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Path to Inclusive Energy Transition in the APEC Region: How to Enhance Women's Empowerment in the Energy Field

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APEC Energy Working Group

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I. Project Background

1. Objectives

In line with APEC's goal to enhance women's economic participation, this project, by identifying affecting factors, barriers and accelerators, aims to conducts study on how to enhance women's empowerment from energy policy planning.

The project will:

1.To create a platform where stakeholders from public and private sectors from both energy and gender background can exchange expertise to identify potential areas that energy policies can be improved with refined gender perspective.

2.To increase knowledge in women's participation potential in each sub sector within energy field.

3.To seek dialogues and collaboration between EWG and PPWE on women's empowerment in energy field for greater synergy among APEC on this issue.

The **workshop** is a two-day event. It is expected to promote the dialogue and communication between the experts from energy and gender sectors. It can be helpful for member economies in designing gender-friendly policies and projects based on the lessons learnt from their peers.
Additionally, a policy recommendation paper based on knowledge exchange and best practices shared in the workshop will provide guidance for APEC economies, research centers, and sub-fora of EWG to further identify potential gaps in accelerating women's engagement and empowerment in energy field, including enhanced partnership further cooperation with related APEC fora.

2.Event Date

5-6 August 2019

3.Venue

Civil Service Development Institute, Taipei

4.Participating Economies

Canada; Chile; Hong Kong, China; Indonesia; Japan; Republic of Korea; Philippines; Chinese Taipei; Thailand; United States; and Viet Nam.

II. Agenda

Day 1 (5 August 2019)	
Time	**Agenda**
08:30~09:00	Registration
09:00~09:10	Opening Remarks Su-Chen Weng, Chief Secretary, Bureau of Energy, Ministry of Economic Affairs (Chinese Taipei) Kim, Young-Jae, General-Director, International Economic Affairs, Ministry of Foreign Affairs (Republic of Korea)
09:10~09:20	Group Photo
Session I: **International Initiative and Research on Energy and Gender** Moderator: Elena Thomas-Kerr, Senior Advisor, US Department of Energy (The United States)	
09:20~09:40	1.Advancing the Role and Recognition of Women in the Energy Sector Speaker: Joanna Osawe, Chair, CEO & Co-Founder, Women in Renewable Energy (WiRE)
09:40~10:00	2.Gender and energy linkages: evidence and policy implications Speaker: Soma Dutta, Senior Technical Expert, ENERGIA: International Network on Gender and Sustainable Energy
10:00~10:20	3.Renewable Energy: A Gender Perspective Speaker: Christine Lins, Executive Director, Global Women's Network for the Energy Transition (GWNET)
10:20~10:40	Panel Discussion
10:40~11:00	Coffee Break
Session II: **Gender and Energy Governance** Moderator: Joanna Osawe, Chair, CEO & Co-Founder, Women in Renewable Energy (WiRE)	
11:00~11:20	1.APEC Project: Empowering Women as Managers in the Renewable Energy Sector Speaker: Elena Thomas-Kerr, Senior Advisor, US Department of Energy (The United States)
11:20~11:40	2.Energia + Mujer Speaker: Adelaida Baeriswyl, Officer, International Affairs Office, Ministry of Energy (Chile)
11:40~12:00	3.Leadership Accord on Gender Diversity-Promotion of Women Working

	in the Clean Energy Sector in Canada Speaker: Merertu Mogga Frissa, Program Manager, Electricity Human Resources Canada (EHRC)
12:00~13:30	Luncheon
13:30~13:50	4.Trend Driving the Transformation in the Energy Sector Speaker: Aisha Bukhari, Vice President, Women in Renewable Energy (WiRE)
13:50~14:10	5.Breaking Gender Stereotyping in the Energy Sector Speaker: Helen B. Arias, Chief Science Research Specialist, Department of Energy (The Philippines)
14:10~14:30	6.Blueprint for Developing a Gender and Energy Policy Speaker: Victoria Healey, Project Manager, Clean Energy Solutions Center, National Renewable Energy Laboratory (The United States)
14:30~15:00	Panel Discussion
15:00~15:20	Coffee Break
Session III: Gender and Energy Efficiency Moderator: Soma Dutta, Senior Technical Expert, ENERGIA: International Network on Gender and Sustainable Energy	
15:20~15:40	1.Low-Carbon Town Project, for Newly Weds, Elders and Workers in Korea- Focus on Nowon EZ House Speaker: Myoungju Lee, Professor, College of Architecture, Myongji University (The Republic of Korea)
15:40~16:00	2.It's Not Just Energy Saving, It's Our Kids' Future Speaker: Tammy Hu, Co-Founder, DOMI Energy (Chinese Taipei)
16:00~16:20	3.Incentivise Energy Saving with Data and Behavioural Changes: Case from HKU and City-wide NGO Speaker: Christina Tang, Founder & CEO, BlueSky Energy Technology (Hong Kong, China)
16:20~16:50	Panel Discussion
Day 2 (6 August 2019)	
08:30~09:00	Registration
Session IV: Gender and Renewable Energy Moderator: Merertu Mogga Frissa, Program Manager, Electricity Human Resources Canada (EHRC)	
09:00~09:20	1.The Promotion of Citizen Power Plants by Women Speaker: Hui-Ping Chen, Co-Founder, Sunnyfounder (Chinese Taipei)
09:20~09:40	2.The Gender Equality and Social Inclusion in Viet Nam: In case of the Trung Son Hydro Power Project

	Speaker: Nguyen Thi Thu Huyen, Deputy Manager, Institute of Energy, Ministry of Industry and Trade (Viet Nam)
09:40~10:00	3.Gender and Energy Access in Thailand Speaker: Munlika Sompranon, Director, Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy (Thailand)
10:00~10:20	Coffee Break
10:20~10:40	4.Renewable Energy as a Model for Integrating Women into the Workforce Speaker: Alex Hosselet, Marketing and Communications Manager, Electricity Human Resources Canada (EHRC)
10:40~11:00	5.Challenges and Solutions toward Empowerment of Women in Japan's Renewable Energy Industry Speaker: Michiko Amemiya, Research Staff, Electric Power Industry & New and Renewable Energy Unit, New and Renewable Energy Group, The Institute of Energy Economics, Japan (IEEJ) (Japan)
11:00~11:30	Panel Discussion
11:30~11:50	Wrap-up Session: Recommendation for Future Synergy Between Energy and Gender
11:50~11:55	Closing Remarks

III. Workshop Record

Opening remarks

In her opening remarks, **Ms Su-Chen Weng, Chief Secretary**, **Bureau of Energy, Ministry of Economic Affairs, Chinese Taipei**, stressed that traditional energy sector is one of the least gender diverse sectors, given its industrial and technological characters. Studies show that women's representation in energy sector is far lower than that in other economic sectors in average. However, ongoing global energy transition can be a game changer. It offers the chance to create new jobs and reshape all aspects of how energy is produced, distributed and consumed, and also brings new potentials for greater gender balance in the energy sector as there is urging need for innovative talents. It is no doubt that shift in energy paradigm requires significant changes in policies. One of the changes in policies that are needed is to plan, examine and evaluate energy policies from gender perspective. Greater participation of women would allow fast-growing sustainable energy sector to draw on untapped female talents.

Mr Young-Jae Kim, General-Director, International Economic Affairs, Ministry of Foreign Affairs, the Republic of Korea, shared his views on gender in four dimensions, including 1) female education in energy-related studies; 2) women participation in the energy labor market; 3) female representation at the decision level of energy policies; and 4) the gender gap in energy access. Korean government has already enacted a law in 2002 to foster and support female engineers and scientists and the Ministry of Science and Technology is the authority in charged and must make long term plan every five year to support more females. An agency was established in 2011 to implement such plan. In Korea has a very low rate of 59% of women participation in the labor market. One of most important issue in the labor market is gender pay gap. Particularly in the energy sector, women are employed for lower paying jobs. To address this problem, Korea plans to introduce a gender wage disclosure system to be implemented next year. Female representation at the CEO level and other high positions needs to be enhanced. He also mentioned gender mainstreaming in energy access. It is highly relevant in less developed countries or regions where many women need to do house chores in the situation where energy is insufficient. Women are more sensitive and smarter consumers in terms of environment sustainability.

Workshop's sessions

Experts provided presentations on the following topics:

1/ Speakers provided 3 presentations in Session 1, "International Initiative and Research on Energy and Gender":

Session 1-1

Ms Joanna Osawe, Chair, CEO & Co-Founder, Women in Renewable Energy (WiRE), presented Advancing the Role and Recognition of Women in the Energy Sector, introducing the how WiRE works. WiRe and other organizations have already gotten a start on trying to address diversity and inclusion in the workplace, but there is still a lot to be done. Based on the limited available global data, women worldwide make up approximately 20-25% of the workforce in the overall energy industry, with less than six percent in technical positions and below one percent in top management positions. Why are participation rates so low? 1) perceptions of gender roles; 2) the glass ceiling exists; 3) workplace flexibility; 4) pay inequity. She emphasized the need to dig deeper and address gender disparity in the energy sector at the root of its cause - by shifting societal attitudes from a social and cultural perspective. Governments and employers should work together to develop programming that attempts to change the nature of work environments that exclude women through initiatives such as gender awareness training. There should also be both external and internal campaigns that seek to portray the success stories of women who are leaders in the industry. It is also crucial to improve workplace flexibility and policies to address attitudes about gender roles. This means that organizations need to implement family-friendly HR policies and ensure that education, training, and opportunities for advancement exist. Areas of policy might include maternity leave, day-to-day practices such as scheduling meetings, and regular training to help women develop professionally.

Session 1-2

Ms Soma Dutta, Senior Technical Expert, ENERGIA: International Network on Gender and Sustainable Energy, made a presentation on "Gender and Energy Linkages: Evidence and Policy Implications", from the Gender and Energy Research Programme, which is a 5-year research project (2014-2019) funded by DFID with 9 teams, 12 countries, 29 partners collaboration. Key findings are:1) universal energy goals are unlikely to be met unless energy policies account for women's specific energy needs; 2) Involvement of women in energy supply chain is good for business, their families and communities; 3) Modern energy services for women's productive uses contribute to women's empowerment; 4) End-use appliances that deliver modern energy services to reduce drudgery and save time can transform gender roles and relations; 5) Engaging with political processes can help women access modern energy services and change gender norms. Policy implications and recommendations are 1) Engage both women and men in the design, implementation, and M&E of energy policies & programs; 2) Support women's involvement in energy system value chains & employment, by

overcoming gender barriers and through equal opportunity strategies ;3) Multiply social and economic impacts of energy access by targeting women's productive uses; 4) Increase women's ability to afford energy services, through financial support, innovative financial mechanisms (PAYG, rental), and improving the enabling environment for women;5) Improve reliability, convenience, and quality of energy supply to increase women's and men's access to and use of energy services; 6) Support women's role in energy decision- making at household, organizational, and policy levels.

Session 1-3

Ms Christine Lins, Executive Director, Global Women's Network for the Energy Transition (GWNET) shared the insights on renewable energy from a gender perspective. GWNET aims to advance the global energy transition by connecting and empowering women working in sustainable energy in all parts of the world. It also advocates to narrow the knowledge gap on gender and renewable energy. According to a research by IRENA, current status of women's participation in the sector is 32% share of women in the renewable workforce, 22% share in oil and gas industry. Barriers to entry of women in the renewable energy sector in the modern energy context include perception of gender roles, cultural and social norms, and prevailing hiring practices. Therefore, we would need policies and solutions to increase women's participation in the sector, including mainstreaming gender perspectives, creating networks and supporting mentorship, access to education and training, gender targets and quotas, workplace policies and regulations, work-life balance. Engendering the energy transition to achieve the Sustainable Development Goals:

Panel Discussion of Session 1

There are many policies that are actually gender neutral, so many organizations and companies will feel that they have no problems. The panelists discussed how they encourage governments and companies to make changes to the needs of women. They agreed that teamwork and cooperation are needed to achieve gender equality goals. First, the distinction must be made obvious. It is necessary to highlight the difference in gender demand for energy and priorities. Second, the contribution made by women must be seen. Positive rewards are needed to encourage companies to make gender equality. In addition, the panelists also discussed the importance of unbiasedness and gender equality in training and hiring process, and the exclusion of cultural and social implicit prejudice during employment. Ms Osawe proposed to start with one's CV, not including the name and education background so that one can be judged from his or her expertise directly.

2/ Speakers provided 3 presentations during Session 2, "Gender and Energy Governance":

Session 2-1

Ms Elena Thomas-Kerr, Senior Advisor, US Department of Energy (The United States) highlighted on APEC Project: Empowering Women as Managers in the Renewable Energy Sector (PPWE 03 2017A). The purpose of the project is to develop women's economic empowerment by developing their skills and confidence to advance in their careers; and to help trainees develop a viable energy product to advance their economy's renewable energy goals. It also aims to accelerate APEC women's career advancement in the renewable energy field and ultimately, to enable advancement of more women to high ranks in energy management positions. With the support of 6-month online training, business plan development, mentoring, business plan pitching session and alumni network, the project turned with successful outcomes. One participant has already formed a company, secured a business partner and potential investors for her business idea. Several participants committed to be instruments- of- change in their home economies. She also recommended to replicate similar technical training programs for women that include: 1) analysis of gender implications, and 2) opportunities to develop soft skills and improve confidence in order to apply acquired technical knowledge. APEC working groups could replicate similar mentoring programs within their technical areas. Perhaps the APEC Secretariat could help facilitate establishment of APEC networks and/or mentoring opportunities given its direct access to policy and technical experts across APEC to capitalize on the expertise already available.

Session 2-2

Ms Adelaida Baeriswyl, Officer, International Affairs Office, Ministry of Energy (Chile) made an introduction on the project Energia + Mujer --"Diagnosis of the Situation of Women in the Energy Sector" Study aims to 1) Establish a methodology for the collection of information and Development of measuring instruments. 2) Prepare a diagnosis of gender gaps and barriers that exist in the national energy sector. 3) Prepare a proposal for an action plan with the Private- Public Working Table "Energy + Women". In Chile, there is gender disproportion in the energy sector, in the management positions, and payment and workhour gap. Therefore, during 2019, Public- Private working table "Energía +Mujer" will work on a proposed work plan to define courses of action to address the barriers and gaps detected con this Diagnosis in order to promote an equitable and sustainable energy transition. Its commitment is to work for greater labor insertion and participation of women in the energy sector, through recruitment,

development and promotion, which translates into a greater balance in leadership positions, fairer payments, and work environments safer and violence free.

Session 2-3

Ms Merertu Mogga Frissa, Program Manager, Electricity Human Resources Canada (EHRC) presented the Leadership Accord on Gender Diversity:- Promotion of Women Working in the Clean Energy Sector in Canada. EHRC works to strengthen the ability of Canadian electricity industry to meet current and future needs for their workforce-on that is safety-focused and highly skilled, diverse and productive. It focused on areas like research/industry consultation, training and skills development, recruitment and retention. It also launched diversity and inclusion initiatives such as 1)LMI: Innovation and Gender; 2) Connected Women Mentorship Program; 3) Agents of Change: Champions Celebrating Diversity and Inclusion; 4) EHRC Leadership Accord on Gender Diversity (the Accord). The Accord is a public commitment of signatory and advocate. Through the three steps from Declaration of Commitment, Implement & Action to Review, it helps to establish metrics and indicators to develop pool of top talent, greater recruitment and retention, engage in workforce truly representative of Canada's people and enhance innovation.

Session 2-4

MS Bukhari (Vice President, Women in Renewable Energy Senior Manager, Partnerships, MaRS Discovery District) gave her presentation, under the topic "an Inclusive Transition to a Clean Energy Future." She has depicted four pathways toward a clean energy future for Canada, which are: "Wasting Less Energy, Switching to Clean Power, Using More Renewable Fuels, and Producing Cleaner Oil and Gas." Meanwhile, she stressed on the importance of locating a better path toward clean energy while cooperating with Canada's indigenous citizens. In terms of achieving diversity, Ms Bukhari has also emphasized and provided concrete examples the importance and differences between diversity, inclusion and belonging in corporations in the field of energy. For the last item, i.e., belonging, she has raised several pathways: acknowledge intersectionality, be intentional in developing the organizational culture and build each other up. For the aforesaid purpose, Ms Bukhari has pointed out the importance of organizational culture, how non-static it tends to be, and how fundamentally crucial it could be to ally ourselves to people whose voices are often ignored. It is the synergy from all of us participating that could make the most change.

Session 2-5

Ms Arias (Chief, Consumer Welfare and Promotion Office), gave her presentation under the topic “breaking gender in the energy sector stereotyping in the energy sector.” She has brought a strategic framework “DOE gender tool kit” that has been executed in the Philippines, as an example of how the Philippines expedite gender equality in the energy sector. The aforesaid toolkit is designed under the following goal: “Men and women equally contribute and benefit from an ideal state of greater energy access for inclusive growth,” which hopefully would bring forth gender equality though its gender mainstreaming strategy, facilitate women empowerment and improve female labor participation in the energy sector through its 5-year agenda. Ms Arias latter demonstrated some of the achievements form the aforesaid efforts: publications, related training programs, introductive projects for girls in young age who has an early ambition in energy sectors, and scholarships. Ms Arias also shared some lessons learned from the aforesaid efforts: how to break gender stereotyping, identification of some of the crucial gender role influencers and helping young kids to break the stereotype as early as possible.

Session 2-6

Ms Victoria Healey (from Clean energy center, national renewable energy laboratory in the United States) has shared with the audience “the Blueprint for Developing a Gender and Energy Policy.” She has briefly mentioned the motivation for the blueprint, the one works behind the blueprint, the target audience, and how it should be used. Ms Healy has broken down the blueprint into 2 phases: “getting started” and “developing the policy.” And it is important to engage the stakeholders throughout the process. In terms of getting started, she has mentioned the “what and who”, including institutional home, champion, and the action framework. She further introduced the “what and how,” including Project Scope & Policy Type, Activities & Needed Expertise, and Resource Mobilization. As for developing the policy, she has identified 8 steps to the final policy documents for gender equality improvement: Inception Phase, Situation Analysis, Review, Policy Drafting, Validation Adaption, Adoption, Capacity Building, and Monitoring. Ms Healey also shows us some of the possible ways to engage stakeholders: public comment, media campaigns, capacity building, transparency, partnerships and debate. Lastly, she also identifies some of the possible challenges(Inter-sectoral Nature, Unrecognized Need, and Weak Follow-up & Accountability) and solutions along the way of policy framework development (to secure participation and ownership of both energy and gender officials, to spend time laying the groundwork, and to invest early in monitoring protocols tied directly to policy actions.

Panel Discussion of Session 2

The moderator Ms Joanna Osawe hosts the panel and asking questions to speakers while the latter answered as follows: Ms Frissa has shared her ideas e.g., choosing interesting themes to involve male into the dialogue, or a mentoring scheme might be helpful for gender equality in the workforce. Ms Thomas-Kerr has mentioned currently the APEC is failing to identify some questions are actually a gender issue, and therefore not be able to come up with the correction solution to the status quo. Ms Bukhari has identified some of the reasons why female tend to working for free. On the other hand, Ms Arias using herself as an example to explain how difficult it could be for girls to join the energy sector. While Ms Baeriswyl explains the implication of Energy roadmap 2018-2022 both on global scale and for APEC region, in the short term the goals are really specific for each economy to follow. Ms Healey shares about the actions done by ECOWAS region after the policies were officially adopted.

Session 3-1

Prof. Myoungju Lee(Professor, College of Architecture, Myongji University, the Republic of Korea) shared with the audience about her low carbon town project, for newlyweds, elders and workers in Korea, using Nowon EZ house as her primary example. She mentioned that the Greenhouse Gases are generally largely from urban area, whereas 30% of heat wave death occurred at home which creates a serious threatening factor to vulnerable groups in poor residential environment. Prof Lee further articulate what Korea would achieve to counter climate change and facilitate GHG reduction. One of the methods is via zero energy housing complex &city. Nowon EZ house is her brainchild that can currently accommodate 121 household, and acquire certifications that verify its energy efficiency and environmental friendliness. It applies state-of-art technology to achieve energy efficiency, reduce combustion, conduct energy monitoring and apply renewable energy. Prof Lee also demonstrates data evidence as how her work in Nowon EZ house has reduced energy consumption, and how the project largely utilizes renewable energy.

Session 3-2

Ms Tammy Hu (the co- Founder of DOMI Energy), shares with the audience about the story behind how she started her company DOMI. As Chinese Taipei's first B-Corp, has been at the forefront of a global movement of entrepreneurs and corporate leaders using business as a force for good. As an entrepreneur, she sees the urgent needs for improvement of the local environment as opportunities that eventually would engage as many stakeholders as possible, urging them to take action. The novel device of her company, allows people to monitor energy consumption (saving) in a playful way. She also mentioned about their education program (summer camp, for

instance) teaching energy saving to the children. Furthermore, among other things she mentioned her company helps the installment of energy saving lighting for some 3000 household. Ms Hu concludes that her work is in fact to awaken people, as an individual what can be done by them, and to improve energy saving with and beyond the boundary of households.

Session 3-3

Under the topic “Incentivize energy saving with data & behavioral changes,” **Ms Christina Tang, the CEO and Founder of Blue Sky Energy Technology**, has started with a brief introduction of the company, the mission of which is to bring blue sky back to cities and It has been serving 100 locations with 4,000 users across 3 cities. Ms Tang further elaborates on how her company works and plays a role in energy saving for the local community in Hong Kong, China. She mentioned the primary source of CO2 foot print come from building electricity, therefore Energy saving during a building operation is a highly impactful and very important lever hence the importance of her company. Also, related to the theme today, she described Women participation in Hong Kong, China in the energy sector: though more females enroll into university then male yet significantly fewer females enroll in engineering and technology. With participation of women in labor force gap widening as age being, we still could discover number of females as engineers have been growing but still low. Lastly, she utilizes her own company, the blue-sky energy technology as a case, and how they empower energy users (students and NGO staff) through data-driven behavioral change programs and collectively achieve results, i.e., the Blue-Sky Energy Technology simply gives people a nudge, and creating amazing result.

Panel Discussion of Session 3

Prof. Lee noted the gender relevant element in the project: as a woman to work as architect is very tough, and her patience as a woman allows her to overcome challenge. Ms Hu talks about her experience working with mother: 95% of her employees are female, and a good portion of them are over age 45. She stresses that it is the fact that they are all women the facilitate communication and conversation within the company, while their mothering nature certainly helps. Ms Tang answers about what is the most important element for behavioral changing: money could be a great incentive, that is to say, energy cost would be the most important incentive but only at the beginning, but the sense of community, would urge people to work together and move forward for energy efficiency.

4/ During the Session on "Gender and Renewable Energy", there were five speakers — from Chinese Taipei, Viet Nam, Thailand, Canada, and Japan — sharing best practices and the experiences of respective APEC economies:

Session 4-1

Ms Hui-Ping Chen (Co-founder of the Sunnyfounder, Chinese Taipei) introduced the establishment, the vision, and the achievements of the Sunnyfounder, the first green crowdfunding platform in Chinese Taipei. As a mother and sociologist, Ms Chen identified the problems which result in the slow development and the insufficient citizen participation in Chinese Taipei's renewable energy sector. She worked with her business partners to establish the Sunnyfounder, providing three ways (investment, donation, or roof-renting) for people who have limited money or are lack of roofs to join the rooftop solar market. Customers can choose their projects and track the real-time generation data on the official website. Since its establishment in 2016, the Sunnyfounder has attracted more than 10 thousand citizens to participate in 80 projects with a total installed capacity of 4MW.

Session 4-2

Ms Nguyen Thi Thu Huyen (Deputy Manager of Environment and Sustainable Development Department, Institute of Energy, Ministry of Industry and Trade, Viet Nam) shared the progress of Gender development in Viet Nam and the achievements of the Trung Son Hydropower Plant Project. Vietnamese government has ensured gender equality by the constitution, laws, and ordinances; therefore, Viet Nam has the best Gender Development Index (GDI) in the Southeast Asia and a higher rate of the women participation in the National Assembly. However, there are still challenges and formalism in gender equality. Further efforts should be put on adjusting inequalities in property ownership, family violence, customs (child marriage, wedding challenge, and preference to baby boys, etc.), and some policies. Trung Son Hydropower Plant Project has demonstrated that changes in the official application formats (previously only requires husband's information) and criteria on women participation (in course or common interest groups) helped not only in improving gender equality, but also in enhancing ethnic minority's understanding and acceptance to the project.

Session 4-3

Ms Munlika Sompranon (Director, Department of Alternative Energy Development and Efficiency, Ministry of Energy, Thailand) explained the advantages, the current status, the challenges, and the solutions of women participation in Thailand's energy field. Firstly, women participation helps not only

in reducing the use of polluting fuels, saving times, increasing earning, enhancing standards of health and education, but also in expanding the customer base of energy services and the human resource of energy supply chain. Although women in Thailand have been handling energy affairs as leaders, trainers/speakers, liaisons, and participants in the different levels (local, government, academy, and industry), some issues in gender equality could be further improved in terms of the balance of power, the decision-making structure, the labor standards, the collection and analysis of energy-industry-specific employment data, the long-term planning for transition, the assessment of green employment potential according to the needs and capacity of all genders and social groups, and the integration of gender equality principle in the National Economic and Social Development plans.

Session 4-4

Mr Alex Hosselet (Marketing and Communications Manager, Electricity Human Resources Canada, Canada) gave an analysis on women in renewables. Globally, women hold jobs in renewables (32%) more than in the gas and oil industry (22%). About 66% of women believe there are barriers for them to join the renewable industry, such as cultural and social norms (72%), lack of gender-sensitive policies (49%) and training opportunities (41%), inequity in ownership of assets (41%), lack of mentorship opportunities (37%), and lack of skills (34%). To attract women participation in renewables, suggestions are to offer role models, to adapt of newer organization structure for possibility and inclusion, to make a more gender equitable workplace, to mitigate conflicts between employee work and personal life, and to avoid public perception influencing the ability to hire and retain women workers.

Session 4-5

Ms Michiko Amemiya (Research Staff, Electric Power Industry & New and Renewable Energy Unit, New and Renewable Energy Group, The Institute of Energy Economics, Japan, Japan) gave an overview on Japanese women in the energy industry. Generally, the ratio of women in the management level is low. Japanese government acknowledges the potential contribution of female lobar force in terms of economic growth and have several government initiatives for empowering women. Since the business model of renewable energy can be local-based and community-oriented, it is easier for women to participate in. However, challenges for women to join the energy industry include the nature of the energy industry (it’s a traditionally male-dominated industry), lack of accumulated work experience and human network in the core business tasks, not necessarily unfriendly work environment of conventional large energy infrastructure site, promotion opportunities limited by outside directors, lack of academic background in science and technology, and less willingness and desire for a greater role and responsibilities.

To encourage Japanese women participation in the energy industry, it is essential to establish supportive systems (in companies and houses), to create new business models for work-life balance, to offer education and training programs related to renewable energy technologies, and to require a certain female ratio in traditional power utilities and the other large companies.

Panel Discussion of Session 4

Issues in women participation in the energy sector and challenges in promoting renewables were discussed. Firstly, it is recognized that there are gender inequalities in the energy sector since women are not only busy both at home and at work, but also facing discriminations in education opportunities and in the workplace. It is essential that women work together and that the society provides women opportunities and rights to participate in the energy sector. Finally, about challenges in promoting renewables, branding is hard for renewable energy because renewable electricity cannot be recognized because the natural of electricity is invisible. Another challenge is that rumors about renewable energy occur in the market. To encourage people and companies to invest in renewables, it is essential that the government provides right information against false ones, demonstrates the real performance, offers cost-benefit analysis, and prepares policy framework.

5/ During the Wrap-up Session, Dr. Jyuung-Shiauu Chern is the moderator and all the participants concluded 3 policy recommendations from the workshop as the followings:

(1) Apply gender approach in energy policies and programs

(2) Strengthen capacity building

(3) Promote multilateral cooperation

Closing Remarks

Mr Su-Chen Weng, Chief Secretary, Bureau of Energy, Ministry of Economic Affairs, Chinese Taipei, expressed gratitude to all participants for their valuable participation in this event. Since enhancing women's empowerment in the energy sector of the APEC region must be built upon and learn from successful experiences from other regions, further inter-organizational and cross regional dialogue and cooperation to facilitate the best practice sharing on this issue should be encouraged. The conclusion of these two days' discussions will be consolidated and reported to the APEC Energy Working Group and to the Policy Partnership on Women and the

Economy for addressing the importance and benefits of gender considerations to advance the clean energy transition

For the workshop material, please refer to Appendices A.

IV. Policy Recommendation

Gender disparities in the energy sector are commonly shared across the APEC region, whilst the ongoing regional energy transition offers new opportunities and potential to engage women in it. Meanwhile, as poverty, energy access and gender equality are inextricably linked, addressing them together could achieve multiple gains in social and economic development.

Recognizing that energy issue are NOT gender-neutral, this workshop, in support of two of the Priorities for APEC 2019-, *1)* ***Women, SMEs, and Inclusive Growth*** and ***2) Sustainable Growth***, provides recommendations for creating an enabling policy environment for women's empowerment in the energy sector in the APEC region.

1. Apply a gender approach in energy policies and programs

(1) The collection and analysis of quantitative and qualitative data at the nexus of gender and energy are essential to identify the gaps and barriers of women's participation in the energy field.

(2) The design, implementation, monitoring & evaluation of energy policies and programs are encouraged to address gender differentiation and gendered patterns for greater effectiveness and efficiency.

2. Strengthen capacity building

(1) Sustained engagement of stakeholders is necessary to develop and implement gender-sensitive energy policies.

(2) Tailored financing programs, training and mentoring, and network building are needed to support the involvement of women as leaders, entrepreneurs, employers and consumers in energy-system value chains, in both the access and modern energy contexts.

(3) Encouraging the adoption of Renewable Energy and Energy Efficiency in the APEC market and with stronger support in promoting women participation in being trained to provide such services are important.

3. Promote multilateral cooperation

(1) Under the framework of APEC, it is encouraged to pursue cross fora cooperation with relevant international organizations to enhance synergy

on gender mainstreaming in the energy sector among all policy bodies of APEC.

(2) Under the framework of EWG, it is encouraged to facilitate the rollout of gender-aware energy projects within the technical areas of its task forces/expert groups, and to accelerate the knowledge sharing of best practices.

V. Feedback

To evaluate the quality of the workshop, we used the Workshop Evaluation by Participants in the APEC PO Toolkit to collect feedback from all the participants, including the delegates from member economies.

There were 80 participants, and the organizer collected 42 surveys, achieving a survey recovery rate of 52.5%. Some participants did not answer all the survey questions, or provided multiple answers to a single question; unanswered questions were not included in the calculation of the percentages. Based on the result, most of the participants were quite satisfied with the event, with all dissatisfaction rates lower than 5%. Furthermore, trainers/experts or facilitators' performance, materials, gender issues and objectives of the training achieved top four satisfaction rates. Nearly 10% of the participants believed that knowledge level went up by 2 after the event, and over 45% of the participants believed that knowledge level went up by 1 after the event. No participant found that the event resulted in drop of knowledge level.

For further information, please refer to Appendices B: Post Activity Survey for statistics and data of the survey.

VI. Analysis of Regional Energy Policies

i. Overview

The nexus of gender and energy was first discussed after the first Oil Crisis, when the focus was on the anxiety for the biomass energy crisis resulted from overlogging (Eckholm, 1975). In developing countries, activities such as fetching water, logging, collecting firewood, and cooking, were not only necessary for basic living, but also daily chores performed mostly by women, thus giving rise to the research on the interrelationship between gender and energy.

Energy related issues have attracted greater concern recently among the rising concern on climate change and carbon emissions, the scope of discussion on the nexus of gender and energy includes:

1.Participation (Workplace and Decision-making)

Traditionally, due to their roles in the family, women have been forced to stay away from public activities, and gender imbalance has long existed in both the public and private sectors, or even in the civil society. In the area of energy, due to social culture and education, men often become researchers of energy technology or decision-makers of policies, whereas women are the main actors of energy conservation. Even in advanced countries, the number of women participating in works related to R&D, testing, and verification, of energy technology, remains rather small, not to mention the number of women in the position to make important decisions.

With female energy experts in minority, their opinions are often suppressed. Also, in the process of formulating energy policies, different viewpoints and needs of different genders are often not regarded as factors that should be considered; even when proving the necessity of including gender issues through gender analysis in formulation of energy policy, there is often the issue of insufficient information and materials (Ulrike Roehr, 2002). Therefore, with men already occupying the majority of strategic positions in the energy sector, and gender perspective yet to be widely accepted, the resistance and pressure are greater when promoting the inclusion of gender perspective in the energy sector.

2.Welfare (Subsidy and Livelihood)

Whether it is the US, EU, or other advanced countries, governments have promoted liberalization of the electricity market to different degrees to break monopoly and allow consumers to freely choose electricity providers. However, in the process of promotion, they often overlook the impact of the liberalization policy on women. (Eurelectric et. al., 1999)

The First is the impact on women's existing rights. Electricity market liberalization further elevates market competition, greatly increasing electricity businesses' competitive pressure. In the past, electricity businesses provided various subsidies for low-income individuals in compliance with government regulations. These subsidies will be lifted under such competitive pressure. However, women account for a great percentage of the low-income population, and the cancellation of subsidies further jeopardizes the livelihood of the already struggling disadvantaged women.

Second, women are disadvantaged in terms of access to energy related knowledge and information, resulting in limited choices. Men has advantage accessing information, and when the electricity market is liberalized, and people can freely choose their desired suppliers, men have sufficient knowledge and capability to select affordable or more environmentally beneficial energy sources; however, due to lack of knowledge and information, women are more inclined towards staying with the original utilities companies. In other words, if gender perspective is not included and analyzed in the process of electricity market liberalization, many women will end up suffering from this policy, rather than enjoying the benefits of this policy.

3.Efficiency (Use and Demands)

Swedish Energy Agency commissioned a study (FOI, 2009) to explore and compare household energy use by gender, age, and income in some European countries. Past studies often interpreted differences in household total energy use between different countries based on income and expenditures, however, this study analyzed total energy use of single households and discovered that there was a significant difference in consumption patterns of different genders; in addition to significant differences in dining and traveling, the key to men's greater energy use compared to women was the operating costs they spent on their cars. The study also showed that in most countries, energy use differed more significantly between men and women than level of income expenditure. Therefore, gender should be a variable that merits in-depth analysis when interpreting the differences in household total energy use.

ii. Concrete Measures and Effects of Regional Promotion of Gender Equality in the Energy Field

1.US Department of Energy

The First Clean Energy Ministerial in 2010 jointly proposed the “Clean Energy Education and Empowerment Women’s Initiative,” with an aim to encourage more women to jointly participate in the clean energy revolution. The ministers believed that if clean energy could be found in more places, the clean energy revolution could further advance and pick up momentum. With every young woman losing the opportunity to fulfill her potentials because she is not encouraged to study science and engineering related disciplines, we lose yet another chance to make the world better. Therefore, by having female professionals with impressive performances in clean energy fields share their stories, the initiative aims to encourage other women to boldly take the first step to participate in clean energy fields. The following paragraphs will introduce related promotions and outcomes of execution of US, one of the initiating countries.

(1) Measures and Regulations

To achieve the goal of encouraging more women to participate in clean energy fields, the US has launched the “C3E” project in March 2012. The project consists of four pillars to promote female participation in clean energy:

A. Symposium: Inviting expert ambassadors, working women in clean energy fields, and other professionals in related domains to attend symposium, hoping to build a stable community of women in clean energy fields.

B. Ambassadors: The US C3E Ambassadors are a group of more than 20 distinguished senior professionals (mostly women). Through sharing their experiences, the ambassadors look to encourage more young women to enter the fields of clean energy. This group of ambassadors also offers women who want to participate in this domain advisory services as their mentors and friends.

C. C3E Awards: These awards recognize mid-career women who have demonstrated outstanding leadership and accomplishments in clean energy.

Nominations may be submitted for anyone with accomplishments in clean energy fields in terms of innovation and technological R&D, entrepreneurship and innovative business models, organizational achievements, policy or advocacy, or related achievements benefiting developing countries. Winners receive a reward of USD 8,000.

D. C3Enet: Through the online community at C3Enet.org, all women working in clean energy fields around the world can exchange information on energy related issues.

(2) Implementation Outcomes

The US C3E breaks the conventional thinking in the past that “men study science and engineering and women study arts and humanities.” Through sharing of experience by female energy experts and recognizing great contributions in the energy sector by women, C3E aims to shape an impression that “women can be as successful as men in the clean energy fields,” encouraging women to participate more and break the stereotype of “science and engineering for men, and arts and humanities for women.” Symposium and C3Enet facilitate community building, offering women an environment to discuss and participate in clean energy fields. Since 2012, the number of US C3E Ambassadors has increased annually, from over 20 in the beginning, to 37 in 2014; 20 women have been recognized for their outstanding achievements in clean energy fields between 2012 and 2014, and received C3E Awards. Their stories will inspire and instill confidence in more women to participate in clean energy.

2. Electricity Human Resources Canada (EHRC)

From statistical data, EHRC has discovered that labor participation rate of women in electricity related industries is lower than 25%, among which, less than 5% are directly engaged in electricity related jobs. Although the population of women in the industry has gradually increased, it remains lower than the average of Canada’s national labor participation rate. This stat illustrates that “how to attract women to key jobs of the industry (i.e.: engineer, technician)” is an important issue at the moment. Thus, EHRC has announced

in May 2015 that it will help women to participate in electricity and renewable energy industries through building the mechanism of mentorship.

(1) Measures and Regulations

A. Pilot Project

A pilot project has been launched by EHRC targeting female graduates of the Women into Electrical Engineering Technology (WEET) program, inviting many utilities companies (such as Hydro One, Ontario Power Generation, Manitoba Hydro and Hydro Ottawa), and private organizations (such as: Women in Nuclear Canada, International Brotherhood Electrical Workers, and Power Worker's Union) to partake in the program.

B. Develop Proactive Actions

This program not only focuses on the issue of too few women participating in the industry, it also aims to develop actions that can facilitate gender equality and equal opportunities in the industry through research and tool design.

According to stakeholders' feedbacks given to EHRC, "having great friends and mentors at work" can best attract and retain female workers. For great friends and mentors can help new employees get familiar with company procedures and policies, provide necessary instruction and comfort, and effectively pass down knowledge and expertise to next-generation employees. Therefore, clearly defined internal relationship and instruction procedures will help to ensure that female employees receive support and instruction; especially in the male-dominant electricity-related industries, the ensuring of "female workers getting support and instruction" is crucial.

C. Steering Committee for Promotion

EHRC has established a national steering committee, which helms this program and provides strategic instruction and oversight, as well as adopting concrete recommendations stemmed from the research outcomes for promotion and implementation.

(2) Implementation Outcomes

For the implementation of the above tasks, EHRC has started recruiting female electricity professionals. To clear all doubts about women working in

the electricity industry, EHRC has offered women a number of paths for them to enter the electricity industry: apprenticeship, college, and university.

A. Apprenticeship: Learning through hands-on experience. On-job training accounts for 80%, while the other 20% is supplemented by courses offered by community colleges or other training institutions. Through this method, theory and practice are connected. To an apprentice, the best reward is to be compensated even during her training, so that she does not need to burden herself with student loan for her dream job. Once they pass professional certification, they can run own business all across Canada, or train others.

B. College: Community colleges offer training on integrated knowledge on both theory and practice, as well as all required skills for women to enter the electricity industry. Some schools even offer paid internships to help students gain practical working experience.

C. University: The electricity industry needs talents with expertise of electrical engineering, civil engineering, and mechanical engineering. Learning professional knowledge in these areas, as well as other applications beyond these disciplines (such as: management, telecommunication), will significantly help women to work in the electricity industry.

3.Australia's 1 Million Women

Founder Natalie Isaacs of 1 Million Women first worked in the cosmetics industry. In 2009, she sold her business and began operating 1millionwomen.com.au, hoping to reduce Australia's 1 million metric tons of greenhouse gas emissions through the power of women.

(1) Measures and Regulations

A. Learn the problems from statistics: Ms Isaacs discovered from stats that, "20% of food purchased by Australians are thrown away rather than eaten. Most of them are fresh food, accounting for as much as 1/3. Furthermore, 13% of Australians' total power consumption are wasted without them noticing."

B.Make women the new reinforcement of energy conservation and waste reduction: In Australia, women are still the main people cooking at home and

assigning household chores, and by providing women related knowledge of energy and climate change, they will be able to learn the preciousness of energy and how big a threat climate change is to our environment; providing them related methods of energy conservation and reduction of food waste can effectively guide and motivate women to become the new reinforcement of energy conservation and waste reduction.

C. Launched the 1 Million Women pilot project in 2013: The 1 Million Women Pilot Project invited 10 Sydney women to participate in the "reducing household power consumption by half" activity. This project lasted three months, where participants turned off automated water heater and electronic devices (such as tablets, laptops, and cellphones), as well as unneeded lighting, and switched to showering, to achieve their energy-saving goals. Women who participated in this project achieved the goal of reducing power consumption by nearly half (electricity bill reduced from AUD 21/week to AUD 12/week). Through this successful pilot project, 1 Million Women believed even more strongly that if they could gather 1 million women to reduce household power consumption by 20%, they would be able to save AUD 240 million in a year, and the reduced power consumption could also lower Australia's reliance on coal-fired power generation.

(2) Implementation Outcomes

A. More women participated: From 2009 to 2014, a total of 170,000 women in Australia participated in 1 Million Women.

B. More families installed solar PV panels: Between 2009 and 2014, a total of 1.4 million households installed solar PV panels.

iii. Recommendation on Women Empowerment in the Energy Field

From the topics of discussion and methods of execution on the issue of gender and energy of different countries in recent years, we can see that enhancement of women's "participation" is one of the most concerned area. This outcome is not surprising, as the "number" of participants is usually the most easily seen "phenomenon," as well as the most direct proof of whether there exists a "gender gap." On this topic of "participation," we can see advanced countries' "proactivity" in their methods of facilitating participation,

which are worthy references to learn from; furthermore, the findings of many “gender and energy” related studies constantly remind us that different genders have different needs and mindsets when it comes to energy consumption, and if policymakers do not pay attention to these differences, implementation of policies will often lead to different influences on different genders. Below, recommended thinking will be provided from three aspects, namely, Enhancement of Participation, Policy Analysis, and Promotion of Efficiency.

1. Enhancement of Participation

(1) Break Stereotype

For example, U.S. Department of Energy forms group of ambassadors consisting of clean energy experts to go to schools for experience sharing. Most of the ambassadors are female experts, which suggests that “women can participate and have outstanding achievements in clean energy fields.” Coupled with provision of scholarship, as well as communication platforms in forms of online community and symposium, the stereotype of “science and engineering for men, arts and humanities for women” has been gradually broken to encourage more women to participate in clean energy fields.

(2) Assist Women to Enhance Professional Expertise

With the phenomenon of “science and engineering for men, arts and humanities for women” when choosing disciplines of study, men have greater energy related knowledge and skills compared to women; even if women intend to switch to energy fields over their long careers, they often are hesitant due to their lack of energy related expertise.

EHRC discovered from its study that “having great friends and mentors at work” could best attract and retain female employees, and therefore, by building the model of mentorship, EHRC helps women to enter the electricity and renewable energy industries. To assist women incubate energy related expertise, in addition to the traditional method of encouraging women to study in energy related disciplines in university, other paths that focus on practical learning, such as apprenticeship and paid internship, are also provided.

EHRC is not bounded by the idea that there are insufficient female professionals at the moment, and we should learn from Canada's way of thinking.

(3) Enhance Women's Participation in Decision Making

If only a small percentage of women participate in the energy sector, there are even fewer women who occupy decision-making positions within the energy industry (Note that the percentage here refers to gender proportion, rather than number of people). POWERful Women conducted a study and discovered that female directors were in absolute disadvantage in the energy industry in terms of proportion. If we recognize that the quality and diversity of talents are an integral part of an industry's competitiveness, then it should be necessary to increase the chances of women participating in the decision-making process in the energy sector. Whether it is setting a gender quota, or reminding enterprises to avoid glass ceiling, only when women's voice can be heard at the decision-making level, enterprises or organizations can make breakthroughs in terms of retaining talents and innovating viewpoints.

2.Policy Analysis

To encourage consumers to shift toward eco-friendly consumption, Germany imposed energy tax and eco-tax (Roehr, 2002). Since women purchased less energy-consuming products than men, the general view was that the taxes would be relatively more beneficial to women.

However, the outcome of the implementation was nothing like how people expected. When imposing energy tax or eco-tax, energy-intensive industries were exempted, or were subjected to lower tax rates; therefore, it was more beneficial to high-tech industries, which had fewer female professionals. On the other hand, it was not as beneficial to the service sector where there were more female professionals (Schreyer, 1996).

Examining Germany's experience, in this type of industrial countries, elderly women account for the majority of those receiving social security payout, and on average, women have lower pension than men. Therefore, under such tax

system, some products may become more expensive due to energy tax or eco-tax, and women may face the situation where they cannot afford to buy products they need when they grow older. From this perspective, women are not necessarily the beneficiaries of this tax system.

Thus, formulation of various energy policies must incorporate gender perspective to ensure that the planned policies and measures will not bring negative impacts on the disadvantaged gender.

3. Promotion of Efficiency

In the energy sector, when we mention “efficiency,” people often think of “energy efficiency.” This is due to the global energy shortage, and Chinese Taipei is not blessed with abundant resources, so to more efficiently use energy is in a way equivalent to reduce the consumption of energy. However, in addition to pursuing enhancement of energy efficiency technically, inclusion of gender perspective also reminds us that, have we also considered the policies designed for “people,” who use energy, and related promotion, based on people’s needs? In general, this can be examined in the following three dimensions:

(1) Energy Use Preferences

According to a study conducted in the US (Longstreth, Turner, Topliff and Iams., 1989), men prefer the “hard way” (such as nuclear, coal, oil); whereas women favor the “soft way” (such as solar, wind, biomass, and hydro).

The so-called “hard way,” including nuclear, coal, and oil, can better provide stable energy with current technology; however, if energy policy planning takes only men’s viewpoint into consideration, aren’t we being too passive when it comes to the development of soft energy, and too conservative to take any risks?

(2) Energy Use Demands

German government once neglected the needs of real users and it resulted in inefficient policy. In 1998, German government investigated and discovered that 75-80% of households cooked with electricity (VDEW, 1998), and concluded that “people who cook prefer to cook with electricity.” German government came to this conclusion based on the finding of the study, and therefore, despite cooking with natural gas was more economical and efficient, German government’s energy policy still did not proactively encourage cooking with natural gas; instead, it focused on educating people how to cook “properly” to save energy.

However, this study was in itself misleading, for even though it was usually women who cooked at home at the time, it was men, who were the main decision makers at home, that chose which kind of energy to use. Neglection of women’s voice of favoring cooking with natural gas led to erroneous energy policies and measures.

This case took place in Germany over a decade ago, perhaps home cooks are different in German families nowadays, but this case continues to remind us that adopting a gender mainstreaming perspective will help us hear the voices of real users.

(3) Policy Planning Efficiency

According to Residential Energy Consumption Statistics (Bureau of Energy, MOEA, 2010), 69.6% of male motorists ride a 100cc scooter or above, but only 34% of female motorists ride a 100cc scooter or above. As for cars, 35.7% of women drive a car 1500cc or below, which is twice the percentage of men (18.1%); for cars over 2000cc, the percentage of men (12.3%) is over twice of that of women (5.4%). This study shows that, in terms of private vehicles, there exists a phenomenon of men driving (riding) larger vehicles and women preferring smaller ones (Lee, Hou, Ko, 2010). In other words, when government subsidizes gasoline, it is more likely to benefit men (bigger vehicles have higher fuel consumption). In Chinese Taipei where men’s average salary is still higher than women, is this kind of policies truly efficient?

Gender perspective provides us a great way to examine and inspect our policies.

iv. Conclusion: Future Outlook

The purpose of including gender perspective into the formulation and implementation of various energy policies is to expand the traditional scope of concern for women (or gender) from welfare, relief, and personal safety, to the entire public sphere through making “gender perspective” a necessary main element from planning to implementation, becoming a universal value. Through “gender mainstreaming,” we pay attention to the planning logics behind various policies and programs, as well as structural issues such as the distribution of public resources. For only by ensuring that various systems, policies and programs, and projects, answer equally to the needs of different genders can we eliminate existing gender inequality in distribution of resources and opportunities.

Compared to other issues, the nexus of gender and energy is still a relatively new topic in APEC, and its development is immature. Therefore, there remains room for improvement in terms of establishment of basic tools of analysis and changing of viewpoints, including:

1.Establishment of Gender Statistics and Enhancement of Gender Analysis

The influence of gender perspective on energy policy is often regarded as “indirect” (e.g., the discussion of different genders’ different habits when using transportation vehicles is more direct, but the energy use behind the different genders’ different habits of using transportation vehicles is less direct); also, when including related analysis of gender perspective for policymaking, there is often a lack of data. With men still occupying most strategic positions in the energy sector, and gender perspective is yet to be widely accepted by the energy sector, the introduction of gender perspective into related planning of energy policies tends to be met with greater resistance and pressure. Therefore, continuing to establish gender statistics related to the energy sector and enhancing in-depth analysis of these data are very important

ground works for the promotion of including gender perspective into the energy sector.

2.Paradigm Shift from “Energy Technology” to “Energy Service

In the past, energy policies focused on energy technology, and pursued stability, efficiency, and lower costs, with technological advancements, such as solar PV applications on the supply end and the enhancement of boiler efficiency on the demand side. However, the need for energy stems from needs of “people,” and we should really listen to “people’s needs” that give rise to these needs. The focus of energy policies should shift from technology onto the provision of comprehensive “energy services.” With this change of concept, energy policies can more comprehensively take into considerations of human health, public education, rural development, and employment opportunity, and the formulated policies are energy policies that can truly meet the needs of “people.”

3. Towards De Facto Equality

Many people mistakenly believe that gender equality means that there are no “restrictions of female participation,” or no “rules unfavorable to women,” in the process of implementation of policies or measures; however, people have overlooked the fact that women have long been underrepresented in the energy sector due to their lack of participation; coupled with gender stereotype, woman remain in a disadvantaged position despite seemingly fair regulations. To solve women’s problems of low participation and underrepresentation at the decision-making level, related measures have been proposed to encourage female participation or protect women’s opportunities to participate in the decision-making process; however, some regard it as unfair treatment to men, or even discrimination against men. Nonetheless, Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) has already stipulated that “adoption by States Parties of special measures aimed at accelerating de facto equality between men and women shall not be regarded as discrimination.” Temporary protective measures adopted for disadvantaged gender for the achievement of de facto equality shall not be regarded negatively. How to make those responsible of planning various

policies and programs in the energy sector understand what de facto equality is, and facilitate the achievement of de facto equality, are the immediate goals we shall strive to achieve.

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- ***Appendices B: Post activity survey***

1.The objectives of the training were clearly defined	***Strongly Agree***	***Agree***	***Disagree***
	28	14	0
	66.67%	61.54%	0%
	Strongly Agree	***Agree***	***Disagree***
2.The project achieved its intended objectives	20	22	0
	47.62%	52.38%	0%
	Strongly Agree	***Agree***	***Disagree***
3.The agenda items and topics covered were relevant	27	15	0
	64.29%	35.71%	0%
	Strongly Agree	***Agree***	***Disagree***
4.The content was well organized and easy to follow	27	15	0
	64.29%	35.71%	0%
	Strongly Agree	***Agree***	***Disagree***
5.Gender issues were sufficiently addressed during implementation	28	12	2
	66.67%	28.57%	4.76%
	Strongly Agree	***Agree***	***Disagree***
6.The trainers/experts or facilitators were well prepared and knowledgeable about the topic	31	10	1
	73.81%	23.81%	2.38%
	Strongly Agree	***Agree***	***Disagree***
7.The materials distributed were useful	29	12	1
	69.05%	28.57%	2.38%
	Strongly Agree	***Agree***	***Disagree***
8.The time allotted for the training was sufficient.	24	18	0
	57.14%	42.86%	0%

9. How relevant was this project to you and your economy?	***Very***	***mostly***	***somewhat***	***a little***	***not much***
	12	17	9	0	2
	30%	42.50%	22.50%	0%	5%
	very high	***high***	***medium***	***low***	***very low***
10. Rate your level of knowledge of and skills in the topic prior to participating in the event:	2	13	21	4	1
	4.88%	31.71%	51.22%	9.76%	2.44%
	very high	***high***	***medium***	***low***	***very low***
11.Rate your level of knowledge of and skills in the topic after participating in the event:	5	28	7	0	0
	12.2%	68.29%	17.07%	0%	0%
	2	***1***	***0.5***	***0***	***-1***
12.The gap level of knowledge prior to and after participating in the event (level prior to this event minus level after the event):	4	19	1	17	0
	9.76%	46.34%	2.44%	41.46%	0.00%

	Female	**Male**
13.Gender	27	6
	81.82%	18.18%