程淑芬), Lydia Hsiao-mei Lin (林筱玫), Shih Shin-min (施信民), Lee Ken-cheng (李根政), Ho Tsung-hsun (何宗勳), Chao Chia-wei (趙家緯), Chen Hui-ping (陳惠萍), Huang Pin-han (黃品涵), Su Huey-jen (蘇慧貞), Lin Tze-luen (林子倫), Chou Kuei-tien (周桂田), Tseng Chung-jen (曾重仁).

Non-voting Participants: Secretary-General to the President Pan Men-an (潘孟安), Executive Secretary Peng Chi-ming (彭啓明), Deputy Executive Secretary Chang Tun-han (張惇涵), Chief Secretary to the President Chen Yi-ling (陳羿伶), Presidential Office Spokesperson Karen Kuo (郭雅慧), Vice Minister of Economic Affairs Lien Ching-chang (連錦漳).

I. Chair's Remarks

Today is the second meeting of the National Climate Change Committee. First, I want to welcome the committee members who were on leave for the first meeting but are with us today: Paul Peng, Sophia Cheng, and Lin Tze-luen.

I want to thank everyone here with us today, as well as our fellow citizens and friends for their enthusiastic participation online. This shows that everyone considers global climate change issues as matters of great importance.

Not long ago, we saw Typhoon Krathon become the first tropical cyclone on record to make landfall in Kaohsiung in the month of October, with recorded gusts at level 17 or higher on the Beaufort scale. Responding to climate change is a major test for national resilience and sustainable development.

Internationally, the whole world is facing increasingly severe climate change challenges. The Paris Agreement of 2015 requires each country to update its nationally determined contributions (NDCs) every five years. In 2021, COP26 increased the frequency of such updates to once every two years to accelerate progress in global carbon reduction. In addition, the next round of NDC updates for countries around the world is scheduled for the beginning of next year.

Therefore, we must come together and create a strong, resilient Taiwan that can respond to challenges and align with international trends. At the same time, we are willing to continue strengthening cooperation with countries around the world, including China, to address the challenges of climate change together.

At the beginning of this month, we launched a carbon fee system, with fees starting to be collected next year. This is a solid step.

Furthermore, our strategic direction is clear: we will promote our second energy transition to ensure a stable and resilient energy supply. In addition to developing more forms of green energy to open up new energy sources, we must also promote deep energy saving and advanced energy storage technology applications to spur the transformation and development of next-generation industries; enhance Taiwan's adaptive mechanisms to respond to climate change; and seek green growth opportunities for sustainability, as we steadily move toward our goal of net-zero emissions by 2050.

At today's meeting, the MOENV will first deliver reports on the progress of certain items listed in the first committee meeting and on the promotion of the public sector chief sustainability officer alliance. The Ministry of Economic Affairs (MOEA) will then deliver a report on the progress in deep energy saving promotion.

I want to thank Deputy Convener and Vice Premier Cheng Li-chiun for conducting numerous interministerial policy discussions in the Net Zero Emissions Transition Taskforce, under the Executive Yuan's National Council for Sustainable Development, in the time since we convened our first meeting in August this year.

In a few minutes, Executive Secretary and Minister of Environment Peng Chi-ming will explain our initial concept for an energy information platform and the current review status of our new carbon reduction goals, two issues of great concern to our committee members. The reports will help committee members and the public to better understand the government's policies.

As Taiwan plays a critical role in global technology supply chains, we must step up climate action to enhance the international competitiveness of our industries and quicken our pace to bring us in line with NDCs internationally. We also need to review our goals for 2030, be more ambitious to break through obstacles, and reset

new, more proactive carbon reduction goals for 2032 and 2035.

At the same time, the best source of energy is the energy we conserve. Our economic development requires that industries and foreign investors continue to invest in Taiwan, which requires a stable power supply. Conserving energy is more efficient than developing new energy sources and is one of the most important cost-effective methods. It is also an immediately effective strategy for reducing carbon emissions. The more energy we save, the more we can reduce carbon emissions.

One of the conclusions reached during last year's United Nations Climate Change Conference (COP28) was that by 2030, the average annual improvement rate of energy efficiency must be increased from 2 percent to 4 percent. Increasing energy efficiency is already an international consensus and trend in efforts to achieve net-zero emissions.

Going forward, the government will gradually promote energy conservation policies and encourage all sectors to promote deep energy saving. From high-emission enterprises to hospitals and schools, and even homes and individuals, everyone needs to participate. The government cannot promote deep energy saving alone. Like a baseball team, for the team to be good, everyone must play their role.

Energy service companies (ESCOs), like analysts and trainers on baseball teams, can provide enterprises with the most cost-effective, tailor-made energy-saving plans to ensure that every dollar invested achieves the best possible energy savings.

Moving forward, in promoting deep energy saving, we need ESCOs to be involved to strengthen our "lineup." The government will cooperate with industry to propose methods including investment

incentives, investment tax credits, and government subsidies to help industries save energy. The government will also cooperate with insurance enterprises and life insurance companies to promote ESCO mechanisms, and will provide funding assistance to upgrade equipment and improve production processes, with the savings on electricity costs returned to investors. Insurance premiums will be used for national development, forming a virtuous circular economy.

The whole world is now facing the challenges of extreme weather and carbon reduction. But I am confident that as long as everyone works together to implement innovative and transformative change, we can create opportunities for sustainable growth for generations to come.

Through this meeting, we will not only rely on the expertise of our advisors and committee members for diverse discussions and collective brainstorming. We will also reference innovative and pragmatic strategies for green growth adopted by countries such as the United Kingdom and Japan. Through joint actions of the public sector in conjunction with the various sectors of society, we can more efficiently accelerate Taiwan's efforts to achieve net-zero carbon emissions.

In a few minutes, I will invite everyone to actively share your expertise and experience. Thank you.

II. Confirmation of the Meeting Agenda
Decision: Meeting agenda confirmed.

III. Confirmation of the Minutes of the First Committee Meeting
Decision: Minutes of the first committee meeting confirmed.

IV. Report Items (Omitted)

1. Status report on items listed in the first committee meeting
(Presented by Executive Secretary Peng Chi-ming)

2. **Progress report on the promotion of the public sector chief sustainability officer alliance**
(Presented by Minister of Environment Peng Chi-ming)
3. **Progress report on deep energy saving promotion**
(Presented by Vice Minister of Economic Affairs Lien Ching-chang)

V. Discussion Items (In Speaking Order)

1. Committee members are invited to comment on report items; written opinions will be included in the meeting minutes.

(1) Committee Member Remarks

1. Committee Member, Paul Peng

(1) For Taiwan to pursue opportunities for leapfrogging, it is suggested that the Executive Yuan's Directorate General of Budget, Accounting and Statistics continue promoting green national income, similar to the Task Force on Climate-related Financial Disclosures. This initiative would enable stakeholders to assess the impact of economic activities on the environment from a monetary perspective. Additionally, financial assets or instruments such as savings, insurance, and bonds could be utilized to attract private resources, expand green investments, and create more investment opportunities for climate change adaptation. It is also recommended that carbon fees that are collected be used to develop net-zero technologies and promotional measures including energy-saving incentives, rather than being allocated to local governments, to avoid diluting development efforts.

(2) The promotion plan for the chief sustainability officer alliance is commendable. However, it is recommended that

a clear performance evaluation system be established. Drawing from private sector practices, it is suggested to link performance regarding ESG initiatives in sustainable development to the remuneration of high-level executives. This should include organizational efforts, with a combination of incentive measures and mandatory regulations.

(3) Regarding deep energy saving, it is noted that electricity price increases have a significant impact on the consumer price index. Over the past three years, industrial electricity prices have already seen substantial increases, and further increases are planned. Energy conservation should be a nationwide effort. However, previous price adjustments targeted only major power users. It is recommended that prices for other users also see moderate adjustments to promote energy conservation through demand-side management, leading the public to respond by saving energy.

(4) The government plans to increase the budget to encourage the replacement of outdated household appliances. However, it is noted that power expenses account for 2.15 percent of the income of households in the lowest quintile income bracket, compared to only 0.74 percent for high-income households. Some low-income individuals may not be able to benefit from the subsidies. It is suggested that more attention be given to disadvantaged groups to ensure a just transition. Electricity-saving measures promoted by various ministries and agencies, including the introduction of ESCOs, are commendable practices. Given the long-term and effective promotion of smart technology development by Taiwan's ICT industry, it is recommended that they be invited to participate in these initiatives.

(5) The MOEA is considering amending Article 10-1 of the Statute for Industrial Innovation to include energy conservation and carbon reduction. The proposal also includes raising the investment deduction cap from NT$1 billion to NT$1.8 billion. It is recommended that the scope of such deductions be expanded to include self-generated renewable energy facilities and energy storage facilities.

2. Committee Member, Lai Po-szu

(1) The Manufactures United General Association of Industrial Park of R.O.C. (MUGA) has deep roots in Taiwan, and focuses on issues related to stable power supply and reasonable electricity pricing. This year, electricity prices have been raised twice, in April and October, with an average increase of 23.5 percent for the manufacturing sector. Taipower's operational losses should be borne collectively by all industries. Freezing price increases for specific sectors, such as domestic demand and livelihood-related industries, could lead to unfair competition.

(2) Electricity price increases have raised business costs and squeezed profits. Manufacturers in industrial parks, primarily traditional industries and small- and medium-sized enterprises (SMEs), often face challenges such as insufficient technology, talent, and funding. It is recommended to strengthen assistance to these manufacturers to promote deep energy saving by deploying expert service teams for on-site diagnostics and facilitating partnerships with ESCOs, enabling manufacturers to achieve energy conservation and carbon reduction in a cost-effective manner.

(3) The MUGA anticipates the swift passage of amendments to Article 10-1 of the Statute for Industrial Innovation that

would make energy conservation and carbon reduction expenditures eligible for investment tax credits. The amendments also propose raising the cap on applicable investment credit amounts. This would encourage businesses to expedite the replacement of outdated equipment, achieving substantive carbon reduction benefits.

(4) The primary purpose of suspending work and classes during typhoons is to prevent workers from becoming involved in accidents while commuting. Currently, neither South Korea nor Japan has a formal system to declare typhoon holidays. In Japan, the decision to suspend work is left to individual companies, whereas in Taiwan, it is solely determined by local government leaders. However, local leaders may face public pressure, leading to potential misjudgments in declaring typhoon holidays. It is suggested that, in addition to improving the accuracy of weather forecasts, Taiwan could consider adopting Japan's approach by granting employers greater decision-making authority, or allowing labor and management to negotiate work attendance based on the nature of employees' duties.

3. Committee Member, Terry Tsao

(1) The direction of renewable energy development in Taiwan and the national carbon reduction plan are key concerns for industries. Following the previous meeting, the relevant ministries established an energy information-sharing platform, enabling industries to better understand the government's green energy planning and development directions. This provides a reference for businesses to determine the proportion of green energy required in their operations, and efforts to disclose renewable energy information are expected to continue in the future.

(2) A direction has already been outlined for Taiwan's new carbon reduction target for 2032, with data being compiled for various strategies and measures. It is suggested that the government first establish a system for internal management. This includes aligning carbon reduction targets using data from flagship carbon reduction projects, integrating statistical data from the chief sustainability officer alliance and deep energy saving, and connecting these with the net-zero framework to ensure that the net-zero goals and timeline are achieved as planned.

(3) Semiconductor Equipment and Materials International has established the Energy Collaborative to collect data and project the power demand for semiconductor manufacturers and data centers operating in Taiwan. Moving forward, the organization will evaluate Taiwan's future power needs as AI develops, and assist in reviewing assessment reports from Taipower.

4. Committee Member, Tseng Wen-sheng

(1) Through adjustments to its power supply structure, Taipower aims to reduce its carbon emissions coefficient from power generation by 40 percent by 2032. However, achieving a 40 percent reduction in total carbon emissions remains challenging in the context of significant growth in power consumption. Carbon reduction efforts should not only focus on lowering the concentration of carbon emissions, but also on reducing overall power consumption. Energy conservation is not only the "first fuel," but also the most effective way to reduce carbon emissions. In terms of power dispatch, Taipower prioritizes reducing the use of high-carbon-emission power sources, such as subcritical

coal-fired units.

(2) Taipower conducted a survey on power consumption across all state-owned and public enterprises and identified areas for improvement, such as outdated air conditioning equipment. It is recommended to conduct effectiveness assessments at the operational level and submit the findings to the decision-making level (board of directors) for top-down decision-making. Additionally, it is suggested to plan for supporting measures, such as enhancing inspection capabilities, to ensure effective implementation and tangible results.

(3) This year's increase in electricity prices is deemed necessary, primarily due to the uncertainty surrounding the Legislative Yuan's approval of an NT$200 billion budget allocation to subsidize Taipower. Without this approval, there is a significant risk to Taipower's net asset value that could severely impact the company's operational stability. Regarding the issues of price freezes and gradual price rises, for domestically oriented industries, measures will be considered to avoid affecting commodity prices. For export-oriented industries, the principle is to implement short-term price freezes or gradual price rises, with subsequent reviews to unify the extent of price rises, so as to prevent long-term unfair competition scenarios.

5. Committee Member, Sophia Cheng

(1) In recent years, governments worldwide have made significant progress in advancing net-zero transition, with high-carbon-emission industries in particular relying on policy-driven initiatives. The MOENV has completed the design of a carbon pricing system. I believe that the terminal

price is scientifically based, while the starting price is related to political science. Appreciation is extended to the MOENV for fostering discussions on the initial carbon fee pricing among industry, government, academia, and non-governmental organizations under the 2050 net-zero emissions consensus. Additionally, long-term carbon fee price targets have been established, providing industries with a reference for planning low-carbon transitions. Moving forward, efforts can be further directed toward more needed future infrastructure development and creating a more comprehensive ecosystem.

(2) Cathay Financial Holdings will participate in the 2024 UN Climate Change Conference (COP29) this November. Following the conference, efforts will focus on analyzing key pain points and proposing solutions for localizing global net-zero trends, particularly in Asia and Taiwan, and will include assessing the overall system. In Taiwan, the financial sector often encounters issues when engaging in climate finance, such as insufficient information for SMEs and startups, a lack of understanding of financial sector perspectives, and mismatches between the risk preferences of capital providers and seekers, which can hinder progress. For future projects requiring professional consultation, it is recommended to seek assistance not only from industry, government, and academic experts, but also from financial institutions to enhance the investment value of such projects.

(3) With the global push for net-zero transition, the international narrative has shifted from just transition to sustainable transition. Recently, Cathay Financial Holdings sponsored an international initiative focusing on people, skills, and communities during the transition process, incorporating

systemic thinking to ensure no one is left behind. Committee members are encouraged to participate and collaborate, leveraging international knowledge to develop a localized version suitable for Taiwan.

(4) Startups are about turning creativity into entrepreneurship, and entrepreneurship into businesses. It is recommended to take stock of the projects collected over the past three to five years through the Presidential Hackathon. By leveraging data scientists and AI, these projects can be developed into strong national support mechanisms. For example, feasible solutions could be identified for issues such as manufacturing growth, power consumption growth, and waste generation.

(5) There are currently few companies in Taiwan engaged in carbon inventory services, and it is suggested to prioritize the development of professional carbon inventory institutions. The MOENV and the MOEA have both developed carbon inventory calculators and related carbon emission calculation tools that allow people to perform calculations independently, without necessarily requiring a third-party verification body to conduct the inventory.

6. Committee Member, Lydia Hsiao-mei Lin

(1) In terms of the application of information platforms, the Taiwan Artificial Intelligence Association can leverage large language model technologies to enhance interaction with the public, such as by providing customer service technical Q&A. This approach would promote fairness, equality, and inclusivity in information disclosure, enabling the public to more fully participate.

(2) Discussions typically focus on how to manage and govern data, as well as using data to train AI. While AI is thriving internationally, domestic development faces challenges, including the need for investment. Issues such as companies failing to secure projects or receive money for secured projects can lead to brain drain, hindering the long-term development of the industry.

(3) It is recommended to integrate AI-ready data and AI governance into energy-saving initiatives, combining AI with green-collar talent to assist industries. For example, most air conditioning systems follow European or Japanese standards, and with past corporate energy-saving consultations in Taiwan, there has been an inability to access communication protocols, requiring alternative methods to obtain data. In recent years, through innovative applications and robust systems developed by private sector players, we have tried relaying feedback from major companies to manufacturers to enable precise data scheduling. However, further collaboration with industries and more time are needed to advance these efforts. It is believed that AI can provide even more support for energy-saving initiatives.

7. Committee Member, Shih Shin-min

(1) The progress reports for listed items from the first committee meeting were comprehensive. Further discussions can continue, particularly regarding whether the decarbonization pathway can allow us to achieve the goal of a 40 percent reduction in carbon emissions by 2032. Additionally, concerning the establishment of the energy information platform, it is essential to ensure that the information provided is complete and accurate, and will not mislead the

public.

(2) The planning of the system for chief sustainability officers is commendable, but it is necessary to consider how to align its framework and position titles with the National Council for Sustainable Development, as well as local government sustainability councils and climate change adaptation promotion councils. Currently, the National Council for Sustainable Development is convened by Premier Cho Jung-tai (卓榮泰), with Vice Premier Cheng serving as deputy convener and Minister of National Development Liu Chin-ching as executive director. It is recommended to clarify the division of responsibilities between the future chief sustainability officers of the Executive Yuan and the executive director of the council to ensure smooth system design. Additionally, it should be considered whether renaming the "alliance" of chief sustainability officers as a "commission" or "meeting" would be more appropriate.

(3) Deep energy saving is a critical issue. COP28 proposed doubling the global annual improvement rate for energy efficiency by 2030 compared with 2022. However, today's report did not mention Taiwan's current annual improvement rate for energy efficiency or its target for 2030. It is recommended to supplement the report with relevant figures and the energy-saving measures to be implemented by various sectors.

(4) As the public thinks that the list of major power users should be disclosed, it is recommended that the lists of major carbon emitters and major power users be made public to encourage mutual learning among users regarding energy conservation and carbon reduction. Additionally, the introduction of

ESCOs should not focus solely on the procurement of energy-saving equipment, but should also emphasize system integration and process improvement. Furthermore, public advocacy and connections regarding energy-saving initiatives should be strengthened to harness the power of civil society.

8. Committee Member, Lee Ken-cheng

(1) In addition to serving as a database, the energy information platform should be designed from a user-centric perspective, leveraging the government digital functionality enhancements promoted by the Ministry of Digital Affairs (MODA) through collaborative efforts. Notably, Citizen of the Earth, in partnership with g0v, previously developed Disfactory, which garnered responses from thousands of users. The platform allows users to upload photos to report violations, making it more convenient than government reporting systems. In developing the energy information platform, it is recommended to integrate private sector resources to provide verified and objective information. This approach would not only establish credibility, but also ensure a more user-friendly interface.

(2) The government's deep energy saving plan is commended for its comprehensive approach, emphasizing institutional support and collaboration among government agencies. The following recommendations are offered for consideration:

- Integrate green job training, low-carbon community initiatives, and environmental organizations to broaden societal participation and achieve deep energy saving goals.
- Establish a systematized energy efficiency assessment

framework, supported by a smart energy management information system, and implement a rigorous third-party energy-saving performance verification system. If future carbon fee revenues are used to incentivize energy-saving investments by industries, the same mechanism should be applied to ensure that objectives are effectively met.

- In response to Committee Member Shih Shin-min's recommendation, disclosing energy information such as building types and major power users will assist ESCO providers and related energy-saving planning by providing access to information regarding effectiveness. It is hoped that further discussion on relevant details can be conducted.

(3) In terms of household energy saving, the main measures currently being promoted involve replacing energy-intensive appliances such as refrigerators and air conditioners. However, the more critical factor is system-wide energy saving, particularly in the construction and improvement of ventilation and insulation systems, which require policy support from the Ministry of the Interior (MOI). Accelerated installation of smart power meters and information integration platforms that link appliances is also required to enable households to monitor overall and individual appliance power usage in real-time. Therefore, it is suggested that the appliance replacement policy should be coordinated with the MOI's building renovation initiatives, as well as ongoing MOENV and MOE efforts to improve power usage behaviors. Such collaboration is essential to ensure the effectiveness of these policies. Additionally, it is recommended to systematically explain to the public the integrated policy logic behind appliance replacement, the government's efforts to promote extended product lifespans

through the circular economy, and other policies such as a net-zero green lifestyle.

(4) It is recommended to allocate a reasonable proportion of the residential energy-saving budget to support green-collar talent training. This should be combined with efforts involving civil society organizations, environmental volunteers, and low-carbon communities to foster real behavioral change. While previous key net-zero transition strategies related to energy saving have included collaboration with local governments and assisting disadvantaged households with energy-saving measures, it is suggested to advance these initiatives more systematically and on a larger scale.

9. Committee Member, Ho Tsung-hsun

(1) The plan to install chief sustainability officers is beginning with the public sector, but there is no conflict if the government and private sector implement that initiative at the same time. Innovative methods from the private sector can inspire a wave of energy-saving practices. Additionally, applications used by various government ministries and agencies should be integrated, allowing the public to access clear and comprehensive information on how to save energy and power through a single application platform, thereby facilitating broader use.

(2) According to statistics from the MOENV, Taiwan generates enough food waste each year to fill 13,000 Taipei 101 towers, equivalent to an average of 20 kilograms of wasted food per person each day. Although the agricultural sector generates a relatively low proportion of carbon emissions, imported food involves carbon emissions generated by

international transportation and production. It is recommended to incorporate the promotion of healthy, low-carbon diets into chief sustainability officers' duties and prioritize it as a key focus in the first phase of implementation.

(3) Regarding the international developmental trend toward green government, the UK has proposed a commitment to nature preservation and providing space for plants and wildlife to thrive. Given that climate change is threatening the survival of Taiwan's wildlife, it is recommended that the government formulate specific strategies, goals, and action plans to address this issue.

(4) Regarding MOEA efforts to better manage electricity consumption, an annual electricity-saving rate of 1 to 1.5 percent can be achieved. However, as the Energy Administration Act already mandates an annual 1 percent reduction in electrical power consumption, it is recommended to set more ambitious targets for saving power.

10. Committee Member, Chao Chia-wei

(1) The previous meeting mentioned the new carbon reduction target for 2032. However, the international norm is a five-year review cycle, and the Climate Change Response Act has a similar provision. Therefore, the 2032 carbon reduction target should be discussed together with the phase three periodic regulatory goals for 2030 and the new round of NDCs (NDC 3.0) for 2035.

(2) International discussions on NDC 3.0 place significant emphasis on citizen participation. Whether the government

is proposing the new carbon reduction target for 2032 or NDC 3.0 with its target year of 2035, it is essential to simultaneously strengthen citizen involvement in the target-setting process.

(3) When the government previously proposed the 12 key strategies for net-zero transition, civil society groups expressed the need to increase strategies for industrial transformation. This is because by 2032, low-carbon cement and low-carbon production processes will account for 10 percent or more internationally. Taiwan must keep pace with these global trends. However, the flagship programs presented in today's briefing still lack concrete plans related to industrial transformation. It is recommended that this area be strengthened.

(4) The Climate Change Response Act has assigned statutory responsibilities to various ministries and agencies that should be executed. The chief sustainability officer system should emphasize encouraging ministries with comparatively less involvement in the past to consider how their core tasks can contribute to promoting joint net-zero transition efforts. Similar to how corporate chief sustainability officers must consider climate change risks, each ministry's or agency's chief sustainability officers should also understand and oversee the status of net-zero transition implementation efforts in their organization.

(5) Deep energy saving should focus on systemic energy saving, which requires strengthened legal support to achieve its goals and the integration of the relevant policy tools across various ministries and agencies. The Energy Administration Act draft amendments proposed by the MOEA do not

currently provide the institutional capacity necessary for deep energy saving. It is recommended to review the current draft and incorporate requirements such as enhanced preliminary energy management systems and energy auditing into the revised legal framework. Additionally, the Financial Supervisory Commission (FSC) could require listed companies to state their energy-saving rates, electricity-saving rates, and other relevant information in their sustainability reports, achieving effective public oversight through information disclosure.

11. Committee Member, Chen Hui-ping

(1) Regarding the energy information platform, AI technology could be integrated to develop a database that allows users to more quickly and accurately access the data or information they need. This would provide insights into the key issues and information that matters to the public, serving as the foundation for the next step in communication with citizens and society.

(2) The 2024 Nobel Prize in Economic Sciences was awarded for research on how institutions influence economies. A key insight from that research is that inclusive social institutions are essential for leading a nation toward long-term prosperity, so to achieve better sustainable development in the future, we must implement inclusive and just transition strategies. According to international studies, men are three times more likely than women to possess green job skills, which limits many women's ability to participate in the net-zero transition due to a lack of skills. This highlights the need for policies such as green-collar workforce development initiatives. It is recommended to prioritize support for workers impacted by the transition who are

seeking reemployment, as well as provide training and assistance to disadvantaged groups such as new immigrants, indigenous peoples, persons with disabilities, and the elderly by designing inclusive institutional frameworks. Furthermore, consideration should be given to utilizing carbon fee funds to support disadvantaged communities, social welfare organizations, efforts to improve energy-saving and carbon reduction measures, and energy efficiency improvements.

(3) In my opinion, the chief sustainability officer alliance is innovative and actively demonstrates the determination of the public sector to advance net-zero transition. I would like to offer two suggestions for consideration:

- Sustainable development efforts can draw on the experiences of corporate chief sustainability officer systems. However, government and business have different roles. For instance, while corporations prioritize short-term returns on investments in energy-saving and carbon reduction projects, government investments should take a more long-term perspective, particularly in infrastructure development.
- In Taiwan's private sector, many outstanding chief sustainability officers operate with the support of the FSC and are guided by strong corporate governance structures, including evaluation metrics and governance frameworks. The public sector's chief sustainability officers can learn from these models and frameworks to develop appropriate indicators and propose sustainability reporting standards and structures for the public sector.

(4) Regarding the deep energy saving plan, the following suggestions are proposed:

- Incorporate Just Transition: Current efforts focus on large power users, small- and medium-sized users, and residential users. However, it is recommended to propose energy-saving action plans that specifically support disadvantaged households and low-income households, offering them additional assistance.
- Energy-efficient Buildings: The current deep energy saving action plan primarily relies on the ESCO model and appliance replacement to achieve energy efficiency goals. However, encouraging energy-efficient buildings is also a key strategy for improving energy efficiency. It is recommended to expand the focus of initiatives for deep energy saving to include specific action plans for energy-efficient buildings.
- Increased Funding for Energy-saving Innovations and Technological Applications: Financial investment is crucial. While the ESCO model and appliance replacement remain effective, there are additional possibilities to explore, such as building-integrated photovoltaics in the PV-ESCO model or AI energy management systems. It is suggested that government resources be allocated to support more innovative energy-saving models.

12. Committee Member, Huang Pin-han

(1) Taiwan's decarbonization pathway should align with international climate goals for 2030 and 2035. Under the UN framework, countries are scheduled to propose new UN NDC goals next year. The Paris Agreement employs a common time frame approach for updating and implementing NDCs, and although national climate goals are generally set over 10-year periods, policies should also

be reviewed on a five-year basis. Therefore, in addition to urging countries to raise their 2035 climate targets, global non-governmental organizations should also monitor the implementation of practical and feasible policies within a five-year time frame.

(2) I welcome the government's proposal of a new 2032 decarbonization target, as it demonstrates strong political will. However, before setting this goal, it is essential to conduct reasonable scenario analyses and engage in public communication. Through comprehensive policy-based decarbonization analyses and the consideration of various scenarios, a scientifically grounded target should be proposed. I recommend that the third committee meeting focus on discussing the new 2030, 2032, and 2035 decarbonization targets. Only through reports from relevant ministries, agencies, and committee discussions can we incorporate more input from civil society groups into future public communication efforts.

(3) The Organisation for Economic Co-operation and Development has indicated that to achieve climate goals by 2030, the world needs to invest US$5 trillion annually, with US$2.4 trillion required for developing countries. Therefore, increasing government spending on green finance is essential.

(4) Scenario analysis and scientific pathway evaluation are the first steps for all decarbonization pathways. According to the UN Framework Convention on Climate Change COP28 decisions, parties should aim to increase energy efficiency from 2 percent to 4 percent by 2030. The International Energy Agency has identified viable methods to meet this

goal, including: fuel efficiency improvements such as electrification, gas-to-power transitions, and oil-to-power transitions, contributing 0.7 percent; technological efficiency such as using energy-efficient appliances and high-performance electric vehicles, contributing 0.7 percent; and behavioral changes such as adjusting air conditioning temperatures, adopting public transportation, and retrofitting green buildings, etc., contributing 0.8 percent. Together, these actions can account for a total of 2.2 percent. Therefore, the deep energy saving action plan must involve collaboration across all sectors, focusing on the industrial, power generation, transportation, and building sectors. However, the MOI and the Ministry of Transportation and Communications (MOTC) did not propose any policy plans this time. It is recommended that these ministries introduce corresponding policies to improve energy efficiency and achieve deep energy saving. The MOEA's report mentioned measures promoting systematic energy saving, implementing energy management information systems, establishing performance monitoring systems, fostering cross-ministerial and central-local cooperation, and strengthening regulations, all of which I agree with.

(5) Regarding electricity pricing adjustments, price signals have a significant impact on public electricity-saving behavior. For instance, following the electricity price adjustment in July 2022, residential energy consumption from August to December of the same year decreased by 630 million kWh compared to the same period the previous year. Among users consuming 1,001 kWh and above, energy usage decreased by 160 million kWh. For the ESCO industry, the payback

period is typically 5 to 10 years. Clear price information is beneficial for shortening the payback period and supports industry development.

13. Committee Member, Su Huey-jen

(1) We must clearly articulate the role and potential benefits of the public sector chief sustainability officer alliance. For example, through communication among chief sustainability officers, the alliance can promote seamless, in-depth cooperation between the central and local governments. Additionally, chief sustainability officers can be given specific, measurable task indicators for their efforts to promote green procurement and optimize related regulations. Furthermore, advancing net-zero transition and deep energy saving requires actively leveraging private sector resources to maximize the benefits of public-private collaboration.

(2) The process of advancing net-zero transition may generate unequal opportunities. Taiwan should develop its own solutions to address these challenges, and use them to contribute to the international community. The government must also ensure that the public understands that in the process of promoting net-zero transition, inclusivity and just transition strategies can certainly be implemented.

(3) Although the Taiwan Carbon Solution Exchange has been established, many stakeholders still do not understand policy tools such as voluntary carbon emission reduction credits and the mechanisms to offset carbon emission increases. It is recommended to expand collaborative capacities and conduct more effective policy communication.

(4) To address health-related adaptations to climate change, efforts should not be limited to improving adaptation to extreme high temperatures. Instead, the focus should be on how to fully consider other climate-related impacts and integrate them into future considerations for overall infrastructure changes and development. Additionally, proactive attention should be given to international trends to ensure timely responses. For instance, London School of Economics and Political Science research points out that 2023 saw an increase of 230 climate-related litigation cases, so the government should strengthen communication and coordination among stakeholders to prevent time-consuming and resource-draining litigation.

14. Committee Member, Lin Tze-luen

(1) The previous meeting discussed the supply side of energy and power, while this meeting concentrates on the demand side. It is recommended that overall strategy encompass a broader range of approaches, including improving energy efficiency, deploying smart energy management systems, strengthening regulatory frameworks, designing diversified incentive mechanisms, and promoting public disclosure of information. According to an MOEA report, while 2,700 private enterprises are expected to participate in the deep energy saving action plan, questions remain about whether there are sufficient human resources and capacity. A mechanism should be designed to foster public-private partnerships, and a collective effort should be made through the relevant ministries and agencies, with civil society participation.

(2) Observers have expressed concerns that previous subsidies

to replace household appliances benefited those who have funds readily available to replace their appliances, while disadvantaged households could not afford to replace their appliances, and consequently continued to use older models. That leads to higher electricity costs, preventing them from benefiting from the government's good intentions while exacerbating inequalities. It is recommended to research, discuss, and provide disadvantaged households with full subsidies for appliance replacement, rather than allowing them to continue using outdated appliances and incurring higher electricity costs. Moreover, public participation in energy-saving efforts should not be limited to appliance replacement alone, but should integrate local government and private sector cooperation to broaden participation.

(3) As large enterprises have more resources to invest in energy-saving efforts, and SMEs may be willing to act but lack resources, innovative action plans should be designed in collaboration with business associations that address the unique characteristics and different types of SMEs.

(4) Deep energy saving should extend beyond merely replacing appliances. The key lies in deploying smart energy management systems, shifting from a "virtuous energy-saving" strategy to a "smart energy-saving" approach. Currently, over 3 million low-voltage smart meters have been installed, and innovative strategies should be developed to encourage public participation. The MOI's building codes should also include the installation of energy management systems.

(5) The deep energy saving action plan requires the concerted efforts of various ministries and agencies. That includes the MOI's net-zero building designs and the MOTC's energy-efficient transportation systems. For instance, building

design offers significant potential for energy saving beyond relying solely on increasing the efficiency of home appliances. Many international examples of net-zero building designs now utilize geothermal temperature regulation by tapping into a stable temperature layer 5 to 20 meters underground. Those designs can significantly improve the energy efficiency of building systems, and introduction of such standards should be accelerated.

15. Committee Member, Chou Kuei-tien

(1) Since taking office, the president has established the National Climate Change Committee and the public sector chief sustainability officer system. Moving forward, the nation is set to propose new carbon reduction targets for 2030 or 2032, significant milestones in Taiwan's transition to net-zero emissions. The policy issues discussed at today's meeting including carbon fees, electricity pricing, renewable energy, building strategies, and energy saving require dynamic decision-making, tracking, and adjustments, but there is still room for greater efforts to channel financial capital into net-zero building projects.

(2) Based on data from 2022, industrial power consumption accounted for an estimated 57 percent of national power use, and carbon emissions from industrial power use accounted for approximately 51 percent of Taiwan's total greenhouse gas emissions. The top 10 industries in terms of carbon emissions accounted for 34 percent of total national emissions, while the top 30 industries accounted for 43 percent of that total, underscoring the importance of industrial transformation. In particular, as the petrochemical industry has contributed 2 percent to Taiwan's GDP for 30

consecutive years, in addition to a few petrochemical industry products that have innovated and key industry changes, the industry's high-value transformation strategies must be strengthened. Additionally, after 2021 the semiconductor and electronics industries became globally strategic industries for Taiwan. However, that has increased power demand, resulting in new peaks in power consumption and carbon emissions. Therefore, it is recommended that industrial transformation strategies be incorporated into the 12 key strategies for net-zero transition to avoid two peaks in carbon emissions. The Global Plastics Treaty negotiations are also expected to resume at the end of this year. Taiwan should address the industrial impacts related to the above-mentioned issues as soon as possible.

16. Committee Member, Tseng Chung-jen

(1) Promoting new issues and new technologies often involves the need to amend existing laws and regulations, and chief sustainability officers can play a role in supervising, integrating, and coordinating these efforts. For instance, while hydrogen-powered vehicles are already mature in many international markets, domestic companies importing hydrogen-powered buses or cars—operating for years in Europe or Japan—face challenges in obtaining certification for domestic use. This is due to the inspections required by transportation authorities and the lack of sufficient inspection capacity in Taiwan, thereby delaying successful certification and deployment.

(2) Given that Taiwan's current electricity carbon emission factor is still relatively high, it is recommended that efforts to electrify government vehicles be paired with the

construction of charging stations powered by green power. This would ensure that vehicle electrification translates into meaningful carbon reduction.

(3) Encouraging government employees to stay at environmentally certified hotels during business trips or purchase circular products reflects good intentions. However, these policies should not become mere policy pledges. It is recommended that the expense reimbursement cap should vary—for example, allowing higher reimbursement for stays at environmentally certified accommodations.

(4) Non-electric power sources still account for a significant portion of Taiwan's overall energy usage. Some industrial processes' thermal applications and thermal demands are relatively high. Therefore, energy-saving and carbon reduction measures should also be implemented in these areas.

(5) Rational electricity pricing can help conserve energy. While in the past, the government maintained low electricity pricing primarily as a form of policy-based care, prices should be permitted to reasonably reflect costs while caring for disadvantaged groups through subsidies, thereby promoting rational power use.

(2) Government Representative Remarks

1. Committee Member, Peng Jin-lung

Regarding green financial support for ESCOs, approaches include the following technical and institutional measures:

(1) Technical Measures:

In terms of insurance products, plans are underway to promote energy efficiency insurance and energy equipment insurance. Insurance companies have also started designing new financial products. To channel the investment of insurance funds, the FSC and the MOEA have reached a consensus, and plan to announce that ESCOs have been designated as an investment target, allowing direct investment by the insurance industry while applying a lower risk coefficient to encourage investment.

(2) Institutional Measures:
The FSC will deliberate using corporate governance frameworks through the management mechanisms of listed companies to disclose corporate energy-saving performance information, thereby encouraging the implementation of energy-saving measures.

2. Committee Member, Chen Shih-kai

(1) The power consumption of Taiwan's High-Speed Rail (HSR) system and Taiwan Railway Corporation (TRC) is relatively high, and the MOTC has requested that Taipower assist TRC with implementing deep energy saving measures. For example, this year's TRC project to replace the chillers in Banqiao Station's air conditioning system is expected to reduce energy consumption by about 2 percent. To address higher electricity costs next year, the MOTC will also require TRC to seek assistance and guidance from the MOEA to continue implementing deep energy saving measures.

(2) The MOTC will continue working to improve public transportation capacity. This year (2024) between January and August, usage rates for road transportation increased by

3.9 percent, TRC by 10.97 percent, and HSR by 8.1 percent compared to the same period last year (2023), while approximately 10 million people also used the government's TPASS (Executive Yuan Commuter Monthly Pass), which reduced transportation costs for commuters.

(3) To promote energy saving in transportation, the MOTC will continue working with various ministries and agencies to encourage the replacement of diesel city buses, old taxis and motorcycles, large diesel vehicles, and TRC's aging rolling stock to reduce carbon emissions. Domestic airlines will also be encouraged to use sustainable aviation fuel.

(4) The MOTC oversees approximately NT$200 billion in public construction projects annually, and a carbon fee rate of 0.7 percent would increase costs by approximately NT$1.4 billion per year. In the future, we will initially use project reserve funds and price adjustment fees to address this issue, and if there is a shortfall, we will follow the plan revision mechanism. Carbon reduction guidelines for public projects such as roads, national freeways, and railways will also be established and are expected to be completed by the end of next year.

3. Committee Member, Liu Shyh-fang

(1) In the transition to net-zero buildings, we hope to reduce carbon emissions by 1.30668 million metric tons of CO_2 equivalent each year. That will include:

- Subsidizing energy efficiency improvements for 350 public and existing buildings, with an estimated carbon reduction of 158,000 metric tons.
- New buildings that obtain a Green Building Candidate

Certificate or Green Building Label: After expected completion by 2030, this program can reduce carbon emissions by 342,000 metric tons annually. Social housing is expected to promote new building energy efficiency labeling, achieving a reduction of 417,000 metric tons by 2030.

(2) The MOI and the MOEA are jointly drafting subsidiary regulations for Article 12-1 of the Renewable Energy Development Act. In the future, all buildings that meet the specified criteria—whether new buildings, structural additions, or renovations—will be required to install a solar photovoltaic system with a certain minimum capacity.

4. Committee Member, Chen Junne-jih

The agricultural sector accounts for approximately 2.2 to 2.3 percent of the nation's carbon emissions. Although relatively small, the Ministry of Agriculture (MOA) will actively assist the industry to save energy and reduce carbon emissions. Specific measures include:

(1) Actively providing guidance and subsidies to support the electrification of agricultural machinery and waterwheels for aquaculture and fisheries, replacing traditional equipment powered by fuel oil.

(2) In the field of bioenergy, approximately 52 percent of hog farms currently engage in biogas power generation, and the MOA will work with the MOENV to continue to increase the amount of power generated.

(3) As flooding rice paddy fields produces methane and is the source of nearly 20 percent of agricultural sector emissions, the MOA has developed a new irrigation method that can

reduce carbon emissions from paddy fields by about 20 percent, and the ministry will actively promote this method. Regarding carbon sinks, the ministry has identified areas suitable for forest carbon sinks, and will continue to advance efforts through ESG initiatives and public-private partnerships.

(4) Regarding healthy low-carbon diets, the MOA will continue to promote low-carbon footprint diets. This effort aims to support local industries, provide consumers with balanced nutrition, substitute domestic for foreign products, reduce food waste, and lower carbon footprints.

5. Committee Member, Wu Cheng-wen

(1) To enhance the promotion of net-zero technology research and development, the National Science and Technology Council (NSTC) is gradually increasing its technology budget, focusing on three key areas:

- Continuously strengthening the exploration of diversified clean energy technologies to increase the supply of clean energy.
- Continuously exploring areas such as carbon capture, carbon storage, and carbon-negative technologies.
- Strengthening deep energy saving technologies to reduce dependence on fossil fuels.

(2) Promoting deep energy saving requires prioritizing the development of the power electronics industry. From materials for electronics, equipment, and component manufacturing to modules and systems, the research, development, and application of compound semiconductor

technology offer opportunities to improve energy use efficiency in power conversion equipment by 2 to 5 percent. Additionally, the smart integration of microgrids can reduce power consumption by 10 percent or more. While Taiwan has abundant research talent in the compound semiconductor field, it faces competition from China, and many talented people are attracted by the development opportunities there. The government should see this as an important issue and increase investment in Taiwan's compound semiconductor industry.

(3) With the development and widespread adoption of electric vehicles, power demand has significantly increased, making it crucial to ensure an adequate power supply. The development of smart microgrids also relies on efficient power electronics. In the future, it will be essential to balance the supply of high-performance power electronics with the demand for low-energy-consumption load systems. These efforts require technological research and development, and the NSTC will increase the budget for this area of technology.

6. Committee Member, Liu Chin-ching

(1) Regarding the division of responsibilities between the public sector's chief sustainability officer system and the Executive Yuan's National Sustainable Development Council, national sustainability strategies set by the council cannot be extended to central government ministries and agencies, or to city-level departments. Installing chief sustainability officers can help each ministry in conducting carbon inventories, setting targets and strategies, and gradually promoting internal reforms, and officers can also

help promote green budgets. The second round of voluntary department reviews and voluntary local reviews will also need to be conducted in 2025, and the chief sustainability officers of each agency can help them to be completed.

(2) The manufacturing sector accounts for more than 50 percent of carbon emissions, followed by the residential and commercial sectors, which is consistent with the direction of the MOEA's proposed deep energy saving action plan. Especially since carbon emissions from power generation are comparatively high, promoting energy-saving measures can also reduce carbon emissions.

(3) ESCOs are a new industry that requires support. Efforts to promote the integration of AI into ESCOs should be accelerated, using this opportunity to extend the new industry into international markets and assist global carbon reduction efforts. Developing the ESCO industry requires human resources, and the National Development Council (NDC) will collaborate with the MOEA, the MOENV, and the MODA to cultivate more green-collar talent.

7. Minister, Peng Chi-ming

(1) The process of setting carbon fees was quite challenging, and various sectors had different opinions about the level of fees that should be levied. The new system that we ultimately came up with, while not perfect, is acceptable to all parties, and we hope everyone will support it.

(2) According to information on job opportunities from 104 Job Bank, there are approximately 20,000 open positions for green-collar personnel in the market. In designing future training programs, we very much welcome relevant

suggestions from the members of the committee. The MOENV will also actively collaborate with other ministries and agencies so that the next generation of young people develop the skills needed for net-zero transition efforts.

8. Committee Member, Kuo Jyh-huei

(1) Smart energy management systems require the joint efforts of Taipower and major power users. Currently, the MOEA has developed an online, user-friendly carbon inventory tool to guide SMEs in calculating their carbon emissions, and assembled expert advisory teams to help businesses implement energy-saving and carbon reduction measures.

(2) Some state-run enterprises have comparatively high carbon emissions due to the special nature of their businesses, and will continue to be required to increase their ratio of green procurement and be encouraged to use energy-efficient equipment.

(3) Achieving deep energy saving requires collective efforts across ministries, agencies, and civil society. The MOEA will cooperate with the MOENV and the FSC to continue to channel private sector funds and capacities into energy-saving business operation models, and encourage the public to incorporate energy-saving practices into their daily lives.

(3) Deputy Convener Remarks

1. Deputy Convener, Cheng Li-chiun

All committee members are deeply concerned about the next phase of net-zero targets and carbon reduction pathways, and hope the government will set more ambitious goals. I will briefly report on the government’s progress.

(1) In 2022, the government set the 2030 carbon reduction target at 24±1%. Recently, the Executive Yuan National Council for Sustainable Development's Net Zero Emissions Transition Taskforce has convened intensive meetings with various ministries, aiming to achieve higher targets. Upon reviewing the original targets, it was found that summarizing existing plans from each ministry lacked breakthroughs. Therefore, we adopted a bottom-up approach, where action plans for the energy, manufacturing, transportation, residential, commercial, agricultural, and environmental sectors were proposed by the respective ministries. However, the targets integrated by the taskforce were still not forward-thinking in nature. Consequently, we are now adopting a top-down approach, establishing flagship carbon reduction projects and raising targets. We are currently conducting intensive assessments and discussions, aiming to propose a 2032 carbon reduction target by the end of the year. Additionally, we hope to align with international standards and propose 2030 and 2035 targets, and seek committee members' input and foster public communication.

(2) The energy sector is of utmost importance, and in the second energy transition proposed by the president, green energy plays a crucial role.

- For offshore wind power, the government will conduct a comprehensive assessment of wind farm sites in Taiwan's coastal waters that can be developed.
- For solar power, in addition to rooftop installations, the procedures for ground-mounted solar power systems will be reevaluated. Efforts will be made to prioritize public-to-

public communication, involving private developers only after reaching a certain phase in order to streamline the development process.

- In the field of emerging energy, deep geothermal energy has significant development potential. The government and state-owned enterprises can take the lead in exploration to reduce risks and costs for private developers.
- While hydrogen technology has not yet matured in many countries, we should not abandon its development. It should be positioned as part of the technological supply chain, integrated into processes, vehicles, transportation, and energy storage.
- Natural gas is a necessary bridging energy source, but efforts to decarbonize it must be intensified. Experimental projects involving de-carbonized hydrogen-burning or carbon storage technology are actively underway to support a successful energy transition.

(3) In addition to the deep energy saving measures reported on today, focus areas include technological energy storage and grid resilience.

- The term “deep energy saving” refers to improving energy efficiency with clear targets, requiring systemic energy-saving approaches. Based on the suggestions from committee members today, we will collaborate with the MOEA and other ministries to optimize plans. Innovative solutions in high-tech processes, equipment, materials, and systems are also needed. Other sectors, such as the transportation, residential, and commercial sectors, require systematically integrated and diverse approaches.

- Data application is critical. Establishing, applying, and analyzing power data will support efforts by the ESCO industry to improve industrial energy efficiency.
- Technological energy storage is another priority. The government strongly encourages self-generated energy and energy storage facilities, which will be included in the amendments to the Renewable Energy Development Act. Additionally, relevant net-zero technologies will be incorporated into the amendments to the Statute for Industrial Innovation.

(4) The manufacturing sector is the second most critical sector. Currently, efforts focus on transforming carbon-intensive industries. However, to drive widespread industrial carbon reduction, in addition to energy saving, net-zero technologies, carbon pricing, carbon trading, and green finance should be leveraged to initiate dual net-zero and digital transformations. Over 6.3 million SMEs should also be supported in their transformations. Furthermore, possibilities for international cooperation should be explored, such as exporting Taiwan's net-zero technologies to establish transnational supply chains.

(5) Regarding chief sustainability officers in the public sector, I will elaborate with the following points:

- Compared to corporate chief sustainability officers, government chief sustainability officers have more tasks and missions under the framework of the Executive Yuan's National Council for Sustainable Development. As an Executive Yuan chief sustainability officer, I will work with the MOENV to define the responsibilities of government chief sustainability officers. Currently, Premier Cho

convenes the National Council for Sustainable Development to discuss climate governance, integrating efforts through the Net Zero Emissions Transition Taskforce, composed of various ministers and deputy ministers. In the future, the deputy ministers will serve as chief sustainability officers. They will provide a more comprehensive understanding of net-zero practices across departments and enterprises, thus bringing about cross-sector net-zero governance.

- The NDC has established a Just Transition Committee aiming to address gaps in climate and net-zero transitions for vulnerable groups, as well as gender issues, discussing these under a just transition framework.
- Regarding information platforms, the MOENV has proposed an initial framework. Based on feedback from committee members, discussions and further optimizations will be conducted to make the platform more open and user-friendly.

2. Deputy Convener, James C. Liao

(1) Setting energy-saving targets may seem relatively straightforward, but achieving them can be extremely challenging. There are only two ways to save energy: through behavioral changes or technology. Encouraging individuals or industries to change their behavior requires regulations, incentives, and technology, while technological progress also relies on regulations and incentives.

- In terms of behavior, people often talk about saving a certain amount of energy annually. But how do we achieve that? How does an individual contribute? How does a company achieve it? Most companies would say they have already

done what they can, and they can only save so much. Would businesses deliberately increase electricity consumption? Certainly not—they would aim to save energy. What's the next step? Replacing equipment with more efficient models. However, does the electricity saved and the carbon reduced by improving air conditioner efficiency offset the emissions generated to produce a new air conditioner? Certainly not. While we can import high-efficiency equipment from abroad to reduce domestic carbon emissions, this approach could hollow out local industries in the long term. Therefore, we need to save energy by using new technologies.

- Regulations must assist in promoting energy-saving initiatives. The government should design incentives, reduce regulatory restrictions, and optimize regulations. Carbon reduction is a nationwide effort, and everyone should share responsibility. However, without adequate incentives, the responsibility merely shifts to the public. Therefore, the government should design a range of different incentives involving economic fairness, social fairness, and just transition.

(2) Energy saving must rely on new technologies. Why are people unwilling to pay a carbon fee? First, it increases costs; second, even after paying the fee, it does not reduce emissions effectively. It is recommended to encourage companies to establish carbon reduction alliances. Through industry-led investments, companies could transition to researching and developing carbon reduction technologies. Industry-led technology development could be incentivized with carbon fee or tax reductions, with corporate investments directed toward carbon reduction technologies. I suggest an evaluation of the feasibility of regulations and

systems, as well as industry willingness, for discussion in breakout sessions.

3. Deputy Convener, Tung Tzu-hsien

Allow me to briefly present my thoughts from three perspectives:

(1) Regarding electricity price adjustments, Taiwan's competitor South Korea has raised electricity prices three times, while we have raised them four times, which has moderately alleviated financial pressure on Taipower. Currently, there is little difference in electricity prices between the two countries. Additionally, Taiwan's industries have a very high proportion of exports. Subsidizing export industries with relatively low electricity prices is not conducive to further improving the productivity of already competitive export industries. In the past, we were very concerned about foreign companies setting up data centers in Taiwan to benefit from low electricity prices. However, since multiple electricity price hikes which began in 2022, Taiwan's industrial electricity prices have increased by more than 60 percent, and the increase is now sufficient.

(2) In terms of electric vehicle development, although Taiwan has set targets for 2030 and 2040, it still lags behind in comparison with international trends. In 2023, global electric vehicle sales accounted for 16 percent, whereas Taiwan's figure was only 5.2 percent. By 2025, the EU plans to have deployed 1 million charging stations, while Taiwan still has fewer than 10,000, which hinders electric vehicle development. The transportation sector accounts for about 16 percent of Taiwan's total carbon emissions. The government should strengthen efforts to promote the

electrification of transportation equipment and implement effective policies to popularize charging stations.

(3) Taiwan's food self-sufficiency rate is only 30 percent, mainly due to fallow land and imports. Some may think that the price of imported agricultural products is relatively low versus domestic products. However, when global food production decreases due to climate change, Taiwan should be grateful to have nearly 300,000 hectares of rice paddies. This provides basic agricultural production capacity, which places like Singapore and Hong Kong lack.

- However, Taiwan's water resource stability is poor. In March last year, media reports indicated that the Chianan Plain had been fallow for consecutive years due to water shortages. This serves as a reminder to the MOEA's water resource units that agricultural water usage should be reviewed and infrastructure investments made in coordination with the MOA to improve water use efficiency and reduce wasted water.

- Agricultural water losses have long exceeded 30 percent. In Taiwan, agricultural water accounts for 72 percent of usage, while industrial water accounts for 28 percent. The claim that industrial water usage causes fallow during water shortages is unfair, as agricultural and industrial water sources differ—agricultural water primarily comes from rivers. Although Taiwan has high rainfall, 82 percent of it flows into rivers and seas, or evaporates. Only 18 percent of rainfall becomes usable water, and only 30 percent of that enters reservoirs.

- Reservoir power generation accounts for a certain proportion of Taiwan's green energy. Conventional

hydropower contributes about 1.4 percent, while pumped-storage hydropower contributes another 1.1 percent. Although the share is not high, it still provides 7 billion kWh of electricity. It should be noted that many major reservoirs have been in use for 50 to 60 years and suffer from severe sedimentation. Investing in reservoir maintenance is also a worthwhile option.

(4) Advisor, Eugene Chien

1. Regarding the MOEA's report on the deep energy saving plan, the most successful aspect is the government's declaration to take the lead, demonstrating its determination to save energy and reduce carbon emissions. This is a crucial step. However, requiring the ten major state-owned enterprises, nine ministries, and over 2,000 enterprises to adopt the ESCO model necessitates consideration of ESCO human resources and capacity. Therefore, I recommend reevaluating the implementation timeline and training relevant talent in advance in order to successfully achieve the set goals.

2. The MOEA's deep energy saving report focuses on deep electricity saving. I hope that the energy aspects can be further strengthened. After achieving the first step of electricity saving, all ministries should jointly plan and promote energy-saving solutions while seeking financial and fiscal support.

3. The government plans to save 20.6 billion kWh by 2027, reducing national electricity usage by 8 percent. This is a commendable goal that can reduce the pressure on Taipower's electricity supply. However, considering the national and global carbon reduction goals for 2030, I

suggest establishing an additional energy-saving goal for 2030 to help achieve the 2030 carbon reduction goal.

4. Currently, deep energy saving efforts primarily involve the ministries under the Executive Yuan. However, government corporations and research institutes are also vital participants. According to Taipower data, the Industrial Technology Research Institute (ITRI) and Academia Sinica are major electricity users. These institutions are not only energy policy formulators, but also advocates of energy saving. They should serve as role models and actively participate in these efforts. Particularly, as ITRI is promoting several energy-saving technologies, it should also implement certain energy-saving actions on its own.

5. Taiwan's 2025 electricity carbon emission factor target is 0.388 kg CO_2e/kWh, while Taipower's target is 0.424 kg CO_2e/kWh. The gap between these figures indicates room for improvement. If Taipower can continue to reduce its carbon emissions, it would also help major electricity consumers lower their emissions and enhance their international competitiveness.

6. Sustainability work is typically top-down. However, when organizations facilitate top-down and bottom-up exchanges, make policy commitments from the bottom up, and make public commitments to society, they can lead all members to drive sustainability efforts. This is the optimal model for promoting sustainability. As the government is planning to establish chief sustainability officers in the public sector, this initiative can play a significant role. Coordinating the implementation of deep energy saving policies will effectively demonstrate the government's determination to

promote sustainability.

(5) Secretary-General to the President, Pan Men-an

Regarding amendments to the Statute for Industrial Innovation, I suggest considering the committee members' recommendations and exploring the inclusion of technologies or equipment related to deep energy saving, self-supplied electricity, or self-generated electricity as eligible investment tax credits.

(6) Convener, Lai Ching-te

I thank the MOEA and the MOENV for their reports. I will now make a consolidated directive on the three reports.

First, I would like to once again thank Deputy Convener and Vice Premier Cheng Li-chiun for connecting this committee with the Executive Yuan's National Council for Sustainable Development and using the council's Net Zero Emissions Transition Taskforce to facilitate cross-ministerial policy discussions, which were subsequently reported to Premier Cho.

Today, we have seen concrete progress and follow-up planning methods for the six items listed in the first meeting. Thank you to Executive Secretary and Minister of Environment Peng Chi-ming for compiling the report. I request that the Executive Yuan and relevant ministries continue to promote and follow up with management of these items.

Additionally, I would like to thank the Executive Yuan for planning to establish the public sector chief sustainability officer alliance. This top-down approach demonstrates a strong commitment to national sustainable development. Regarding the chief sustainability officer role mentioned by committee

members, I think that the relevant ministries, units, and personnel involved in net-zero transition should be listed together to ensure smoother implementation when promoting green procurement.

The nation has a net-zero emissions goal, and central government agencies and local governments must also have their own respective goals. Please include ITRI and Academia Sinica, as suggested by Advisor Eugene Chien, in the first wave of energy-saving and carbon reduction targets to accelerate the completion of the following two key tasks:

First, complete internal carbon inventory. For example, water usage, electricity usage, and fuel consumption should follow the same practices as the private sector; the electrification of government vehicles must be completed on schedule by 2030; public sector buildings, whether new or old, must take the lead in completing Building Energy-efficiency Rating Labels and set a target year for completion with annual performance indicators to guide the private sector in joining the effort.

Second, enhance green procurement. In addition to allocating funds specifically for green procurement in the annual budget, the central government should lead by example by gradually increasing the proportion of the green procurement budget each year. Our current goal is to raise this to 10 percent by 2030, with further review to assess the feasibility of increasing this target.

We also look forward to government agencies at all levels embracing innovative thinking and mechanisms to advance net-zero transition efforts.

Similarly, for the critical first step of energy saving, not only do all ministries need to fully commit to the effort, but

consideration should also be given to effectively using administrative regulations to guide the process. Public-private partnerships should be leveraged to create innovative business models that help achieve the goal of reducing carbon emissions and saving 20.6 billion kWh of electricity over four years. Advisor Eugene Chien just suggested extending the target to 2030 and reevaluating what goals could be achieved. Moving forward, we need to focus our efforts on three directions:

First, the public sector must lead by example. All ministries must take action to promote the adoption of the ESCO model in state-owned enterprises, establish tangible performance and models, and accelerate domestic energy-saving processes. While ensuring personal data security, energy information management systems should be fully utilized to conduct detailed data analyses. This will enable efficient use of energy-saving investments, maximizing the effects of equipment upgrades and deep energy saving. In other words, we must not only improve equipment efficiency, but also simultaneously pursue systematic energy saving and smart energy management to maximize the efficacy of ESCO implementation.

Second, bring in private sector resources to enhance energy-saving efforts. In terms of labor, collaborate with private sector experts to quickly establish advisory teams that provide professional support for energy saving. In terms of financing, actively involve the finance and insurance industries to offer funding guarantees for energy-saving projects and expand the scale of energy-saving initiatives.

Third, encourage public participation in energy-saving efforts. Promote the replacement of old equipment with new, highly energy-efficient appliances. This is the starting point for

changing public behavior. Energy-saving and carbon reduction actions must be integrated into everyone's daily lives to collectively build a more sustainable, low-carbon society. The suggestions made earlier by Academia Sinica President James C. Liao regarding introducing incentives and integrating technology are especially important.

I sincerely thank all the civil society representatives on the committee for the valuable suggestions they have long provided regarding the government's promotion of energy-saving initiatives. I also request that the Executive Yuan consider the committee members' opinions and adjust the subsequent implementation plans accordingly.

(7) Group Planning Discussion

Explanation: Deputy Convener Cheng Li-chiun will serve as the group leader for key area 1, "net-zero pathway"; key area 6, "green finance"; and key area 7, "sustainable homeland and adaptive resilience." Deputy Convener James C. Liao will lead key area 2, "green energy and carbon reduction technology," and key area 4, "sustainable green lifestyle." Deputy Convener Tung Tzu-hsien will lead key area 3, "green & digital twin transformation" and key area 5, "just transition." Committee members are invited to join groups of their choice to continue discussions on topics of concern.

Resolution: Approved as proposed.

VI. Extempore Motions

Description: Committee Members Chou Kuei-tien and Su Huey-jen jointly proposed motions.

Motion 1: It is recommended that the government explicitly set a 2032 carbon reduction target. Based on this, a stocktaking of policy tools should be conducted for dynamic and balanced decision-

making, and a specific implementation roadmap should be drafted.

Motion 2: From 1998 to 2007, Taiwan experienced carbon lock-in primarily dominated by the petrochemical industry. With the expansion of the semiconductor and AI industries, the next decade is likely to see a new wave of carbon lock-in driven by the electronics industry. Forward-looking strategies must be clearly proposed to address this issue.

Resolution: Motion 1 regarding the 2032 carbon reduction target will be included as a report item for the next meeting. Motion 2 concerning industry structure will be presented to the committee at an appropriate time after group discussions.

VII. Chair's Closing Statement

First, I want to thank everyone for their active participation, which allowed today's meeting to align toward a common goal. Everyone's collective efforts and continued commitment are greatly appreciated. Before the meeting ends, I would like to summarize with five key conclusions:

First, I hope that all committee members and advisors can conduct at least one group discussion per month on the committee's seven key areas. These discussions should aim to build consensus and narrow down the topics for more focused discussion during the quarterly committee meetings, ensuring that policy enactment becomes more feasible.

Second, regarding the two most critical tasks, the new 2032 carbon reduction target for Taiwan and the establishment of an energy information platform, which are of great concern to both our citizens and the international community, I ask the committee members to exchange ideas more frequently and present consolidated policy recommendations at the next meeting.

Third, the MOENV just today reported on plans regarding the 2032 carbon reduction goals. Next year, countries around the world will propose their second round of NDCs for 2035. Taiwan must stay aligned with global developments. Thus, our goal is to propose Taiwan's 2032 carbon reduction target at the next committee meeting in January next year to further build consensus.

I want to emphasize that we must carefully review the current bottlenecks in policy implementation, face challenges honestly, propose practical solutions, and resolve issues effectively. Taiwan's new carbon reduction goals must be pursued with greater determination. This requires more pragmatic policies and thorough execution.

Fourth, I thank the committee members for reaching a consensus. We ask the MOENV to take the lead in accelerating the establishment of the energy information platform. I also encourage all committee members to participate in the discussions during the platform's development process. Our shared goal is to enable rational and in-depth discussions within Taiwanese society on a common foundation based in fact.

Fifth, during this meeting, the MOENV summarized recent actions taken and progress made by the Executive Yuan in response to climate change. The MOENV also reported on the establishment of the chief sustainability officer alliance to deepen sustainable development and net-zero emissions planning. Additionally, the MOEA reported on the action plan for deep energy saving.

We will adjust subsequent promotion strategies based on committee members' suggestions to ensure that relevant policies are implemented effectively and deliver maximum benefits.

Lastly, I would like to once again thank the Executive Yuan and relevant ministries for establishing connections with the National Council for Sustainable Development's Net Zero Emissions Transition Taskforce and conducting cross-ministerial discussions and coordination to translate the committee's valuable recommendations and consensus into actionable plans.

Let us continue to work together to build a net-zero, sustainable Taiwan. Thank you.

VIII. Meeting End Time: 7:47 p.m.