

Capacity Building Series: Managing Industrial Estates' Decarbonization Effort towards Net Zero

BACKGROUND

Referring to the target stated in the Paris Agreement, namely to limit the increase in the earth's temperature below 1.5°C by 2030, Indonesia is committed to reducing GHG emissions by 29% by 2030 and achieving net-zero emissions by 2060. To support this target, Indonesia targets the achievement of new and renewable energy (RE) in the national energy mix of 23% for 2023. This target needs to be supported by all sectors in Indonesia, both in terms of energy supply and demand, to make the transition to low-emission energy, including the commercial and industrial (C&I) energy sector. In Indonesia, the C&I sector is also projected to account for the largest portion of energy consumption up to 52% in 2028.

Multinational companies united under global climate initiatives such as [RE100](#), Science-Based Target Initiative ([SBTi](#)), Clean Energy Buyers Association ([CEBA](#)), and others have started working on a pilot-scale energy transition. The energy transition in the C&I sector requires long-term efforts to ensure the replication and scaling of NRE implementation and energy efficiency, including in industrial areas. The high potential for green investment and the growing demand for potential investors to invest in industrial areas served by RE sources is a momentum that needs to be utilized. The support and active role of the local government is needed to increase the development of industrial estates in the region.

The West Java Provincial Government has the vision to develop an industrial area with a strong focus on its RE potential. Energy transition efforts and zero emission programs have been considered in the West Java Regional Energy General Plan (RUED). Currently, West Java is developing a new metropolitan area, namely the REBANA Industrial Estate, which has become a State Strategy Project (PSN) and is targeted to become a strategic, pilot area for the implementation of EBT for industrial estates in West Java.

The Clean Energy Investment Accelerator ([CEIA](#)) is an independent non-profit initiative participated by more than 40 multinational and national companies, as well as more than 70 supply chain partners that aim to help the C&I sector to decarbonize by transitioning to renewable energy. CEIA conducts policy analysis, facilitates dialogue between parties, and provides technical assistance and capacity building for companies and policy makers.

CEIA along with the West Java One Stop Investment Service ([PMPTSP](#)) held a three-day series of capacity building with the theme ***“Managing Industrial Estates' Decarbonization Effort towards Net Zero”***.

OBJECTIVE

Increasing Industrial Estate (IE) management capacity through training on topics including contextual settings, renewable energy (RE) frameworks for electricity and industrial heat, energy efficiency (EE), energy conservation, regulations, and Industrial Estate incentives, as well as examples of their application in other countries.

Event Overview for Day 1

Renewable Energy and Energy Efficiency Concept and Its Utilization for Industrial Estates in Indonesia Day 1: Tuesday, 12 April 2022 (Watch Day 1 HERE)	
Content	Speaker
Opening	MC
Welcoming remarks	Almo Pradana - Deputy Program of Climate, Energy, Cities, Ocean <i>WRI Indonesia / CEIA Indonesia</i>
Opening remarks	Noneng Komara Nengsih - Head <i>Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu (DPMPTSP) West Java Province</i>
Keynote speech	Ridwan Kamil - Governor of West Java Province
CEIA Introduction	Gina Lisdiani - Country Head <i>Allotrope Partners Indonesia / CEIA Indonesia</i>
Industrial Decarbonisation <ul style="list-style-type: none"> - Decarbonization in electricity, thermal and fuel - Power-to-heat linkage and co-planning - Science-based target intro 	Parthiv Kurup - Concentrating Solar Power (CSP) Cost and Systems Analyst <i>National Renewable Energy Laboratory / CEIA Global</i>
Energy conservation and efficiency in the C&I sector <ul style="list-style-type: none"> - Energy conservation framework - Energy productivity for industrial estate - International context for energy conservation and its economic benefit 	Parthiv Kurup - Concentrating Solar Power (CSP) Cost and Systems Analyst <i>National Renewable Energy Laboratory / CEIA Global</i>
Q&A (see below)	Moderator
Towards clean energy from IE in Indonesia <ul style="list-style-type: none"> - Types of ownership and authority of IE in Indonesia - Electricity supply business area - Regulations and challenges of providing RE for IE - RE use business scheme opportunities for IE 	Agam Subarkah - Senior Lead Program for Corporate Energy and Governance <i>WRI Indonesia / CEIA Indonesia</i>
Q&A (see below)	Moderator
Closing	MC

Event Overview for Day 2

Renewable Energy and Energy Efficiency Concept and Its Utilization for Industrial Estates in Indonesia Day 2: Wednesday, 13 April 2022 (Watch Day 2 HERE)	
Content	Speaker
Opening	Clorinda Wibowo - Energy Manager <i>WRI Indonesia / CEIA Indonesia</i>
Regulation and potential implementation of RE and EE in Industrial Estates <ul style="list-style-type: none"> - Regulation and potential use of RE in Industrial Estates - Regulations/mandates and potential utilization of EE in Industrial Estates 	Luh Nyoman Puspa Dewi - Conservation Energy Director <i>Ministry of Energy and Mineral Resources</i>
Fiscal incentives for RE and EE development in Industrial Estates <ul style="list-style-type: none"> - Fiscal incentives on RE development in Indonesia - Impact of fiscal incentives on investment - RE environmental aspects and emission reduction incentives 	Febrio Kacaribu* - Head of Fiscal Policy Agency <i>Ministry of Finance</i> <i>*to be confirmed</i>
Green Ecosystem Support: Renewable Energy Certificate & RE Project Development	Marjon Sinaga - Vice President Priority Account Executive Swasta Bisnis Individu <i>PT. Perusahaan Listrik Negara (Persero)</i>
Q&A (see below)	Gina Lisdiani - Country Head <i>Allotrope Partners Indonesia / CEIA Indonesia</i>
Closing	MC

Event Overview for Day 3

Renewable Energy and Energy Efficiency Concept and Its Utilization for Industrial Estates in Indonesia Day 3: Thursday, 14 April 2022 (Watch Day 3 Part 1 & Part 2)	
Content	Speaker
Opening from CEIA Indonesia	Arliza Nathania - Energy Research Assistant <i>WRI Indonesia / CEIA Indonesia</i>
RE and EE Based Industrial Estates <ul style="list-style-type: none"> - IE development facilities and efforts to use RE and EE applications - IE operational benefits from using RE and EE - Tenant management in IE for RE use and EE applications - Success story of IE in using RE & EE in the US 	Daniel Riley - Director of International Corporate Climate Partnership <i>WWF / Renewable Thermal Collaborative</i>
Q&A (see below)	M. Rezky Zain - Power Sector Analyst <i>WRI Indonesia / CEIA Indonesia</i>
Introduction of SBTi for Industrial area <ul style="list-style-type: none"> - Definition, concept and benefit of SBT - Standard and SBT target set-up - Past and ongoing projects under SBTi 	Nanda Noor - Sustainable Landscape & Business Senior Project Lead <i>WRI Indonesia</i>
Industrial decarbonization in Vietnam <ul style="list-style-type: none"> - Barriers and challenges to using RE for the industry in Vietnam - RE usage scheme options available to industry in Vietnam - CEIA assistance for Industrial Decarbonization in Vietnam 	Hang Dao - Co-Lead <i>CEIA Vietnam</i>
Q&A (see below)	M. Rezky Zain - Power Sector Analyst <i>WRI Indonesia / CEIA Indonesia</i>
Closing	MC

QUESTIONS AND ANSWERS SESSION - Day 1

Renewable Energy and Energy Efficiency Concept and Its Utilization for Industrial Estates in Indonesia
Tuesday, 12 April 2022 (08.00-10.30 GMT+7)

1. China is one of the countries experiencing grid stability issues after they granted industry permission to connect solar PV systems to their transmission grids. If the solar PV system in Indonesia is also connected to the transmission network, it is estimated that this can be one of the obstacles that will be faced in increasing the capacity of renewable energy in Indonesia. What is the best way to mitigate this problem?
 - **Kathleen Krav:** Reducing the export of electricity to the grid will reduce the overall impact on the grid, and there are considerations of electrical engineering, as well in the context of transmission disruptions and ways to manage them as well.
2. What do you think about the difficulty of matching the output of solar power and the demand for industrial production? Are there any suggestions or best practices to help match production with the solar output?
 - **Phartiv Kurup:** We have been looking for ways to meet the demand for solar energy, one of which is that it is easy to meet the energy demand during the day, while at night it is highly recommended to do coupling with other energies. For example, when coupling with thermal or thermal energy in an industrial context, this will lead to the possibility of implementing a solar-thermal or electric-thermal system. Where, when an industry has a thermal battery, this will lead to a great possibility to meet energy demand consistently at the desired time. Then, thermal implementation will also reduce the demand for natural gas, along with the demand for plant operating hours to meet customer demands.
3. Where does the greatest energy loss occur in industrial manufacturing plants?
 - **Kosol Kiatreungwattana:** When viewed from the main users of energy (end-users), there are many processes that occur in the manufacturing industry. Of all these processes, heating, cooling, and the use of industrial machines are certainly the points where energy loss occurs the most.
4. Regarding buying and selling electricity that can be done for self-consumption, shouldn't it be regulated by the ministry? If the power wheeling scheme has been regulated by the government, the business model for RTS does not need to use a power equipment rental scheme, can it be concluded that way?
 - **Agam Subarkah:** Power wheeling in the Indonesian context, the scheme is between IUPTLU and IUPTLU holders working together to flow the area to one place. Meanwhile, regulating the sale and purchase of electricity from the ministry will be quite difficult because it has to revise the regulation that has been in effect. For power equipment rental, this is a pretty good solution because the rental scheme is still implementable because it doesn't violate the regulations.
5. Are there any suggestions for the industrial sector in planning strategies to deal with the related issues?
 - **Agam Subarkah:** I suggest for industry players to have a roadmap in the form of a decarbonization and clean energy strategy. This is important as a business consideration and investment in the future.

QUESTIONS AND ANSWERS SESSION - Day 2

Government Support to Promote RE Use and Energy Efficiency in Industrial Estates

Wednesday, 13 April 2022 (08.00-10.30 GMT+7)

1. Is the carbon tax and REC related?
 - **Marjon Sinaga:** For carbon tax, it can be covered by paying a carbon income penalty or building a renewable energy power plant or it can be done by buying REC to claim the use of RE.
2. Does the national target already take into account the needs of the industrial sector? Is there any hope the government has for Industrial Estates in increasing the energy mix?
 - **Puspa Dewi:** Currently, the Ministry of Industry is making a plan to reduce emissions so that it is collaborating with MEMR. The Ministry of Industry's plan for Industry 4.0 has not yet focused on low carbon, but due to global demands, there will be discussions about net zero emissions with the Ministry of Transportation.
3. The Ministry of Energy and Mineral Resources has issued a Ministerial Regulation regarding RTS, but it is still said that the maximum installed capacity of PLTS is the same as the connected power between industry and PLN. However, in reality there is still confusion regarding the installation permit. Is there a way out from PLN and EBTKE for industries to get parallel operation permits? More installations will impact the grid stability. However, there needs to be a mitigation strategy from EBTKE and PLN. From the 2021 Ministerial Regulation, there is also an application that will be made by EBTKE regarding the issue of RTS installation licensing, has there been any progress in the application? From PLN's presentation, there is also a plan to develop REC products from PLTP in Sulawesi and Sumatra, there are inputs because the industry prefers to buy bundled REC, which is physically grid-connected.
 - **Puspa Dewi:** After the PLTS Rooftop ministerial regulation was issued, it underwent various revisions regarding the related permits. According to the director, Aneka is currently compiling an application and it is still in the discussion stage and will be informed.
 - **Marjon Sinaga:** An agreement was made at the beginning so that the system would be safe, related to capacity, the system must be reviewed whether it can accept the power capacity, so that it is also being discussed with MEMR in relation to the system. Take the example of TNB Malaysia, which is also connected to the system, a very detailed study is being conducted where there are separate provisions, such as the location of determining the voltage. PLN will not hinder this issue
 - **Wisnu Nike:** The hope from the industry is that there will soon be certainty between Permen and in the field there will be synchronization. The industry doesn't want any instability on the grid but as an industry it has a brand target that must also be achieved.
4. Does the REC have an expiration date?
 - **Marjon Sinaga:** There must be. So it is mandatory that buyers will buy REC according to the volume used in operation, and if it runs out, they have to buy a new REC.

5. Are there incentives related to energy conservation reports at this point?
 - **Puspa Dewi:** For energy management there is but it doesn't work because the old Legislation Plan was regulated. For example, the weakness was that incentives were given tax facilities, while the authority was in the Ministry of Finance, so the process was very long. We are currently trying to build awareness, but because of our obligation, we will revise it as it is related to existing regulations or be returned to the person in charge of the authority.
6. We are building a solar power plant related to the import and export of electricity with PLN. It is currently unclear what percentage of the compensation will be.
 - **Marjon Sinaga:** Now in the regulations that are issued one-by-one, various considerations arise from a system perspective. From an operational point of view, the exports that PLN usually take are at peak loads, so the energy costs are also high. There is a price calculation as in the example from TNB and Vietnam as well. This condition was jointly decided by PLN.
7. The application for a PLTS development permit is in accordance with the Minister of Energy and Mineral Resources Regulation 26, how long is the application duration and what is the mechanism for not obtaining a permit?
 - **Marjon Sinaga:** In terms of capacity, if it is large, it will require a large backup as well, this must be anticipated more.
8. Does PLN have future plans for on-site or off-site PPA as has been done in Vietnam such as power wheeling?
 - **Marjon Sinaga:** PLN does not have a plan yet.
9. What is the government's plan to encourage ESCO business?
 - **Puspa Dewi:** It has opened up the market in transportation and buildings. For the ESCO mechanism, it is more business to business, but the government is trying in the scope of local government through retrofitting the investment, especially if the area has been audited for what design use. Have met with OJK to discuss the payment mechanism between ESCO, local government, and business entities. The approach is still personal, but the direction for the future is to make it into an implementable regulation.
10. How does MEMR see the role of banking in energy efficiency development?
 - **Puspa Dewi:** Currently, banks do not have a deeper understanding of energy efficiency and the current interest of banks is more towards the development of their infrastructure in adding services. This is because the energy transition has not yet provided attractive interest rates, but is being pursued with the OJK's green taxonomy so that banks are expected to be more aware.
11. Can RECs become an aspect of Environmental, Social and Governance (ESG) investment?
 - **Marjon Sinaga:** Several investors have discussed with PLN that the distribution of RE and the construction of renewable power plants will be through the contribution of REC profits.
12. Is it possible for PLN to develop a grid-connected REC?
 - **Marjon Sinaga:** Of course, there will be demand mapping so that we can synergize industrial needs with the renewable power plants development plan from PLN.

QUESTIONS AND ANSWERS SESSIONS - Day 3

Introduction of SBTi and the Practice of Decarbonizing Industrial Estates in Other Countries

Thursday, 14 April 2022 (08.00-10.30 GMT+7)

Session I - Q&A with Daniel Riley

1. Can you explain and compare industrial consumption of thermal energy and how industrial estates can play a major role in helping tenants adapt thermal energy from renewable sources?
 - In the energy sector, there are always issues between the corporate and its tenants, but if the tenant is a retailer, they will not be able to take direct control over the power source. So there are many ways to develop investment solutions for using RE. There has been a lot of assistance, one of which is from CDP to help the industry transition to RE. Industrial estate management can attract tenants to be located in their area if the industrial area uses RE.
 - I get a lot of questions about the use of green hydrogen for industrial areas. For industrial areas, it is how to connect future green infrastructure plans with industrial estate development plans, such as energy distribution for example. Some of the questions that IEs should think carefully about are:
 - Do you have to build your own RE installation or are there other green product instruments that can be used?
 - What is the plan for developing energy infrastructure in the future?
 - Therefore, it is very important to be able to make plans according to market needs and also adopt new technologies in the calculation of investments.
2. Biomass in Indonesia is now a top priority for the transition to RE. Can you explain the inhibiting aspects of the use of biomass, especially those related to its future expansion? Mainly because in America there is a large agricultural industry. Also, what are the preferences of American customers in using biomass?
 - There is a lot of skepticism among the environmental community in America regarding biomass with concerns about the difficulty of managing industrial waste. For example in Europe there are clear regulations on using biomass for electricity. There is also a discourse that biomass can be used for carbon neutral. In America there is no need for a carbon tax on biomass, so the most important thing is how to define unsustainable biomass.
3. How can the feedstock problem in America be solved collaboratively between the government and the manufacturing sector? Are there certain standards that are used?
 - America is open to a wide range of inputs where there are currently so many different interests for biomass. Currently, the Renewable Thermal Collaborative (RTC) has a tool to calculate the need for different types of feedstock. What WWF and WRI are doing is how to create guidelines for biomass that are easy to understand and effective for industry.
4. How can the tools being developed by RTC be replicated by other industries?
 - What we are currently doing is making tools for specific technologies, namely electrification, solar PV, thermal and renewable energy gas. This tool is very high-level, namely to find out the current

investment costs required. We will create other tools for green hydrogen and for the food and beverage sector. So that these tools can be used for various sectors, how the company's next action will be and when is the right time to invest.

5. Is RTC expanding its ecosystem and community for energy providers?
 - Yes, the content of our community is various stakeholders who are willing to help. Our standpoint is that companies need a variety of help to achieve their targets with a variety of technologies and investment efficiencies that can fundamentally help them.

Session II - Q&A with Nanda Noor and Hang Dao

1. What are the main steps for designing strategies and targets based on SBTi? How important is it for a company to use SBTi to set targets?
 - **Nanda Noor:** It is necessary to know the zero point of the company and perform calculations for limitations and initial assumptions after knowing the baseline from the company, then setting targets that the company may achieve based on a certain period of time. SBTi offers a calculation method to set up the company's baseline and targets. Then, companies can determine pathways and scenarios for related targets.
 - **Nanda Noor:** There are 4 (four) benefits that we can see:
 - i. Validation of targets and strategies based on scientific methods that are quantitative and international standards.
 - ii. Anticipating questions from academics, researchers and customers.
 - iii. Meet the investment criteria and facilitate the monitoring process from investors.
 - iv. Company credibility against targets, anticipating future stakeholder expectations.
2. Indonesia and Vietnam have very similar electricity systems, but in the last 10 years, Vietnam has made promising progress in the procurement of renewable energy companies. What are the main drivers in Vietnam to push the CB mechanism? What are the drivers of the C&I sector and government agencies and how will EVN as a vertically integrated utility react to this initiative?
 - **Hang Dao:** Policies implemented in Vietnam encourage renewable energy investment in Vietnam. We need to clearly convey the demand for the C&I sector as it accounts for more than half of the country's electricity/energy needs. So we need to make sure policymakers are aware of the demand because the big energy users are the direct actors. Because if there is a policy but no one is taking action, then we have to ask whether the policy is effective or if the incentive is strong or motivated? Does the policy stimulate the market? The role of corporations as executors requires someone to voice their demands so that policies can be made properly. The advantage of the Vietnamese market, because the policy is top-down, is that state-owned utilities are so regulated and controlled by the government that they have neither the right nor the desire to oppose the policy.
3. What about reliability issues on the grid side?
 - **Hang Dao:** The problem occurs with the scale of solar power utilities, this problem occurs because the distribution of solar power in each region of Vietnam is different.

4. In Vietnam, industrial estates prohibit tenants from installing solar panels in the area. Do they benefit from even distribution of electricity? What are the practices for energy attribute claims? Can a factory industrial area claim REC without buying or retiring REC?
 - **Hang Dao:** We have two kinds of electric retail models in Vietnam. In this case, the tenant buys electricity directly from the EVN, so they can't mind where the tenant gets the power from. For example for the Deep-C area, they invest in their own system and they resell the green tariff so that it can bring mutual benefits to their tenants, so this is another profitable solution for both tenants and industrial estate managers.
5. Regarding the decarbonization strategy for the green field project, if the industrial area is already operating, what are the possible SBTi strategies to be implemented for brown field industrial parks? What are the guidelines from SBTi regarding green washing and if the claims given by industrial estates or tenants have not yet occurred?
 - **Nanda Noor:** The challenge of SBTi is how to look at cases in the field and provide an approach with an under-promise context. There is a reason why the SBTi provides guidelines and pathways specifically for perceivers and also hopes that every company that submits the SBTi document is a company that has checked short-term targets, after which they can only make long-term targets. After the two targets have been deemed feasible according to the standards in the SBTi, the company can start talking about the net-zero target. SBTi takes field considerations into actual conditions, so that participating companies in SBTi already have a stable operational level and can control variables within the company well.
 - **Nanda Noor:** The company recommends setting targets that can be achieved in the short term and carrying out the process in SBTi one by one. So that the company can overcome the target well and focus on the targets that have been set previously.
6. How much cost must be spent to reach the net-zero target?
 - **Nanda Noor:** Depending on the company, industry and sector, how much emissions you want to reduce using emission reduction modeling. It is difficult to estimate the numbers. The cost components required are time calculation, development of internal tools for development and monitoring, then validation of emission calculations and modeling. For Indonesia, because it is still in the development stage, the validation fee can be considered zero. Because the investment for this is quite large and there are many investors who are interested in contributing to the energy transition in Indonesia.
7. Can you describe the development of financing facilities from domestic or international lenders for corporate procurement in Vietnam and whether the government provides support and leasing facilities to attract financing capacity from abroad?
 - **Hang Dao:** In Vietnam, feed-in tariffs play a role in stimulating investment because it brings sufficient merchant benefits for investors. So there is no shortage of lenders both domestically and internationally. We may have limited procurement options but we do not have limited financing options, especially for financing RTS procurement.

DOCUMENTATION

Group Photo – Day 1

