Renewable Energy Congress & Exhibit
REcalibrate, Make Renewable Energy Right
SGV Hall, AIM Conference Center, Makati City
12-13 December 2024

DAY ONE

WELCOME REMARKS | Ms. Marie Schroeter
Country Director, Friedrich Ebert-Stiftung Philippines

Ms. Schroeter expressed gratitude for attendees' presence during a busy time leading up to Christmas and acknowledged key figures in the audience. She said that the focus of the Renewable Energy Congress is about discussions the future of energy, emphasizing the need for an inclusive and sustainable approach to energy transition. Highlighting the work of the Friedrich Ebert Stiftung (FES) in the Philippines, the speaker underscores the importance of addressing climate change and energy equity, particularly for marginalized communities.

Among the key points the speaker brought up include the necessity of social justice in the energy transition, the impact of climate change on vulnerable populations, and the critical role of gender equity. Women are often excluded from energy decision-making despite being key energy managers, she said. She also advocated for integrating gender-responsive policies and empowering women in the energy sector.

Her speech also stressed the need for transitioning from fossil fuels to renewable energy, developing infrastructure, upskilling workers, and ensuring community involvement in decisions. She emphasizes that the Philippines' energy transition is part of a global movement, requiring international cooperation and financing. She concluded her remarks by wishing the participants a productive conference.

INTRODUCTORY REMARKS | Charlie Ayco
President, CENTRE

Mr. Ayco thanked the attendees of the 7th RE Congress and introduced the topics for discussion over the next two days, emphasizing the significant transformations occurring in transportation and energy sectors. Notably, electric vehicles (EVs) and autonomous driving technology are becoming more common, which could radically change commuting and car ownership in Manila.

In energy, the speaker highlighted the dramatic decline in costs for solar panels and battery storage, making renewable energy more accessible. Current battery prices have decreased significantly, allowing for cost-effective energy storage solutions. He also cited advancements in solar technology, including the rise of "balcony solar" installations in Germany, which simplify solar energy adoption for individuals.

Mr. Ayco also focused on the shifts towards encouraging questions about accelerating the transition to renewable energy and democratizing power generation so that ordinary people can participate in energy production. This includes envisioning a future where decentralized energy generation is common, allowing individuals to produce and sell energy.

The speaker then invited participants to engage in innovative discussions about the future of energy, stressing the need for new business models and approaches. The speaker concluded by expressing eagerness for fruitful discussions during the renewable energy congress.

- **KEYNOTE SPEECH | Senator Risa Hontiveros**

In her speech, Senator Hontiveros addressed renewable energy advocates, highlighting the dangers posed by recent natural gas legislation, which supporters have touted as a bridge to a cleaner energy future. She argued that this legislation is flawed and could lead to a reliance on fossil fuels rather than a genuine transition to renewable energy.

The senator also raised strong concern on the government's long-term commitments to natural gas supplies — as indicated in the natural gas bill — especially as the Malampaya gas field is in the process of being depleted. She compares it to forcing consumers to pay more for energy while ignoring cheaper alternatives. She also expressed apprehension over the proposed natural gas legislation that it would open the door to monopolies in the energy sector, allowing a few companies to control production and distribution. The senator likened the situation wherein buyers of *pan de sal* will be forced to purchase from only one store and not from others.

Emphasizing the importance of cost-effective energy policies, the senator warned that prioritizing natural gas over renewable sources will leave the Philippines trapped with outdated infrastructure. She urged advocates to reject the natural gas bill and instead support a transition to renewable energy, which she said will ultimately be more viable and affordable.

The senator pointed to a potential upside: as electricity grid costs goes up due to this legislation, microgrids powered by renewable energy may become more attractive. By promoting self-generated power and decentralized energy systems, communities can gain energy independence. She said advocates should resist the allure of natural gas as a "bridge fuel" and to fully embrace the future of renewable energy, which is sustainable and equitable for all Filipinos.

• MESSAGE from Guest Speaker| Athena Denise Galau, OIC Country Program Coordinator of United Nations Women

Ms. Galau expressed solidarity with efforts that support renewable energy and gender equality, emphasizing the importance of energy accessibility for women's empowerment. She said that inadequate energy access leads to economic disempowerment and perpetuates inequalities, particularly for women in vulnerable communities. The Philippines has made progress with its Renewable Energy Act and gender policies, but there remains a significant gap in serving women's needs in the energy transition.

She also outlined several key areas for action:

Policy Alignment: Advocating for renewable energy policies that align with gender action plans to address the needs of marginalized women.

Investment in Leadership: Encouraging recognition of women as innovators and leaders in the energy sector, and supporting women-led energy enterprises through resources, training, and platforms.

Accessible Financing: Promoting equitable financing models that empower women and support small enterprises.

Ms. Galau also urged policymakers to create transformative policies that make clean energy a right for all, and called on private sector partners to foster inclusivity in financing. They concluded that the energy transition must prioritize justice and opportunity for everyone, committing to leave no one behind in these efforts.

• PLENARY PANEL 1: "Recalibrating targets, policies, and actions towards inclusive and sustainable renewable energy"

• OPENING REMARKS | Dr. Fernando Martin Y. Roxas, President of the National Power Corporation

Dr. Roxas discussed the challenges and opportunities of implementing renewable energy on small islands, which are primarily tourist areas, as opposed to urban areas that are connected to the main grid. He said that currently, the main grid generates about 23-24% of its energy from renewable sources, nearing a target of 35%. In contrast, renewable energy on small islands is less than 1%, largely due to the absence of economies of scale, high costs of transporting fuel, and environmental risks associated with fuel shipment and spills.

He emphasized the need for innovative solutions and collaboration with the private sector to develop hybrid renewable energy systems on these small islands. He also recognized the importance of providing clean energy and improving the livelihoods of residents, who often struggle with limited economic opportunities. This approach aims

to create a virtuous cycle where improved incomes lead to increased electricity demand, benefiting both residents and energy providers.

The speaker concluded by expressing the goal of developing a workable model for electrifying remote areas while enhancing the quality of life for the poorest communities.

• Dr. Nelson Enano Jr., the moderator, introduces the panelists; Sharon Montañer, Director of the Market Operations Service, Energy Regulatory Commission (ERC); Francis dela Cruz, Partnership and Advocacy Adviser of the Institute for Climate and Sustainable Cities (iCSC); Matthew Carpio, Transaction Advisory Head, Climate Smart Ventures; Georgina Pascual, National Project Officer of the International Labour Organization (ILO); and Ping Mendoza, President and board member of the Industry Association of Philippines Solar and Storage Energy Alliance (PSSEA).

• Enano posed the first question to the Energy Regulatory Commission regarding the progress of the Renewable Portfolio Standards. "Given the current situation, how do you assess the implementation of this program and what impact has it had on RE deployment or adoption?" Eñano asked.

• The ERC's Montañer discussed the progress of compliance with the Renewable Portfolio Standards (RPS) for distribution utilities and retail electricity suppliers. To ensure compliance, initiatives are ongoing to secure renewable energy supply through competitive selection processes (CSPs) and the renewable energy market, where Renewable Energy (RE) certificates can be purchased.

According to her, the Department of Energy is implementing various programs, including auctions, to expand RE capacity. The Energy Regulatory Commission has established a cost recovery mechanism that allows utilities to recover compliance costs, prioritizing sourcing from renewable energy to keep costs at zero. Only after exhausting renewable sourcing efforts can utilities purchase from the RE market, where they must seek the least-cost RE certificates.

A cap of approximately 241.56 pesos per megawatt-hour has been set on RE certificates to protect consumers from excessive costs. The commercial operations of the renewable energy market are scheduled to launch on December 26, with an event set to celebrate this milestone, she said.

• Enano asked Roxas of the National Power Corporation as to how the agency would expedite the process so as to ensure complete transition by 2030 in the SPUG [Small Power Utilities Group] areas?

• NPC's Roxas said that solar technology is the most difficult to install on missionary areas, which consists of islands, that have mountains in the middle and whose flat lands are on the beach where people usually live. He said creative solutions are needed, and individuals from SkySails and the CENTRE are exploring alternative approaches.

Additionally, a renewable energy lab is being established with the University of the Philippines in Diliman to adapt existing technologies for these areas. The team is also experimenting with biofuels, biomass, and floating wave generators. Overall, the complexity of deploying renewable energy technology in remote areas underscores the importance of collaboration with academic institutions for research and development.

• Enano asked the ILO regarding its recommendations or programs to ensure that RE development not only creates decent jobs but also recognizes the active participation of workers, particularly in the transport and energy sectors and communities in shaping the energy transition.

• ILO's Pascua said that the RE transition highlights the need for a holistic approach that includes workers, communities served by energy facilities, and investors. According to Pascua, the ILO advocates for formal measures to engage these stakeholders through the National Tripartite Industry Council in the Philippines. This council facilitates discussions on labor issues, industrial peace, and increasingly, renewable energy and energy transitions.

As renewable energy technologies emerge, jobs may grow, but the phase-out of fossil fuels, such as coal, can negatively impact workers and communities reliant on those industries, he said. To address potential displacement and disruptions, the ILO stresses the need for ongoing dialogue and support systems to ensure affected individuals

can maintain their livelihoods. Overall, the message is that a successful energy transition must consider not just technological innovations, but also the social implications for communities and workers.

• Enano asked Francis de la Cruz of the ICSC regarding its key initiatives to enhance or put in place policies towards broader and faster RE adoption in the country. "What policy gaps and urgent concerns do you see to accelerate RE deployment but ensuring inclusivity and sustainability?" he asked.

• ICSC's De la Cruz emphasized the need for collaboration among civil society organizations (CSOs), businesses, academia, and electric cooperatives to facilitate energy transition, particularly in Eastern Visayas. He enumerates four key areas of focus:

Enforcement: There are many existing laws that need effective enforcement and possibly creative interpretations, such as the joint memorandum promoting local energy planning (Joint Memorandum Circular 2020-1 between the Department of Interior and Local Government and the Department of Energy).

Engineering: There is a need to address engineering challenges related to energy systems, De la Cruz said, although he does not delve into specifics.

Economics: How do we make renewable energy economically viable for our electric operatives, LGUs, and communities which can put up micro-grids that can be run by communities, and which, in turn, can also address some social concerns.

Empowerment and Education: CSOs should integrate energy into their development work and empower communities to understand and participate in energy decision-making. This approach can help communities feel invested in their energy futures, rather than merely being end users. Don't treat energy as a separate subject, he said. It has to serve the social needs of the community because I think that's the only way you can get buy-in from that community.

Overall, De la Cruz advocated for a holistic approach that incorporates legal, technical, economic, and social dimensions in the energy transition process.

• Enano then posed the same question to Ping Mendoza of the Philippine Solar and Storage Energy Alliance (PSSEA). "Which policy gaps and urgent concerns do we see to accelerate this deployment?"

• PSSEA's Mendoza explained that The Philippine Solar Storage Area Alliance (PSEA) is a collaborative body comprising industry players, technology providers, developers, and financial institutions, aiming to refine energy regulations of the ERC and DOE. The organization includes a mix of large conglomerates, contractors, and both local and foreign technology providers.

Mendoza offered PSSEA's perspective on solar energy in three key points:

Cost Efficiency: Solar power is considered the cheapest form of electricity generation in the Philippines. Unlike coal, which is largely imported and exposed to foreign exchange and supply chain issues, solar is modular and allows for upfront cost locking, leading to zero marginal production costs after installation. With potential project lifespans of 25-30 years, solar power can significantly lower long-term energy costs.

Decentralization: Solar’s modular nature, which is almost like LEGO, he said. allows for its deployment in off-grid areas. As a result, it offers solutions tailored to small communities without the logistical challenges of large-scale power plants. However, there's currently insufficient demand in these regions, as farmers and fishermen have limited productivity unless supported by new technologies. "So what we see is the opportunity of not doing large-scale shipments to fisher villages or like off-grid areas, but compartmentalizing that into sort of bite-sized packages," Mendoza said. "The issue is demand. There's not enough demand in those areas."

Industry Development: To foster growth, PSEA identifies the need to address the talent gap in the solar industry by collaborating with educational institutions, creating local demand in off-grid areas (through innovations like cold

storage and data centers), and encouraging open discussions about the future of energy. According to Mendoza, PSSEA envisions a shift to a decentralized, two-way, and digital energy landscape, akin to the evolution of mobile communication.

• Enano then asked Matthew Carpio of Climate Smart Ventures for his reaction.

• CSV's Carpio offered three key points regarding the cost of electricity and opportunities for innovation in the energy sector.

Cost Analysis: The average electricity bill in the Philippines ranges from 13 to 15 pesos per kilowatt hour, with the generation charge being only 6.5750 pesos. This highlights a significant gap that can be improved upon, emphasizing the potential for cost reduction.

Innovation in Business Models: The speaker encourages thinking beyond traditional methods of energy installation. Innovative financing options, like loans that spread out payments, can make solar energy more accessible without the burden of large upfront costs. This shift in perspective could help lower the effective cost of electricity. "There are so many business models you can do [to lower energy costs]," Carpio said. "You can borrow from BPI [Bank of the Philippine Islands]. You can stretch it so out, far out so that it can feel like a load. So that it feels suddenly, [solar technology] doesn't feel like 100,000 pesos, but it feels like 5,000 pesos per month."

Collaborative Role of Stakeholders: The speaker emphasizes the importance of collaboration among local government units (LGUs), renewable energy developers, financiers, and other stakeholders. The Philippines is recognized for its progressive renewable energy regulations, including net metering and ambitious RE targets. The existing regulations provide numerous tools for innovation and financing, whether through home loans, partnerships, or installment plans with local installers.

In conclusion, Carpio called on all attendees to explore innovative strategies and collaborative efforts to reduce electricity costs and improve energy accessibility.

• Enano asked ERC's Montañer: Since one of the ways to accelerate the adoption or utilization of renewable energy is through distributed energy resources, how do you plan to increase the number of prosumers, particularly for DERs, given that only 80 DERs have so far been accredited by the ERC, aside from the net metering and the self-generating facility program, which has been there since EPIRA [Electric Power Industry Reform Act], the SGF [Self-Generating Facilities]?

• Montañer said that rules regarding DER was only promulgated around December 2022, the current uptake is a bit slow. DERs are limited to one megawatt but this may be revised depending on future installations. Similarly, net metering experienced slow growth initially, only gaining traction starting in 2019, but there was a 120% increase in installations from 2022 to 2023, a pattern which we hope to replicate more quickly, she said.

Montañer added that to raise awareness and encourage participation, extensive information, education, and communication (IEC) efforts are underway, including partnerships with local government units (LGUs) to promote net metering and DER. The ERC is collaborating with LGUs to create one-stop shops for application processing, as seen in Pasig and Iloilo, and is reaching out to other cities like Quezon City and Iligan.

Additionally, new net metering rules have been issued to streamline processes for socialized and economic housing developments, making solar access more equitable. A recent project in Iligan City showcases modern solar-equipped housing. The ERC plans to continually assess and amend these programs to overcome barriers and challenges, with further revisions to net metering and a review of DER rules expected as installations increase, she said.

• Enano then asked NPC's Rojas as to whether it already has a technology or a technical mechanism that is appropriate for these SPUG areas?

• NPC's Roxas said that the agency has various strategies for generating electricity in island provinces, which highlight the need for tailored solutions based on local conditions. Among these approaches include experimenting

with kite flying to check for wind energy, exploring biofuels and biomass, and utilizing local resources to reduce dependence on imported fuels. He also underscored the importance of creativity in finding solutions and the need for private sector involvement, as government finances are limited and can slow down implementation. The NPC loses around 18 pesos per kilowatt hour owing to diesel generation, he said. As a result, he called for changing the supply chain and electricity generation methods in remote areas to improve efficiency and sustainability.

• Enano then asked all panelists to respond to one question: How we can ensure that the marginalized communities, the women, and the workers are active participants in shaping this energy transition?

• ICSC's De la Cruz emphasized the importance of a multisectoral approach in discussions about energy transition, highlighting the need for engagement from diverse stakeholders, including civil society organizations (CSOs), interest groups representing women and youth, and those involved in skills development and accreditation. The goal is to ensure that new policies and mechanisms do not favor a small group at the expense of others and that the transition is both green and just, building on past criticisms and lessons learned.

He also sought continued engagement and collaboration across sectors to create a more inclusive process. He also emphasized the value of community organizing, noting that when communities understand and see the benefits of technology in their daily lives, they are more likely to embrace it. Drawing from his experience in national policy work, he advocated for area-based community development. Organized communities will be better positioned to adapt to the impacts of climate change, he said. His core message is about fostering trust and demonstrating technology's value to empower communities for a sustainable future.

• PSSEA's Mendoza questioned whether climate change resonated with most of Filipinos, arguing that economic incentives drive behavior. He said that if people are more focused on immediate financial needs than on greenhouse gas emissions, they will respond better to the economic benefits of renewable energy. Highlighting the Department of Energy's target of 4 gigawatts per year for the next five years, amounting to 1 trillion pesos, he suggested that promoting solar energy can uplift the situations of those who decide to adopt and use it. Installing solar rooftops is not only a self-serving decision to save on utility bills but also benefits the broader community by reducing demand and supporting renewable energy initiatives. Thus, self-interest in adopting renewables can lead to collective economic and environmental advantages, he said.

• Dr. Enano concluded the first panel session, and thanked the speakers by handing over the Certificates of Appreciation.

The Master of Ceremonies, Ina Silverio, then provided an introduction to the next activity during session breaks, which is Office or Consultation Hour. Among the RE industry technology and financing experts or advisers who engaged in one-on-one conversation or consultation with some participants were Dr. Nelson Enano of the Center for Renewable Energy and Appropriate Technologies of the Ateneo de Davao University and Mindanao Renewable Energy Center, Matt Carpio of Climate Smart Ventures, Ping Mendoza of the Philippine Solar and Storage Energy Alliance, Maria Imelda E. Pabros of Pag-Ibig Funds, Sixto Donato Macasaet of the Foundation for Sustainable Society Incorporated, and Engr. Rene Fajilagutan of Romblon Electric Cooperative, Ivan Limjuco of Allotrope Partners.

• PLENARY PANEL 2: “From vision to action: local RE policies and plans for inclusive, resilient, and sustainable energy and climate measures,” moderated by Maris Cardenas, Executive Director of the CENTRE

Among the panelists include Undersecretary Marlo Edingan of the Department of Interior and Local Government; Vincent Ferdinand Paul Vinarao, the Assistant Department Head of the Quezon City Climate Change and Environmental Sustainability Department; Iloilo Province Board Member Rolly Distura, who chairs the committee on disaster risk, reduction, and climate change and Vice Chairman of the Committee on Science and Technology, Labor and Employment, and Public Safety and Order, and Economic Affairs and Environment in Dumangas town in Iloilo; Ray Garin, the Energy Efficiency and Conservation focal person of Iloilo Province; Manuel Santiago, punong barangay of Barangay Malvar, Santiago City Chapter; and Ms. Grace Yeneza, Executive Director of Preferred Energy, Inc., an NGO promoting clean and energy efficient solutions.

CENTRE's Cardenas: We recognize that the local government units are very important in achieving the government's renewable energy targets, something that the national government has also acknowledged. In 2020, the Department of Interior and Local Government and the Department of Energy issued a joint memorandum circular mandating local government units to take a more active role in the implementation of renewable energy projects.

To share further about the background or context and the importance of the policies, I would like to start with Ms. Grace Yeneza to share her insights and also provide an overview of the national policies as basis for the crafting of local energy or RE policies and their importance in pursuing local development programs.

• PEI's Yeneza: the joint memorandum circular between the DILG and the DoE highlights the need for LGUs to engage in energy planning and to support the integration national energy laws and programs at the local level. The goal of the LGU energy code is to maximize the benefits of energy projects for local development, with a focus on renewable energy, and to enhance the economic livelihood of their communities through job creation and sustainable practices. She emphasized the importance of LGUs in contributing to national energy and climate goals, especially given the country's high risk of natural disasters. She mentioned that some LGUs, like Iloilo province and Butuan City, are actively pursuing these initiatives, with a commitment to sustainability and local development.

• CENTRE's Cardenas then introduced the LGU representatives who will share their best practices or inspiring stories about the local energy and climate projects, beginning with the province of Iloilo which was set to receive also on the same day the first Sustainability A ward by the Department of Energy for their sustainable innovative energy and climate projects.

• ILOILO's Distura mentioned that he is accompanied by Mr. Rey Garin, the province's focal person on Energy Efficiency Conservation Desk. When the Iloilo Provincial Ordinance for Renewable Energy (IPOR) was crafted, it was able to harmonize national and local policies. Section 6 of the ordinance automatically appropriates 0.5% of the provincial budget for renewable energy projects. As a result, the provincial hospital and five of 12 district hospitals already have 50 to 60 kilowatts of solar rooftop panels.

Moreover, under the Iloilo Local Energy code, the Energy Efficiency Conservation Office was created which is mandated to focus on energy efficiency and conservation.

He also mentioned the I-SHARE initiative, aiming to allocate 5% of the special education fund for renewable energy projects in schools. He also plans to incorporate wind technology in island barangays. Overall, they are focused on strategically aligning local ordinances and policies to promote sustainable development and address energy needs in Iloilo.

• ILOILO's Garin shared initiatives aimed at implementing the Government Energy Management Program (GMB) in the province. The Energy Efficiency and Conservation Desk in Iloilo oversees various local ordinances and plans, including the Iloilo Provincial Ordinance for Renewable Energy (IPOR), Local Energy Code (LE Code), and the Iloilo Provincial Renewable Energy Plan (IPREP), all of which have benefited from partnerships with organizations like USAID, UNDP, and the Department of Energy.

According to him, the province allocates 1% of its annual budget for renewable energy projects, funding transitions to renewable energy in local hospitals. To enhance these efforts, the province has assigned Energy Efficiency and Conservation Officers in various municipalities to implement renewable energy projects, emphasizing the integration of energy efficiency with renewable energy investments.

Garin said that Iloilo also invests in training programs to raise awareness and promote renewable energy technology among local government units. Efforts include renewable energy training, green vehicle initiatives, and collaboration in agriculture-related renewable energy applications. The province promotes benchmarking with other municipalities to encourage the adoption of renewable energy solutions. Overall, these initiatives reflect a comprehensive approach to enhancing energy efficiency and transitioning to renewable energy in Iloilo.

• CENTRE's Cardenas remarked that if the Philippines can automatically allocate funds for debt servicing, why not do the same for services that will create jobs and directly improve the lives of people directly such as in energy, citing

the case of Iloilo which was able to ensure automatic allocation for the province's RE projects. She then introduced the next case presentation, the Solar Power Revolution in Barangay General Malvar.

• GENERAL MALVAR's Santiago cited "Solar Power Revolution," an initiative aimed at promoting empowerment and sustainability in Barangay General Malvar in Santiago, Isabela. This program highlights the availability of solar energy in the Philippines and includes various projects designed to enhance local governance.

One key feature of the initiative is the installation of 40 solar streetlights, which has significantly reduced energy costs, saving the barangay approximately 1.9 million pesos annually on electricity bills. These savings allow the barangay to allocate more funds to other essential projects, underscoring the positive impact of the solar power initiative on community development.

A short video of Barangay Malvar and its solar power revolution was then shown. It featured Eddie Cardenas, one of the 10 graduates of the Solar Photovoltaic Installation System that was established in Barangay Malvar on January 22. Cardenas is the Electrical Engineer of Barangay General Malvar.

There were several other residents of Barangay Malvar who also shared their testimonials about the RE project:

Alexander De Los Santos, a resident, said that when power is lost due to disasters, the barangay's high-grade solar system will provide electricity to the entire barangay building, benefitting evacuees who have chosen to seek shelter during storms.

Michelle Ante Malana, a barangay nurse of General Malvar, said that the BHWow is a big help to the health center as it makes it easier for us to go to the patients who cannot come here, especially those who cannot get medicine for their maintenance. And for the children who cannot go here for their monthly immunization.

A police officer said that solar lights in the barangay have had a good effect on our anti-criminality programs. It has resulted in a 91.11% reduction in crime rates. Also, there has been a 75% improvement in our public safety perception because our citizens are no longer worried. And we were able to quickly respond to the emergency cases in our barangay.

Cris Angelo Vitar, a volunteer who helps install streetlights, said that their work provides safety to the youth. Through this, we are helping the environment for our generation and for the next.

Dante Tolentino, a farmer, said solar powered irrigation for a hydrated garden project, brought about a 240.63% increase in his income, amounting to 22,500 pesos.

Inspired by these initiatives, punong barangay Santiago continued to say that 17.44 percent of households in Barangay Malvar have privately installed solar lights, contributing to an additional reduction of 106.58 metric tons of carbon dioxide in our atmosphere. To illustrate the program's potential impact across the country, if all of the 42,045 barangays were to install just one unit of a 300 watt solar-powered street light, it would result in an estimated electricity cost savings of Php 408,305,000 and a reduction of 31,294.79 metric tons of carbon footprint each year.

He also shared that the police are happy with the solar power revolution because the crime rate is reduced.
And the people, especially the women, have a higher feeling of safety even if they walk in the dark.

• CENTRE's Cardenas then called on the government representative from Quezon City, the largest city in Metro Manila, which has pioneered many policies in energy efficiency and other climate actions.

• QUEZON CITY's Vinarao started by introducing the Quezon City's enhanced local climate change action plan (LCCAP) for 2021 to 2050 which aims for ambitious climate actions that provide mitigation, adaptation, and equitable benefits for all citizens. The city has conducted a greenhouse gas emissions inventory, revealing that 60% of emissions come from stationary energy, 21% from transport, and 19% from waste. The city is targeting a 30% emission reduction by 2030 and pursuing carbon neutrality by 2050.

Quezon City's key initiatives include: amendments to its Green Building Code to increase energy efficiency requirements for buildings, aiming for 80-100% compliance by 2030 and solarizing 100% of feasible city government buildings by 2030. Currently, six buildings have solar installations, and projects are planned for city-owned hospitals and schools. To implement these projects, a memorandum of agreement with the Division of City Schools will facilitate the rollout of solar projects. The city is also replacing lighting with LED systems and considering energy-efficient air conditioning units.

To institutionalize these efforts, an executive order has been issued to formalize the governance structure for energy efficiency initiatives, designating energy conservation officers across all departments. These initiatives are expected to contribute to an estimated 12% reduction in greenhouse gas emissions, showcasing their potential impact on climate action.

QUESTIONS

1. From member of the audience (from Benguet Electric Cooperative): "Many of the LGUs I encountered have problems with the procurement. So how did you hurdle the procurement process?"

   RESPONSES:

   • ILOILO's Distura: [Republic Act 9184] is really our challenge. But we hired someone really competent in drafting POW in the Provincial Engineering Office and we have staff who are focused on the Bids and Awards Committee (BAC). I am also a member of the Committee on Appropriations and we follow up with the BAC every now and then. And then we see to it that they should come up with a timeline so that the project can be implemented immediately. And that is what we're very, very concerned about. Because as you may know, the delay of our project also delays our services to our constituents. And as you may know also, there are also many local government units has lots of savings. Their money is in the bank. And local government units are not banks. We should utilize those money to pump prime the economy, to improve our services to our constituents, that should also be looked into. We're also thankful to have a governor, Toto Defensor, who is a working governor.

   • BARANGAY MALVAR's Santiago: We undergo the usual procurement process. The Department of Engineering and the City Architect Department under the City government prepare the terms of reference and the design. And they open them up for bidding. And it's no longer a surprise. There are already plenty of contractors that are engaged in installing solar PV installations. There are already a lot of contractors who are competent and can be trusted in so far as installation ng solar PV systems is concerned.

   • QUEZON CITY's Vinarao: We have thousands of buildings, and if we want to solarize them, we need significant amounts to fund them. While the city is using its own funds, it is also exploring alternative financial mechanisms, including public-private partnerships (PPP). Proposals for these partnerships have been submitted and are currently under review to ensure they meet necessary technical requirements and documentation before moving forward. At this time, the city has not yet entered the procurement stage for solar installations.

   • PEI's Yeneza: What I can share is an overview of Butuan City's current efforts in preparing an energy development plan, contrasting it with other local government units that are already implementing policies. But I just want to say that having a champion for renewable energy is important as we have Board Member Distura in Iloilo and Mayor Joy Belmonte in Quezon City.

   Butuan City commenced its planning by conducting a resource assessment to identify available resources, manpower, funding, and stakeholders. They formed an inter-stakeholder technical working group, involving city government officials, their local electric cooperative (ANECO), businesses, and other stakeholders, which was crucial for collaboration.

   The city partnered with WWF for the development of their energy plan, which outlines their energy needs for the next 25 years, including the integration of solar projects, biomass, and electric transportation such as electric tricycles. Following the identification of energy projects, Butuan City is currently engaged in

pre-feasibility studies and plans a forum to present findings in order to attract investors and secure financial assistance for the proposed initiatives.

2. CENTRE's Cardenas: “How can local RE policies and projects ensure the inclusion of marginalized and vulnerable communities in the energy transition, especially women and workers?”

   RESPONSES

   • ILOILO's Distura: We aim to expand access to our renewable energy incentives, which will address previous limitations that excluded the residential sector. We will now engage women and homeowners' associations including various other stakeholders.

   One initiative includes installing solar panels in daycare centers across four pilot barangays, leading to improved efficiency and allowing mothers more time for household responsibilities while their children benefit from a comfortable learning environment.

   Additionally, the Climate Field School program initiated during my tenure as a town mayor, has now evolved into a climate adaptation program focusing on empowering farmers and fisherfolk — predominantly women — through education and weather forecasts. Funding is established through automatic appropriations from relevant local offices to ensure sustainability.

   Overall, innovative governance is important in promoting renewable energy and ensuring inclusive participation in development efforts in Iloilo.

• CENTRE's CARDENAS concluded the session highlighting the key messages from the discussion. She said that inclusivity is important in renewable energy projects as it highlights the engagement of vulnerable sectors, including women and youth, in initiatives such as the Solar Power Revolution. While local government units (LGUs) are increasingly involved, the role of electric cooperatives as stakeholders and partnerships with them should also be given importance.

She also noted the energy trilemma —comprising of energy security, equity, and environmental sustainability — and the Philippines' low ranking in RE share in the energy mix despite having ample resources. We need energy equity, particularly for those in remote areas who pay significantly more for energy compared to those on the mainland or urban centers.

Cardenas also reminded the participants that December 12 is the last day of the 18-day campaign to end VAW (Violence Against Women). She said that the lack of access to energy can also be considered a form of violence against women. Local governments can leverage this issue to empower women and ensure their access to electricity. Iloilo’s use of ER1-94 for renewable energy allocations should be considered or replicated by other LGUs so that automatic allocations can enhance women's energy access further. Overall, collaboration among various stakeholders is essential for accelerating the deployment of renewable energy in the country.

As her final note, Cardenas said that we can utilize our government resources better when we consult with our local constituents on how to manage these resources because they also increase safety and security for them and the rest of the people.

(BREAK FOR LUNCH)

When the RE Congress reconvened for the afternoon sessions, Engr. Gene Loise Pecson of CentRE gave an introduction for the deep dive sessions, while Ellaine Borrejon of Oxfam Pilipinas shared a brief background on just energy transition and the mechanics for the workshop that will be conducted after the two simultaneous deep dive sessions.

• DEEP DIVE ONE | Innovating for sustainability: new approaches to RE project development and financing

Participants: Engr. Silver Navarro; Mr. Erel Narida, One Renewable Energy Enterprise, Inc; Engr. Maria Imelda E. Pabros, Pag-Ibig Fund; Mr. Ivan Limjoco, Allotrope Partners. Ivan Galura is the moderator.

• Galura: We'll first have three presentations from from our partners from Allotrope, from Pag-IBIG, as well as from Engineer Silver Navarro. So at this point, can we call on Ivan from Allotrope so we can start with our first presentation.

• ALLTROPE's Limjoco: Allotrope Partnersis an international clean energy advisory organization focused on emerging markets. Based in Oakland, California, Allotrope specializes in public-private partnerships, project origination, market analysis, and solutions to advance clean energy and climate objectives across Southeast Asia, including significant operations in the Philippines.

Allotrope offers corporate advisory services to help companies evaluate renewable energy opportunities, develop strategies, and assess market conditions. We also lead the Clean Energy Investment Accelerator (CEIA) initiative, which supports the deployment of commercial and industrial clean energy by connecting governments, companies, and investors.

The Local Utility Project Accelerator (LUPA) focuses on assisting electric cooperatives (ECs) by providing resources and support to navigate renewable energy project development amounting to more than 150 megawatts. We also help them comply with Renewable Portfolio Standards (RPS). Additionally, the Greening the Banks (GTB) initiative aims to enhance the capacity of financial institutions to engage in green finance, promoting lending for sustainable projects.

Allotrope's initiatives include engagements with over 600 companies, development of training for banks and stakeholders, and facilitation of clean energy projects in Vietnam and the Philippines.

Allotrope is interested in emerging technologies such as clean electricity applications, battery storage solutions, and carbon market support, and invites attendees to discuss opportunities for collaboration after the presentation.

• Galura: I would like to call on our next speaker from Representing Pag-ibig Fund, the government sector, Engineer Imelda Pabros. Please, let's give her a round of applause.

• PAG-IBIG's Pabros: There are various benefits and financing options available through the Pag-IBIG Fund as the fund has significant assets of over ₱1 trillion as of August 2024, and its substantial housing loan financing of ₱126 billion last year. Pag-IBIG is not limited to the MP2 savings program, but rather provides a range of financial products for its members, including loans for lot purchases, house construction, and home improvements, which can include solar panel installations.

The Pag-IBIG Fund offers competitive interest rates for housing loans, starting at 5.75% for a one-year fixed term, and the maximum loan term can extend to 30 years, depending on the borrower's age. Members can finance solar panels either independently or as part of a broader home improvement project.

Additionally, incorporating solar panels and other energy efficiency features can increase the appraisal value of properties. Energy efficiency and water efficiency features, such as efficient plumbing fixtures and natural ventilation, can enhance property value and reduce utility costs. Successful projects financed by Pag-IBIG also include solar panels which, in turn, highlight the organization's commitment to supporting sustainable housing development.

Projects Pag-IBIG has financed include Amaya Central Eco Residences in Tanza, Cavite; Datum Horizon East Ortigas Buildings in Cainta, Rizal; Paseo Verde in Las Piñas City; Legrand Central Courtyard in Albay and Rio Verde in Batangas. In the Visayas, Pag-IBIG financed Blessed Sacraments in Lipa City, Cebu and in Mindanao, Agan-Lagau Subdivision in South Cotabato and Agan-Lan Gateway, also in South Cotabato.

• Galura: Thank you, Engineer Pabros. That's actually a very interesting take on increasing adoption of R&D. Pag-IBIG does it at the housing sector level. To conclude our presentations, may we call on our third speaker, another engineer, Engineer Silver Navarro to deliver to us his presentation on financing renewable energy.

• Navarro: I will discuss the financing of renewable energy projects, focusing on commercial banks and community-based initiatives. Sustainable development financing like the Bago Integrated Solar Farmers Association has been supported by the ACIP project, in partnership with the Department of Energy and local governments.

Renewable energy projects, while having high upfront costs, typically incur low operating costs. Among the risks banks face when financing such projects include technology maturity, resource availability (like wind and hydro), construction challenges, and post-installation support. Market viability and community consultation are important to ensure social acceptability and environmental sustainability.

In what is called the "spider web," there are various factors that make a project bankable, such as reliable renewable energy resources, technology assessment, off-take agreements, permitting, and operational maintenance. Banks, like BPI, provide technical assistance to help clients navigate these complexities, including regulatory compliance and linking them with trusted technology providers.

Additionally, successful community-based projects are those that also utilize solar energy for productive use, such as turning pineapple leaves into marketable products such as a Barong Tagalog, bags, and shoes. The project not only provided energy access but also created livelihoods for community members. But members of these communities were also later trained to use G-Cash and Palawan remittance payment service.

Challenges faced by these projects include finding warranty support, coordinating community engagement, establishing markets for products, and securing operational funding. Financing is essential for achieving renewable energy goals but supportive business models and environmental awareness are needed as well so as to advocate for a just transition that ensures inclusivity and resilience in the communities.

• Galura: What makes banks hesitate to provide financing, for example? Or for electric cooperatives, why do they find it difficult to secure financing? What are the factors that make them arrive in a yes or a no in terms of financing these projects? How do [banks] decide whether or not to provide financing?

The audience also identified three factors that hinder financing of renewable energy projects. These three factors are the competence of the borrower (including their track records and organizational readiness), the lack of knowledge regarding the financing arrangements (which include permits and other bureaucratic requirements), and other governmental processes involved.

• Pag-IBIG's Pabros: Requirements by the Pag-IBIG Fund for accepting properties as collateral is that the properties must be titled. Our borrowers typically conduct cost-benefit analyses regarding installation of solar panels as alternatives to traditional power sources.

We had one developer who approached us as a solar farm. They planned to install solar panels on the roofs of units financed by Pag-IBIG. However, the beneficiaries would not be the homeowners but the developer who would sell them but pay the homeowners a nominal rental fee of ₱1,000 per year, just like a lease on their roofs. We thought that there would be a lot of limitations that would come from it, such as the possibility of homeowners wanting to extend their properties vertically or issues arising if a house is foreclosed while the solar panels remain under the control of the developer. These concerns illustrate some limitations encountered in financing solar features through the Pag-IBIG Fund.

• Galura: Thank you, thank you, Engineer Pabros. Engineer Silver?

• Navarro: Earlier, I've shown you the spider web. So there's no single answer to that because it's complex. What Ma'am Pabros showed, the rooftop that will be used for solar is actually an innovation. But it's not included in the policy. You also have to consider other factors.
That's only on the technology side. And of course, the contract obligations, as you can see, are more complete, in our opinion, on the whole of the project. And also identifying where are the shortcomings that we need to help, equipment, offtake, O&M, compliance to regulation, permits. It's a whole package that needs to be completed. So if there are major components that are not complied, it will be difficult for us to finance.

• Galura: Thank you. Thank you, Engineer Silver. What are the challenges that ECs face in accessing financing for their RE projects? But based on our experience, for the electric cooperatives that we talked to, mostly it's because the projects that they're trying to do are too small to be bankable, to be attractive to investors or to banks that are not blocking their access to financing for these RE projects.

And then another one is the track record, especially with the small and medium-sized developers don't have the track record that the bigger players have, like the Ayalas, the San Miguels, the Aboitizes. So that is also one challenge that we've seen engaging with these small and medium-sized developers in accessing financing for these projects.

• ALLOTROPE's Limjoco: Electric cooperatives (ECs) face challenges when transitioning from their traditional distribution mandate to power generation, since they lack of operating experience and track record in managing power plants. But this absence of a track record should not be held against them, especially if the intention of the EPIRA law is to encourage ECs to enter power generation.

Electric cooperatives can find the right partners with established track records can help lend credibility and support when seeking financing for projects.

Additionally, ECs can collaborate to expand the scale of their projects by including other areas within their franchise. This could enhance project capacity, thereby making it more appealing and profitable to financial institutions. Overall, electric cooperatives need to enter into strategic partnerships and project scaling to improve the bankability of renewable energy initiatives they will undertake.

• [Unclear]: How do electric cooperatives become bankable as utilities doing not only distribution but also looking now into generation? So you can benchmark it. Not necessarily track record but it was able to pay the loan to DBP or so. It's a benchmark. Can it be replicated? Yes.

But really the potential for electric cooperatives is like we talked to NEA the other day or last week. And the demand for energy is really growing thanks to the economy. That the supply is catching up.

So if we just let the big players who will be producing, it's not enough. Everybody has to take its role, take initiative. How do you replicate the success stories? How do you expand the benefits that those who have done it successfully also be electric cooperatives. So, very supportive so far, the ERC in doing this. And I think that's one process that learning from those who have done this ahead and already, we can replicate that in other cooperatives. All right.

• Galura: But I guess when we talk about partnerships, we also eventually will have to touch upon upon the business models. Because when you say, OK, go look for someone who has done it before, either a Meralcoor probably a Genco, an Aboitiz perhaps, and then partner with them. Maybe that will help the viability of your project or what it is that you're trying to do.

But then again, if you partner with them, what is a business model that will most likely make your project viable? I guess I want to throw that question for now, before I throw it to our panelists here. I want to throw that question to our audience and have a quick survey again.

So we have here four business models in the electric power industry in the Philippines.

There are many ways by which you can sell power and make money selling power. And there are just four of them here. Number one is you participate in a DU-initiated competitive selection process. So that's how you sell your power. Number two is you bid in a government auction such as a GF or a Fit All way, way back. And number three, sorry, what's our number three?
Number three is you sell entirely to the WESM. For power plants that sell entirely to the WESM, those are merchant plants. So you don't have a long-term contract, you're just a merchant plant. And number four, you sell to contestable consumers as low as 100, you can be an RE supplier, right? So the question we want to ask our audience is, if you are developing an on-grid utility-scale solar project, let's just say 5 MW solar, what is the best business model to make our project financially viable.

• ALLTROPE'S LIMJOCO: The LUPA initiative employs a blended finance model to support electric cooperatives (ECs). This model utilizes funding from various sources, including grants, concessional loans, and guarantees, to meet the diverse financial capacities and needs of different ECs. By aligning their unique requirements with appropriate financing options, the blended finance model helps address gaps in funding. For instance, if an EC has equity but lacks other forms of financing, this model allows for tailored financial solutions to effectively support their projects. So for example, they have the equity but then they have some gaps in other financing, then we can adjust that through the blended finance model as well.

• Galura: Thank you. Sir Silver? Referring to these four models, I think this is from the perspective of a developer. Okay. The first one, what is the one that is just for sale? The pink is CSP. The yellow is REST. So we know how hard it is to get CSP, the whole process. You can go through that, but you have to compete, you have to prepare, it's a costly and very time consuming process but still possible. Your next option is J-App. This is also a big potential market and this is similar to the FIT regime. But this case, the gear price of the ERC and you have to beat that. Again, like the FIT, you have a 20 years guarantee, which is very comfortable for the bank, especially if it comes from the government, made by the consumers. Your sales are guaranteed, but the projects are big and the price is very low. So you cannot do it with small projects. It really needs to be scaled. The third one is the DCEP. I am not speaking for DBP. But they opened a window for Merchant Plant. Why? Because the price of solar has gone down.

And if you compete it in the market, we have the privilege of priority dispatch. If you are renewable, you can dispatch first. But you can't decide the price. You'll be a price follower, a price taker. But if you generate solar during daytime, the price of WESM is good in the morning.

So, you just sell, you'll earn. The margin is not that big, but it's viable. So for the banks, it's risky if you don't have a contract if you're a merchant plant. But somehow with those analysis on the pricing, we have finance merchant plant. So it's not for everyone. We're able to do that because the track record of that developer is good. They have multiple solar farms. And the last one, the auction.

It's okay, right? There are four. So it depends on your scale, it depends on your appetite to process and how you meet your requirement on this specific business model that you're proposing to be financed. It's quite interesting, sir, that you actually mentioned the BPI and then, of course, BPI also offering merchant loans to purely merchant plans. But also, Ivan mentioned earlier the role of blended finance. So at this point, probably as a last question that we want to throw to our audience. If you are developing an RE project, and this is going to be our last topic before we wrap up.

Which of the following funding sources will you most likely tap if you are developing an RE project. So it would be interesting to hear from our audience. But at this point perhaps, we have a liberalized financial sector. The GFIs are competing toe-in-toe with commercial banks. They can offer lower rates because that is provided under their mandate. The government is not for profit as much as we don't believe that.

• Pag-IBIG's Pabros: The Pag-IBIG Housing Loan is an excellent option for potential borrowers due to its competitive interest rates — 6.25% per annum for a three-year fixed term and 5.75% for one-year — along with a maximum loan term of 30 years. Pag-IBIG offers loans to both individual home buyers and developers involved in subdivision or condominium projects, as well as institutional loans at low rates.

We understand the challenges of financing solar projects across different scales, from residential to large-scale megawatt installations. We're working with installers to facilitate funding and we're willing to support small and medium enterprises (SMEs) and corporate projects, provided that the required risk assessments are addressed. We somehow extend our assistance to help them pass those requirements. So, from the household, to the commercial, to the megawatt, the bank is willing to finance that.
Furthermore, there is a preference for government financial institutions (GFIs) in financing renewable energy projects, while recognizing the successful efforts of individuals like GM Rene, who efficiently taps various funding sources for diverse renewable energy technologies. The message is clear: banks are open to financing renewable energy initiatives, but borrowers must be aware of and meet specific requirements. The bank is ready to assist them through the process to ensure successful project financing.

• ALLOTROPE's LIMJOCO: We leveraging private investments to fund renewable energy projects, allowing electric cooperatives (ECs) to avoid upfront capital expenditures. This model enables the projects to be implemented without requiring immediate funds from the ECs, with ownership transferred to them after a certain period. This approach is particularly beneficial since entering power generation is not typically part of the ECs' original business model and they may lack the necessary funds for such projects.

ECs can reach out to Allotrope Partners for assistance with their projects, especially regarding the Renewable Portfolio Standards (RPS) mandates, as its part of our support for renewable energy initiatives.

DEEP DIVE TWO | Solar PV installation and energy efficiency/ management with Engr. Rei Panaligan
President, Center for Renewable Energy and Sustainable Technologies (CREST), as the lead discussant, trainer

• CREST's Panaligan:I'm the president of Center for Renewable Energy and Sustainable Technology or CREST. CREST is a member of the Center. The Center is a network of different stakeholders. And I'm in a nonprofit organization. Basically, our work is more on decentralized energy systems. I will give a little introduction later.
And my background is I'm an electronics engineer, but I've been involved in different works already also.
When I was approached to run a workshop on solar photovoltaics, I was a bit hesitant because I know that the participants have different levels. So, maybe we should just do a temperature check here in our room.
There are people from the electric co-op, from community organizations, from the private sector.
We only have a few hours — normally when we give training on solar, actually our basic training is two days. This is the one with hands-on that is installed in the roof for the installers.

We also have training for design. So, design is the focus. Then, there are advanced ones. Then, there are also for policy makers on how to evaluate contracts. Because LGUs receive a lot of proposals, right? So, how do they evaluate project proposals?

How do they conduct economic evaluation, and so on. So we have that kind of training. But of course, we cannot cover all of those today.

So primarily our focus is what we call micro-renewables. So these are the small-scale systems. And we've been working with, of course, solar, popular one right now in terms of the RE technologies. But we also have some projects, the biodigester, and then we're also working with some publicators for microhydro. So we've been exploring this type of systems as well. But of course, the most easy setup and popular of all is solar.

There are various concepts related to energy consumption and solar power as distinguished by power (measured in watts) and energy (measured in watt-hours). A 10-watt bulb consumes 10 watt-hours of energy in one hour and this shows the importance of understanding energy demand when sizing solar systems rather than simply adding appliance power ratings.

The basic principles of energy includes the two types of current — direct current (DC) from solar panels and alternating current (AC) from the grid — and the need for an inverter to convert DC to AC for use in household appliances.

An energy pyramid is also important because it prioritizes energy conservation and efficiency before renewable energy installation. Simple practices like turning off appliances when not in use can lead to significant energy savings. Solar installations should work in tandem with energy conservation and efficiency measures to avoid increased electricity bills, which can occur if users believe their solar energy is unlimited.

Solar setups are of several types: grid-tied systems (connected to the grid and utilizing net metering), off-grid systems (independent from the grid), and hybrid systems (combining both grid and battery for backup). Grid-tied systems are popular, while off-grid systems are effective in remote areas. The components necessary for solar systems are solar panels, inverters, charge controllers, and batteries and it is important to choose quality equipment and reputable suppliers to ensure reliability and longevity.

QUESTION: Should we buy branded equipment?

• Panaligan: It's not necessary. It's not about the brand, but the capacity is more important. But it's also true for the panels. If you compare the 500W product of Company E and Company B, there are some technical differences. the voltage, current capacity, so very important, it's better to have the same.

QUESTION: So sir, we have a donation map, and then there are people who donate, so they are the ones who... who connect, so they donate, so it's worse if they don't connect.

• Usually, when the battery is low, it means that the battery has a problem or it overcharged. So the charge controller might be broken. We can't really design. It's easy to design a gridline, because there are only two components. It's hard to design an off-grid, because you need to match all the applied components. For example, there is a charge controller that is only 12 volts, 24 volts, 48 volts. The inverter is the same. So, if you have a system, your charge controller must match with the power capacity. For example, if you add panels and battery, you didn't put the charge controller. There's a possibility that the charge controller will be overloaded because it's on the 1kW side. But because you increased the panels to 2kW,

1the capacity of the charge of the product is not 2kW. It can be damaged. At that cost, The problem is with the DIY. That's the problem.

Of course, if you know the basics, you won't be delayed of course, as we said to the electric co-op it's also a business opportunity for the co-operatives instead of because you have technical know-how you're the one providing your services instead of other companies.

That's our problem. Because our skills are very limited in the Philippines. That's one of the barriers to low adoption. Because there's no [skilled personnel] but the technology is already there. Technology is mature.

You can buy it anywhere. There are also financing. All the banks, all the development banks are providing financing for solar PV. But it is still left out because of the ceiling. The skills are still concentrated in Manila and in [unclear]. There are no skills, no installers in the provinces.

The usual complaint is that if something is broken and it's outside Manila, they cannot return because it is too far.

The basic calculations involved in sizing a solar system for a home, focusing on energy demand and the number of sun hours available, is approximately 4 hours in Manila. But a conservative estimate of 3.5 sun hours for calculations should be used. The efficiency of the solar panels is also a factor in determining energy production.

For battery sizing, energy demand should equal two times the battery system capacity due to the limitations of lead-acid batteries, which can only use 50% of their capacity to maintain longevity. If batteries are consistently fully charged, their lifespan will be significantly reduced.

When installing solar panels, the roofing structure should be able to carry substantial weight, as solar panels can be heavy, with a single panel weighing about 30 kilograms. The overall weight of multiple panels could pose risks, making it essential to consult a structural engineer.

Additionally, shading is a critical concern, as it can prevent solar panels from producing electricity. Solar streetlights positioned under trees that do not receive adequate sunlight, resulting in their failure to charge properly and produce electricity. Overall, careful planning and consideration of these factors are crucial for a successful solar installation.

Other considerations: The solar panel should be facing south. If possible, your panel should be facing south. Why? So that it can capture the sun.

Then, of course, grid availability.

Why is grid availability important? Because if it's grid-type, it needs to be connected to the grid.

And then, it needs to match the equipment and components as we said, all the equipments have power rating, voltage rating, current rating all of them must match that's the time for design you need to familiarize yourself with or they will be broken.

They should not be exposed to the flood. And then of course, very important, look at the legal and permitting requirements. There are cities that have ordinances on Solar rooftop. And of course, if they apply for net metering, they should have coordination with our electric operators. It's also important that when you set up, there is individual access to the pallets.

So if there is a problem, you have to clean it quickly and go to the pallets. And then of course, inverters and other components should be located as close together so that when you monitor it, it's easier. And what's good now is that all the new inverters are smart. So, if you have a Wi-Fi, wherever you are, as long as you're connected, you can monitor the performance now in your solar PV system.

QUESTION: Sir, solar aircon, 24-7, how much is the cost of power for your company?

• CREST's Panaligan: There is a growing market for solar-powered air conditioning units and these products are becoming available although their efficiency have not been verified.

For a typical urban household in Manila with basic equipment and one air conditioning unit, a 5-kilowatt solar system could potentially cover all daytime energy consumption, provided the air conditioning is only used during the day since solar generation does not occur at night.

This setup is particularly beneficial for daytime-heavy consumption environments such as offices and schools, as well as for individuals who work from home. By effectively utilizing solar photovoltaic (PV) systems during the day, users can maximize their energy savings and reduce reliance on the grid.

QUESTION: First, is it okay to pressurized water when cleaning the panel?

• CREST's Panaligan: Yes, it's possible. Because it has a tempered glass.

QUESTION: The second question, sir. Because in the standard testing of net metering, it must meet 85% power factor in the tapping point. So sometimes our testing is it going down? Is it the one that is reducing the power factor? The question is, is the inverter capable of producing reactive power?

• CREST's Panaligan: If an inverter is branded, it should be configured to the parameters that are standard in net metering. The standard in net metering is supposed to be what the standard of the inverter is. We won't set a regulation that can't achieve the current technology available in the market. So probably, that's why Huawei is either a probability converter or again, maybe there's a fault in the connection. But usually, sir, it should be inverted. It can comply with our topic standards.

• QUESTION: Hi, I'm a economist from the Philippine Solar and Storage Energy Alliance. I wrote a baseline report on the rooftop solar industry of the Philippines. It's kind of a primer wherein I discuss the government regulations, issues on net neutrality, particularly, especially, the permitting, Also, the valuation of exported energy, because in everything we export energy, the excess energy from solar is for the fuel grid. And in return, our generation cost is lower than what the BU is charging us. I also emphasize the need for certification of solar installers para walang problema, if it is not certified as solar, there is a danger of fire. I also assessed the opportunities of rooftop solar industry in the Philippines using satellite imagery, satellite data. We conducted discussions, consultations in Cebu and Davao as well for that report. So, yeah, you can find it on the PSSEA website, the CENWIT website, under News and Events.

• CREST's Panaligan:Okay, so many of the concerns have been raised. There is a policy forum in the Center, which was also issued by the constituency center on how to move forward on advanced net metering policy, the BER guidelines, and the expanded solar mounted rooftop. So, Chris is leading in the formulation of these policy recommendations.

But that's it. That's the realities. I think there's still around 56 electric co-ops that don't have net metering program. Majority in Mindanao. So, maybe it will be good. So we think that I have this franchise area, and I'm allowed to do other things....so may mga ganoon nonsense na... I think this stuff dinaligated naman ng ERC at the DOE. I think they already have focus here... Anything else? Before we... If nothing else, thank you everyone. And what's next?
We can return.

DAY TWO | PLENARY: Charting Just Energy Transition Framework and Direction

Sharing/ recommendations by stakeholders on JET roadmap

Panel / Dialogue with the Government

Atty. Marissa Cerezo
Director IV, Renewable Energy Management Bureau
Department of Energy

Mr. Ludwig Federigan
Department of Environment and Natural Resources

Mr. Bernard Paul M. Mangulabnan
OIC-Chief Labor and Employment Officer
Department of Labor and Employment

Ms. Jairus Carmela C. Josol
Climate Change Officer, Climate Change and Sustainable Development Department
Asian Development Bank

Mr. Bency Ellorin
ICSC Public Engagement and Advocacy Advisor for Mindanao
Co- Convener, Mindanao Renewable Energy Acceleration Coordination Hub (Minreach)

Ms. Jo Ann Eala
Vice President and Head of BPI's Sustainability Office

Moderator: Mr. Joel Chester "Cheng" Pagulayan
Oxfam Pilipinas

• Pagulayan: The key highlights from breakout sessions yesterday focused on the Just Energy Transition Roadmap. These sessions gathered insights from various sectors, including financial institutions, civil society organizations (CSOs), and stakeholders from local government units (LGUs), women's, workers', youth, and transport groups and electric cooperatives.

Key points include:

Need for Standardized Policies: There is a call for standardized renewable energy policies and budget allocation at the local level, along with improved awareness and education about renewable energy and climate change.

Strategic Partnerships: The need for strategic, inclusive, and sustained partnerships among various groups have been emphasized, including faith-based organizations, indigenous peoples, academia, NGOs, and the private sector.

Challenges for Electric Cooperatives: Electric cooperatives face limitations in public funding for renewable energy production, lack of support for vehicle modernization under the PUV modernization program, and challenges with existing plans that hinder the transition to electric vehicles.

Financial Barriers: Small-scale developers struggle with compliance requirements for renewable energy projects, faced with high initial investments, and lengthy permitting processes.

Desired Changes by 2030 include standardized policies and educational efforts around renewable energy; increased funding for community-based renewable energy systems; creation of champions for renewable energy within LGUs and improved inclusivity in planning; support for electric cooperatives to participate in renewable energy projects and develop capacity; legislative efforts to establish a Just Transition Law with subsidies and service contracting provisions for transport workers.

Currently, the roadmap being drafted will incorporate existing community-based networks and case studies, local budgeting for renewable energy, and capacity-building initiatives already in place. Ongoing collaborations involve banks and financial institutions promoting renewable energy projects and enhancing the capabilities of electric cooperatives.

What are your reactions or insights from these recommendations and the key issues and concerns that were also raised. So who would like to start? Atty. Cerezo, sure.

• DoE's Cerezo: I'm glad to know that we have common goals of improving the quality of life of our people and of our communities. We have set a target for renewable energy to constitute over 50% of the generation mix by 2040. While the government cannot establish power plants due to EPIRA regulations, local government units (LGUs) can engage in commercial transactions.

The Renewable Energy Management Bureau aims to create policies that attract more investors to the renewable energy sector. The Philippines has improved its ranking as an attractive destination for renewable energy investment, moving from 20th place in 2020 to 2nd place recently, indicating growing interest in investments. The government focuses on streamlining permits and clearances to help expedite projects, as delays can increase costs.
Lastly, connecting the country’s electricity grid across its 7,650 islands remains a challenge, since it remains complex to establish the necessary infrastructure for electricity transmission to different regions.

• DENR's Federigon: On behalf of DENR, I'm very happy to see the different initiatives or comments or recommendations by all sectors, civil society, transport or energy sector in this group. If I may request the organizers, we could have a copy of that particular presentation so that at least while the technical working group for the Just Transition is being formed, this will become your inputs to the roadmap while we are preparing the Just Transition roadmap. Based on the timeline of the DENR, which did the kickoff for Just Transition, we are supposed to finish the entire roadmap, at least for presentation during COP30 that will happen sometime November or December next year. So from now until end of next year, there would be of course scoping mechanism, assessment or baselining, there would be consultation with different sectors. If you want to transition to a low-carbon or climate-resilient future, it should be people-centered. So inclusivity and equity are important. There has to be more focus on people who are vulnerable, like women, children, youth, persons with disabilities, and all the rest, which I think articulated during the presentation early on. So we have to continue this dialogue. This is not only a work of government, but a work of all of us. We have to always put our voices there to ensure that every sector of society, the voice of every sector of society are being considered. Maybe it's better to popularize what Just Transition means and how we can understand the two words in Filipino.

• DoLE'S MANGULABNAN: Incorporating the framework of decent work in discussions about Just Transition is important since the Philippine Green Jobs Act was passed eight to nine years ago. This act aims to frame climate change not only as a scientific issue but also as a social one, focusing on how to support workers and labor unions during the transition. Social dialogue, social protection, and respect for rights at work remain important, underscoring these four fundamental principles as essential considerations in the discourse on just transition.

• iCSC's ELLORIN: Local government units face challenges in providing funds energy-related concerns as they have competing expenses, such as the Gender and Development (GAD) budget and disaster risk reduction funds.
In Mindanao, a decline in contracted power for Mindanao from 2025 to 2032 is projected and this as an opportunity to invest in renewable energy, with a need for 1,500 to 2,000 MW of new capacity.

There are concerns about coal overshadowing renewable energy in future investments and emphasizes the urgency of prioritizing economic dispatch for solar and hydro energy.

During the Mindanao Clean Energy Forum, it was stressed that the existing energy infrastructure should not be privatized and that new policies should be implemented starting in 2026. The Asian Development Bank's energy transition efforts could create perverse incentives, especially given the historical shift toward coal due to privatization and reliance on hydroelectric power.

The ambitious goal of the Marcos administration to energize the Philippines by 2028 highlight the need for improved access to basic services in poorly-energized provinces. There should be a focus on distributed renewable energy and integrating renewable energy objectives into policies aimed at achieving a 50-50 energy mix by 2030. This could be done by reinforcing the importance of collaboration in promoting renewable energy to enhance the region's energy future.

• Pagulayan: Let's move to our financial institutions. Maybe ADB or BPI can start. So in financing, funding, recommendations from earlier, so maybe you can directly provide feedback on those insights.

• ADB's Josol: First of all, we at the ADB wish to emphasize the core principles of justice in the Just Transition program. We aim to ensure that the benefits of the energy and transportation transitions are equitably distributed among all stakeholders. The second is that procedural justice highlights the importance of involving stakeholders in meaningful dialogue during the transition process, rather than merely allowing passive participation.
ADB supports articulating diverse stakeholder visions and integrating these into policy, program, and project development. We work closely with various groups, including civil society organizations and labor unions, to foster inclusivity and ensure that social aspects are considered alongside technical discussions.

The ADB has committed to not finance coal and is evaluating oil and natural gas within the context of the Paris Agreement. They advocate for the internalization of carbon social costs to enhance the competitiveness of renewable energy.

Additionally, ADB runs a Just Transition Support Platform to provide knowledge and technical assistance, helping stakeholders understand the transition's impacts on workers, education, and social protection mechanisms. This includes planning for infrastructure needs to diversify economies towards greener industries.

• BPI's Eala: We know electric cooperatives. The problem is, it's not that simple to make a renewable energy project. We have more than 417 projects, 168 of which are renewable energy. We've seen quite a good number of big and small projects and we have said no to a lot just to see them fail. You run, you earn, you produce. Where will you bring it? So you always think that the project should be complete, A to Z. It's done, it's studied.

The biggest, most advanced technology in solar then, 2004, was Sharps in Japan. It's very successful. When 2013 came, one year before the 10-year guarantee expired in 2014, Japan would no longer consider the heat and humidity in the Philippines as just for it to have micro-cracks. They haven't taken into account. Do you know how many storms come to us every year?

The magic number is 20. There is always 20. So in average out the earthquakes that are happening, 20 per day. That's how many.
So my message here is, we really need to have renewable energy. But let's remember that being prepared for disaster or resilience is important because we're already in the middle of a storm, we're still in the middle of earthquakes.

Renewable energy is important for BPI because by 2026, yung outstanding coal output that we finance will be halved. By 2030, it will be zero.

If you ask us how high our appetite is for RE, it's very high for me. That's why I explained yesterday that there will be a process because of the 417 projects that were made with BPI, we have no failure. You won't be funded if you don't pass. But what I can say to you is that if you pass, you will be able to sleep well because you studied the course. I am

also telling the ECs that RE is not a core competency. So if you are going to enter, you need to have a partner who can help you. On the financial side, you will see that the RE project is not a charitable act. If the grant is exhausted and dry, the story is over. Where will you go? The word is sustainability. Your ability to sustain. It means to continue. So don't look at it negatively when you say that you need to be successful and earn money.

ECs need to know the risks that they have because if you manage those risks down, you will be able to successfully perpetuate your projects.

When you go into RE, take note you are in the Philippines, technical preparedness and ensuring project success and profitability. Thank you.

• Pagulayan: We have two questions. Going once. And there's one here. One more. Let's get the two questions. There's one at the back. So, maybe we can get a mic. Let's listen to the two questions and then we'll have a round of answersfrom our panel.

• QUESTION FROM ERWIN ARAÑA from Bicol: Good morning everyone. I'm Erwin Aranya from Bicol, Masbate. I just want to ask, I am in the electric co-op, we are in this table, we are in the electric co-op. We are ready to go down to our electric co-op, not private companies. Because we know that private companies are expensive. The importance of renewable energy came from the Electric Coop. Who is the one who came to see us there? We, the Electric Coop. and the provinces are developing. We are lacking in the energy that we are supplying to the member consumers. We are hoping to have renewable energy there.

• QUESTION FROM ART BACOCO from the Benguet Electric Cooperative: I'm Art Bacoco from the Benguet Electric Cooperative. We need to help our government for the development of renewable energy within our area coverage. We don't have water rights, everything is registered in the [unclear]. So how can we help? Number two, the service contract is already named to another developer. So, you know, if we could give an option to these electric cooperatives, electric cooperative na sila ang mag-develop. The objective of the electric cooperative is to reduce the generation cost.

An electric cooperative doesn't actually earn money if they develop renewable energy. The objective is to lower the generation cost. If they can see, if they can return the ROI and a small percent in the maintenance of the generation cost. That is actually the objective of electric cooperatives that want to help the government to lower the price of electricity. But the problem is, how will they develop? Like for renewable energy, hydro, they will not own the water rights. They do not own the service contract. All of the R&E developers have a service contract. The problem with solar is that we want to have solar. The problem is the requirements regarding the conversion of the lot from agricultural to industrial. That's where our core is actually being delayed.

• iCSC's Ellorin: Why don't you sit down and come up with an independent project? Because this is equal to our experience sa Mindanao — why are electric cooperatives over-contracted with coal? I will not name the Energy Cooperative and the power plant. They gave 1 million per contracted megawatt to the board. 35 years, 35 megawatts. It came from the agency ng coal plant. It's a governance issue. It's corruption.

We should also be aware that while the honorarium of the board of directors are meager, those running for positions as board members during elections sometimes kill one another because there is money in contracting.
A former executive of a large distribution utility showed me the financial statement which indicated the hidden charges used to bribe mga board of directors to go into contracting. So you will have a hard time with your RPS because you are over-contracted. Even if you need 5.08% this year, you should have RPS. Many are not going to comply because they are over-contracted with coal, over-contracted with diesel. So, look at the embedded, because your problem with RPS is the CSP. But if you go with embedded projects, with private, like if there is a water rights that has a service contract, that would solve maybe a significant portion of your problem. I hope this is where the problem is. We know from the book of Nene Pimentel on cooperatives, he explained that elitist cooperatives are not cooperatives in the real sense. Why are the Illiterate Cooperatives not a real cooperative? While the Board of Directors is elected by members, the General Manager is appointed by the NEA. Is there a real cooperative here that gives credit to your consumers? Can the member enjoy dividends? Are there electric cooperative that release dividends? Unless those things are done, they are not true electric cooperative as defined by the International

Cooperative Association and the Cooperative Board of the Philippines. It only becomes a cooperative because the law says it's cooperative but in principle it's not.

• DoE's Cerezo: The Electric Power Industry Reform Act (EPIRA) has ownership restrictions for generation facilities to prevent monopolies and encourage competition, ultimately benefiting consumers through lower electricity prices. But the ownership restrictions do not prohibit entities from applying for renewable energy (RE) contracts.
The energy application process is now managed through the Energy Virtual One-Stop Shop, established by law in 2019 to ensure timely actions on applications. Renewable energy contracts have a processing limit of 31 days, and there are penalties for government inaction on applications.

Electric cooperatives and distribution utilities should be reminded of their obligations under the Renewable Portfolio Standards (RPS), especially following the recent launch of the renewable energy market, which allows for imposing penalties on non-compliance.

Comprehensive planning should be done for various renewable energy sources, including solar, hydro, geothermal, biomass, wind, and ocean energy as there are significant infrastructure costs, especially for offshore projects. Energy conservation practices and energy efficiency should be prioritized.

There should also be a holistic approach to integrate social and cultural aspects alongside policy changes in the transition to renewable energy. These should highlight collaboration with financial institutions, think tanks, and civil society organizations to advance these goals.

• Moderator: And we request everyone to go to the stage to put their sticky notes indicating their recommendations for Just Transition and let our government representatives witness them.

Recommendations written on sticky notes include:
• We need to have a strong LGU participation and risk mechanism initiatives.
• More RE development on biomass, establish solar panels and lithium batteries, including housing loans from the IFF
• Just transition and jeepney modernization. No one should be left behind.
• Mura at malinis na kuryente.
• More grants.
• Provide financial and social support to communities.
• De-risking mechanism initiatives.
• Wish ko gobyernong matino at mahusay na nagsusulong ng RE.
• Work support program for sustainability.

• DEEP DIVE THREE | Powering the workers in transforming and energizing the transport sector
Led by Sentro, NCTU, CentRE

• Moderator: The main speaker is from the Move As One Coalition. They will discuss their paper or their study on the assessment of the PUV modernization program industry, consolidation, and financing towards just transition for task force workers. From the team that created the study, two of them are here to represent the team, Miss Cola and Sir Ramir. And then after which, we have 10-20 minute insights from a speaker and actor, from a representative of DOTR, Sir Zion Yuson from the DOTR.

• MOVE AS ONE's Angeles: Good morning, I am Engineer Ramir Angeles from the Move As One Coalition. I'm here with Cola. We're part of the team that made this research paper. We partnered with NCTU-Sentro to assess the PUVMP, the industry consolidation and financing towards just transition for transport workers. The rest of our team is Miss Bianca Cipriano, Miss Joanna Aguilar (daughter of Ka Jaime), Haya Bendaña, and Ken Abante.

The speaker highlights the significant role of jeepneys in the Philippines, noting that they are a crucial mode of transport with substantial ridership. However, the transition to modernized public utility vehicles (PUVs) faces challenges, particularly with the Public Utility Vehicle Modernization Program (PUVMP). The speaker discusses issues such as the high cost of new vehicles, which can reach 1.8 to 2 million pesos, creating financial strain on small-scale jeepney operators and leading to opposition against the modernization efforts.

They emphasize the importance of a just transition, advocating for government support and subsidies to help transport workers navigate this change. The speaker critiques the inconsistency in the service contracting program and stresses the need for a more structured approach to funding and support that ensures sustainability and cost recovery for operators.

Additionally, they outline the need for comprehensive planning that considers financial viability, operational costs, and effective monitoring of public transport services. The study conducted focuses on analyzing financial data from cooperatives to inform future investments in public transport, making recommendations for policies that enhance commuter service quality while ensuring government investments are effectively utilized. The ultimate objective is to create a balanced system where improved transportation infrastructure meets the needs of both operators and commuters while fostering a successful and inclusive energy transition.

• QUESTION: Did the study looked into the data that was collected by Sakay.PH, a smartphone application that was used to ensure social distancing during the lockdowns and check that jeepney drivers and operators were practicing safety protocols and were thus entitled to receive their subsidies from service contracting.

• NCTU's Jaime Aguilar: That app was not useful. Because of the nationwide operations in the market, there are places where the cellphone signal is not clear. That's why the problem of the application becomes inconsistent. And the jeepney driver himself, because the smartphone you're using the problem is that it has a dead spot. But in the end, the drivers received their subsidies using service contracting.

• DoTR's Yuson: Service Contracting can't be done permanently. We're trying to explore partnerships with LGUs. From that, we plan to have a manual tracking for our cash flow. Maybe we can explore if in local government, it's more credible. Some government, some LGUs, they don't want to be part of the government. But it's based on the decisions of the government.

• iCSC's De la Cruz: I represent iCSC in the board of CENTRE. So actually, I'm glad that the transport workers are here. And here, what we're talking about is a modern jeep, not yet electric. What I'm saying is, this deep dive should be a congress. I'm saying this because we might not be able to tackle everything. For example, we're talking about jeep, we're not talking about other forms of transport. For example, buses. We're not talking about two-wheeled vehicles. Because it has a lot of implications. And as I heard, a more efficient mass transit system results in less private cars. I think, my commitment is we should contextualize this discussion better.

• NCTU's Aguilar: Just transition is what we need. We need service contracting and later push for electric jeeps.

• iCSC's De la Cruz: The MRTA should avail of the Green Energy Option Program which will help lower its electricity costs.

• QUESTION: How did you get the money for service contracting?

• DoTR's Yuson: General operations. From GAAP.
What did you say earlier about service contracting based on aid? They don't want to pay for the service contract. So it's like a payout. So it's like a payout. So it's like a payout.

• QUESTION: Since financing is important, like projection and calculation, so, is it correct to say that GASPIE has 86% profit? I just want to clarify that the account of the pie is big, but the actual amount you studied in Calabarzon, the revenue is 5.6, the cost is 5.2. So it's a bit higher, right? I remember a study, did you see Mariano 2019? So what do you think, aside from the question of amortization, where are the projections differing? Will service contracting be one option to make it viable?

• iCSC's De la Cruz: So, if you're somewhere, if it's 15 pesos per kilowatt hour, 15that's it. Unlike diesel, the electric prices are not volatile. Although external cost, where do you get the energy source? That's why I said it's not exactly in my discussion. If you're still in the Meralco, then it's coal.

GREEN ENERGY PITCH | Featuring two energy pitches

• Moderator Anthony Jacob: This part of Green Pitch is exciting because we will hear about the various initiatives, projects, and even startups that we have here in the venue today about the application of renewable energy. Each presenter will be allowed a maximum of five minutes pitch or presentation feature presentation about their initiative promoting the use of RE and other sustainable energy practices. Their presentations will be followed by a 10-minute feedback and question portion with our esteemed panelists, which I will introduce later on. And of course, the guests are also welcome to ask questions and participate in the discussion.

So to introduce the panelists, our first panelist, we have Mr. Sixto Donato C. Macasaet is an expert in economic and cooperative development. Our next panelist is Dr. Nelson Eñano, a specialist in the engineering, economics, and regulation of energy systems. And lastly, we have Mr. Ralph Ebora, a mechanical engineer and energy engineer with 14 years of experience in the Philippine energy sector.

So our first feature is we have Greenewables, a transformative innovation turning agricultural waste into eco-friendly bio-brickettes offering cleaner, more efficient energy solutions to drive sustainable change and environmental responsibility. Everybody please welcome Mr. Erickson Pacta.

GREEN ENERGY PITCH 1 | ERICKSON PACTA, GREENEWABLES

• Greenewables' Erickson Pacta: Greenewables intends to address the environmental impact of traditional charcoal production using wood. Grilling 1 kilogram of meat requires an equal amount of charcoal, leading to significant deforestation if the demand for grilled meat in the Philippines is considered. Greenewables aims to address this issue by converting agricultural waste — such as rice husks, sugarcane bagasse, and coconut waste — into a cleaner, renewable alternative to charcoal.

The product is designed to be environmentally sustainable and economically viable, with packaging options for both residential and commercial sectors. A 5 kg box of their charcoal substitute costs ₱150, making it more affordable than conventional charcoal. The business model includes both business-to-consumer (B2C) and business-to-business (B2B) sales, as well as empowering farmers to sell the product.

Greenewables aligns with several Sustainable Development Goals (SDGs) related to renewable energy and environmental sustainability. The company outlines a projected timeline for market research, product development, and scaling up production. The company has received endorsements from government agencies to combat illegal wood-based charcoal production and has achieved recognition through various competitions.

The company is seeking an investment of ₱12 million to support operations and establish production facilities in the CARAGA region, aiming to create over 50 green jobs and save approximately 500,000 trees from deforestation. The team includes experienced professionals from various fields, emphasizing their commitment to promoting renewable energy.

• CENTRE's Macasaet: For us at FSSI, the three bottom lines are important. Environmental, social, and economic. In environmental, you clearly show that instead of cutting down trees, you're using agri-waste for briquettes instead of charcoal. The social, you said you have a partnership with a farmer organization because it's beneficial to farmers. Then, what I saw was that you showed that your pricing is competitive and you have a clear target market. And in management, your management team, but it looks like you showed a very impressive track record. So there are many things going for Greenewables. FSSI is giving loans and sometimes equity investments to support social enterprises. I think if I were to be your guide, you should show that there is a beginning to what is happening. The concept is okay, the product is okay, the management team seems okay, but I think you need to show me that there is actual production, actual marketing, actual... Maybe in the beginning, of course, the self-funding first.

• Greenewables' Pacta: Sir Luis has successfully created biobriquettes on a micro-scale but at his own expense due to high demand. We need funding to establish a facility for larger-scale production.

We are currently in negotiations with CARAGA State University for pilot testing the production facility, which will utilize agricultural waste from the region. The initial target market for the biobriquettes includes small grilling businesses, such as lechon manok and BBQ sellers, who face difficulties meeting the current demand.
The aim is to produce approximately 55 tons of biobriquettes per month to meet this demand. Sir Luis has already demonstrated proof of concept by successfully producing the briquettes, indicating confidence in the project's viability.

• Eñano: My comment, Sir Eric, thank you for your team for doing this job. I hope you get support for this. In other countries, like grilling or barbeque, normally there is no smoke. For your case, I would like you to comment on the combustion efficiency. Because normally, a biobriquette has a stove or a boiler. For your case, is there such a thing? Because it might lessen the combustion efficiency. Also, the raw material availability, can you comment on that? Because, how to say, whatever resources you have, maybe a combination of many, it should be consistent, right? Finally, can you comment on that moisture content?

• Greenewables' Pacta: We have designed a stove for biobriquettes, currently in the prototyping phase, and plan to research how to effectively utilize biobriquettes with this stove, focusing on controlling combustion.
Biobriquettes are more efficient than wood-based charcoal, producing less harmful ash and providing purer heat. We are holding discussions with potential business partners, such as Mang Inasal, to explore market interest in using biobriquettes and to assess the sustainability of agricultural waste as a consistent feedstock for production.

The initiative, referred to as "Sumagras Renewables," aims to scale up agricultural waste utilization and has secured a contract for utilizing idle land. We are conducting ongoing research to ensure that the feedstock is sustainable within their region, with plans to implement backup strategies for feedstock availability.

• Ralph Ebora: First of all, I agree with Sir Dodo that it's not apparent in your presentation that there is a prototype. And when you answered the question, it just became apparent. So I think it would be good to have a question but I have two pieces of advice for the next presentations. I think you're, so number one is I think you're missing an intermediate step. Because you're thinking of putting up facilities right away. Because what you said earlier is, there's a prototype, and you want to put up facilities in order to meet the demand of businesses, right? So you're missing an intermediate step. So you should produce a little bit first and then you should let the businesses test it. Because you might put up facilities and produce, and then the investors might not be interested in replacing their existing solutions. So that's important. And the second advice is related to the firstadvice. So you will get this kind of advice if you joined the New Energy Nexus incubation program. So we have an incubation program next year around May. And this is free of charge and New Energy Nexus supports early stage startups and we'd like you to go to the next level.

QUESTION from Veron of Chinitap, Bulusan, Sorsogon, LGU: Does the project include studies demonstrating the viability of biobriquettes for household use, not just in industrial applications? Has there has been research establishing the combustion efficiency of biobriquettes for cooking purposes and their suitability as an alternative fuel source in households?

• Greenewables' Pacta: Sir Luis Romilo, who conducted local market research, is the appropriate person to provide detailed insights. Sir Luis developed biobriquettes using a carbonization process on a micro scale and tested them in local businesses, such as lechon manok and grilling establishments.

Feedback from these businesses has been positive since biobriquettes allow for faster grilling times compared to wood and generate significantly less smoke. For specific details regarding the market research and its findings, it would be best to consult Sir Luis directly.

QUESTION: The unique selling points of the startup's products should be highlighted by comparing existing options to proposed solutions, particularly in the renewable energy sector. This approach can attract interest from potential funders.

The pitch should also demonstrate the return on investment (ROI) to show the viability of the business model for NGOs or communities involved. The company can also form partnerships with local government units (LGUs) to

address the issue of agricultural waste management. Many rural areas neglect agricultural waste, which contributes to methane emissions. Utilizing this waste as raw material for biobriquettes could be beneficial.
The company should also consider how to produce biobriquettes with minimal emissions during processing to enhance environmental sustainability.

• Greenewables' Pacta: Thank you so much for the inputs. Actually, we can provide that, your inputs. Because those inputs are needed for investor pitch deck. What I did here is just for pitching competition. But as for the investment type of pitch, So, that's where the comparison and ROI is. We have the financial projections here. Thank you.

GREEN ENERGY PITCH 2 | BENJIE FLORES, NASCENT TECHNOLOGIES

• Nascent's Flores: The company is focused on developing sodium-ion batteries as an alternative to traditional lithium-ion batteries. The Philippines currently relies heavily on imported lithium, highlighting the need for local manufacturing of battery technology. With a team that includes 60 PhDs and a strong focus on both electrochemistry and power electronics, Nascent Technologies aims to create energy storage solutions suitable for residential, commercial, and grid-connected applications.

The company has successfully developed a coin cell and is progressing towards producing pouch cells and prismatic cells within a projected timeline of 2029-2030. They also plan to integrate and manufacture lithium-ion cells alongside their sodium-ion products.

The company also offers technical and consultancy services for industrial partners, electric cooperatives, and energy companies interested in incorporating battery technology into their operations. The company emphasizes the importance of battery lifecycle management and recycling as part of a circular economy approach.
Nascent Technologies' business model focuses on research and development (R&D), consulting, and potential manufacturing, with revenue projections of approximately ₱760 million by 2031. More information about the startup can be found on their website and LinkedIn page.

• PANELIST: Two quick questions. First is, I understand that you have investors now. Are you raising funds? I can introduce you to the investment arm of Energy Nexus. Let's talk later. Second quick question is, I understand that NID and BES are still in the R&D stage, but I understand that you're getting revenue also from services and consultancy. So what are the types of industries that you have revenue from consulting?

• Nascent's Flores: Because we have the equipment, one example is the BET analyzer, a piece of electrochemistry equipment. I think we're the only ones in the Philippines that has that equipment. Just this morning, there are academic labs who are lining up to have their samples tested. So that's one, the academic sector. And also for the studies, we're mostly approaching power corporations that want to develop their own VSS. We understand that the big power players, they have their own team to do the studies, right? But what we're trying to do is to assist are the ones who are a bit smaller than the bigger players, right? We've been talking to other cooperatives which are entertaining the idea of installing their own DSS.So that's the market size, the target market size. And what kind of battery could be provided for grid services or just for residential?
The residential market is very saturated right now. We have a lot of Chinese suppliers already capturing, and also we have Filipino installers who have captured that market. We are trying to approach right now are the industrial, the bigger power plants, also factories, who would like to install batteries in their, or backup batteries in their own system. We're also approaching data centers who are trying to install battery backups in their facilities. Because normally, in urban areas, the need for battery is not that high. For example, industrial, If you're an industrial electricity consumer, normally you'll sell electricity to the grid, maybe as an ancillary service or as a backup power or as a power supply to the grid. So in Metro Manila or in urban areas, there's no power interruption.

• PANELIST: Is that what you're thinking of?

• Nascent's Flores: I think for the BSS, we are looking at embedded BSS because of the reserve market. I think a lot of power corporations are exploring BSS as their asset so that they can be players in the reserve market. Also off-grid, obviously that demand is there, but depending on the funding, if we have financing, right? So we are also open to

that. So, you have already tested the water in your... as compared to lithium-ion in terms of... Right now, because it's at cell level, the sodium ion is at cell level, it's comparable, right?

Because there's no point having sodium ion and then using other expensive chemicals, right? So we're trying to build it using sustainable products.

• PANELIST: So the recipe you're talking about...

• Nascent's Flores: We're now going to the next stage, which is the pouch level. So if you go to the next format, then there's a lot of problems in all right.

• PANELIST: I just would like to say that I think what you are doing is important because it is important for solar, renewable, and battery technology, especially for us because of our concern for the community, especially for off-grid. So we would just like to commend you for what you are doing.

• SOLIDARITY MESSAGE | Mr. Lloyd Cameron, Economic and Climate Counsellor, British Embassy in Manila

This year's Renewable Energy Congress emphasizes the urgency of accelerating the energy transition to maintain the 1.5-degree Celsius climate goal. This includes new energy initiatives announced at COP29, such as pledges related to green corridors, energy storage, grids, and hydrogen, stressing the UK's commitment to integrating climate action into its foreign policy and strengthening international partnerships.

The UK government aims to fully decarbonize its power sector by 2030 and is increasing investment in renewable technologies like hydrogen, solar, nuclear, and wind. The UK government marked the closure of the last coal-fired power plant in Great Britain as part of their green industrial revolution.

This underscores the importance of a just and inclusive energy transition that ensures public participation, creates green jobs, provides upskilling opportunities, and guarantees affordable energy. We also acknowledge the Philippines' efforts to adopt clean technologies and express honor in collaborating with the country through the Energy Transition Council (ETC), which supports the government's energy transition priorities.

Networking and collaboration among participants should be further encouraged to tackle emerging challenges and promote the clean energy transition. We wish everyone a joyous Christmas and a Happy New Year while looking forward to stronger partnerships in the future.

• CLOSING MESSAGE | Donato Macasaet, Vice President of CENTRE

The ongoing Renewable Energy Congress 7 and its theme, "Recalibrate, Make Energy Right," which the importance of achieving renewable energy goals correctly through a just energy transition.
Discussions have improved over the Congress days, highlighting the collective effort to implement renewable energy in a way that is inclusive and beneficial for all sectors.
We wish to express gratitude to the Secretary, his wife, and the facilitators of the event. We also express thanks attendees for their active participation and sharing their experiences and aspirations for a just energy transition.
In closing, we commend the success of the Congress and wish everyone well on their journey home.