

# Purnomo Yusgiantoro Center Research Portfolio



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For more  
information about  
our activities.

## Our Profile

**The Purnomo Yusgiantoro Center (PYC)** is an independent, non-governmental think tank which was established as an initiative in June 2016. PYC is based in Jakarta and its main goal is to promote independent, systematic, professional analysis and research in the field of energy and natural resources.

The Center aims to participate in a wide range of research spectrum and to provide policy solutions and/or recommendations within the energy and natural resources sectors at national and global level. PYC also plays a role as the bridge in connecting various entities in the energy and natural resources sector.

PYC upholds independence, integrity, objectivity and diversity as the core values of its work.

## Our Vision

To be a leading knowledge center in energy and natural resources sectors for research, innovation, and technological development in Indonesia and abroad.

## Our Missions

- To provide, promote and support high-quality research and training in the field of energy and natural resources.
- To facilitate a meeting point for experts, academics, and various think tanks and initiatives working in the energy and natural resources sector and encouraging collaboration among them.

## Our Focus

The Center strives to develop a solid research division with members coming from diverse interdisciplinary backgrounds. PYC involves independent and collaborative studies as well as projects with other organizations focusing on energy security. There are three main research divisions; (1) energy economics and financing, (2) energy law and geopolitics and (3) environmental and energy management.

# Board Members



*Founder & Head of the Governing Board*  
**Prof. Purnomo Yusgiantoro, Ir.,  
M.Sc., M.A., Ph.D., IPU.**



*Member of the Governing Board*  
*Advisor for Energy Law and Geopolitics Research Division*  
**Luky A. Yusgiantoro, B.Sc., M.Sc.,  
M.S., Ph.D.**





*Head of the Supervisory Board  
Advisor for Energy Economics and Financing Research Division*

**Inka B. Yusgiantoro, B.S.E.,  
M.S., M.S.E., M.A., Ph.D.**



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*Chairperson  
Advisor for Environmental and Energy Management Research Division*

**Filda C. Yusgiantoro, S.T., M.B.M.,  
M.B.A., Ph.D.**

# RESEARCH PLAN

(2022)



## **Crowdfunding as an Alternative Financing Option for Renewable Energy Projects**

The rise of financial technology or known as fintech in the last couple of years, has created new opportunities to do transactions in a way we've never seen before. Crowdfunding allows large numbers of people to make small contributions in investment or donation to various impactful projects. Meanwhile, renewable energy projects, especially small-scale ones, are often hampered by the unavailability of financing options due to the high risk and low return on investment.

This study will assess the potential of crowdfunding as alternative financing for renewable energy projects according to its economics, social and regulatory perspectives. This includes collecting primary data to understand Indonesia's society's investment and donation behavior for green projects through surveys.



## **The Potential of Hydrogen in Indonesia**

Hydrogen is believed to be the future energy in the next decades. Currently, many researches have been conducted to optimize hydrogen efficiency in terms of technology advancement, but not much research has focused on hydrogen potential in a broader perspective.

This study aims to compare the potential development of hydrogen from various sources such as (but not limited to) plastic, coal, natural gas, geothermal, and biomass in Indonesia considering source availability, technology readiness, regulation, and socio-politics perspectives. It will also map the potential of the hydrogen market both in the domestic and international markets.



### **Electric Vehicle in The Energy Transition era**

The study analyzes the implication of energy transition on Indonesia's geopolitics and geoeconomics: electric vehicle (EV) industry. In 2022, this department will perform a detailed qualitative and quantitative-based analysis to propose strategies and policy recommendations to support the EV ecosystem in the future and Indonesia's energy transition in particular.

This study also aims to discuss the geopolitics and geoeconomics role and strategies of Indonesia on the global Electric Vehicle (EV) development and supply chain.



### **Leadership for Sustainable Energy Security and Net Zero Emission Era**

This study will analyze the Indonesian leadership vision based on the Sustainable Energy Security (SES) index and net zero emission commitment target. SES is defined as provisioning of uninterrupted energy services in an affordable, equitable, efficient and environmentally benign manner and has been proposed as an end goal of the energy policy for a developing country, including Indonesia.

This subject is interesting considering Indonesia will hold the G20 presidency in 2022 (external leadership). At the same time, Indonesia currently focuses on achieving net zero emissions in 2060 and strengthening Indonesia's energy security (internal leadership) for a sustainable future.



## Carbon Pricing Implementation

The study analyzes the impact of carbon pricing to the energy and other related sectors in Indonesia. In 2022, this department will conduct an Input-Output analysis on how carbon pricing regulation may affect Indonesia's energy, economy, social and environment sectors.

This study will analyze the ripple effects on carbon pricing from the energy sector towards other impacted sectors through input-output table analysis. Quantitative results obtained from the input-output analysis can provide specific measurements on the effectiveness of carbon pricing regulation as a climate policy in Indonesia. At the same time, the results can depict how it affects other sectors, including, but not limited to, economic and social.

# ONGOING RESEARCH

(2021)



## **A Pilot Study of P2P-Based Solar Energy Utilization in Areas with Lacking Access to Electricity**

This is a collaborative study between PYC and Blockchain & Climate Institute (BCI) in London. This is a pilot study to assess the feasibility of solar PV utilization with the peer-to-peer (P2P) model in areas lacking access to electricity. The P2P scheme will be implemented by using the apps developed with blockchain technology.



## **Leveraging the Potential of Crowdfunding for Financing Renewable Energy**

This study aims to map the potential of 4 types of crowdfunding (securities, lending, reward and donation) as alternative financing options for renewable energy in Indonesia. The mapping includes analyzing the economics of renewable energy projects and crowdfunding systems, as well as domestic market behavior toward investing and donating in green projects such as renewable energy.



### **Designing Project Financing Renewable Energy System in Eastern Indonesia: Compatibility Case Studies Adapting to European and Other Regions**

This is a collaborative research between PYC and Heriot Watt University in Scotland, in order to explore alternative financing options for renewable energy projects in Eastern Indonesia. This study also covers potential institutions as project coordinators in the planning phase, de-risking and mapping the end-users targets.



### **Implication of Energy Transition for Indonesia's Geopolitics and Geeconomics: Case of Battery and EV Industry**

This study aims to identify how carbon pricing implementation in the energy sector will affect the energy security, economy, social and environment. This study can illustrate how the linkages between the energy sector and the environment have a significant role in Indonesia's sustainable development, especially (but not limited) in the economic, social and environmental sectors. This study is conducted through a comparative study also qualitative and quantitative analysis.



## **Carbon Pricing Analysis on Indonesia's Energy and Other Related Sectors**

This study aims to identify how carbon pricing implementation in the energy sector will affect the energy security, economy, social and environment.

# RESEARCH PROJECTS

(2019-2020)



## Biogas Implementation for Home Industrial Waste

PYC visited a biogas reactor that utilizes wastewater from tofu factories in Giriharja Village, Sumedang, in January 2020. This visit was made possible through facilitation by Dr. rer. nat. Neni Sintawardani from Indonesian Institute of Sciences (LIPI). She received the PYC Energy Awards 2019 for her contribution in developing the biogas and delivering positive impacts to local society. During the visit, the PYC team observed and discussed the biogas development and sustainability in the village. In the future, PYC aims to get to know the project better and to discuss further possible collaboration with the LIPI.



## Flare Gas Utilization through Mini-LNG Feasibility Study

PYC is currently conducting a feasibility study of flare gas utilization through mini-LNG. Gas flaring produces primary greenhouse gases (GHGs). By utilizing the flare gas, this will alleviate the emission problems. In addition, it will increase the national supply of natural gas to support the current energy transition from fossil-based fuels to low carbon fuels. LNG is the most convenient form for distributing natural gas to the end-user where pipelines are unavailable because it is easier to be stored and transported. Through mini-LNG there will be less initial development cost, more efficient distribution and it requires smaller area for production facility. This study aims to identify the feasibility of developing mini-LNG facility in the research area considering its economy aspect.





### **Socioeconomic Study on Decentralized Solar PV Business Model in Remote Area**

PYC team and Sinari visited a remote island on November 27-30, 2019. Sinari is a renewable energy startup that received PYC Energy Awards 2019 for its works in providing electricity access in the remote area. PYC conducted a survey on the affordability and availability of electricity on the island. It was identified that the people who live in the island are still suffering from lack of electricity. Currently, PYC is conducting a socioeconomic analysis of the data collected during the visit.



### **Remote Island Electrification for Productive Use**

PYC is conducting an integrated study in order to find a better solution for electrifying Indonesia's remote island and improving its economy. The study focuses on analyzing the most suitable type of technology needed to electrify remote islands, especially for productive activities. The affordability and financing options for the most suitable technology adoption are also taken in consideration in this study. Through this research, PYC hopes that it can be used as a reference for the implementation on other remote islands.

# RESEARCH PROJECTS

(2017-2018)



## **PYC-IPS Project on PV Installation for Military Base**

PYC is currently working with International Power Supply (IPS AD) and Indonesia Defense University (Universitas Pertahanan Indonesia, Unhan) on a research project for military posts electrification. As an archipelago country, Indonesia has numerous remote military posts where electricity power for these posts are often provided by a diesel generator. This approach is considered as a costly and unsustainable alternative considering the supply chain of the diesel fuel. Aiming to assess the cheaper and sustainable alternative, the joint research project focuses on conducting a feasibility study on military posts electrification through smart off-grid renewable energy system.



## **Geothermal Investment Feasibility Study**

PYC is currently taking part in an integrated study on the technical, financial and legal aspects of a geothermal investment project. This work aligns with Indonesia's ambitious renewable energy (RE) target with the commitment of having a 23% share of RE in the 2025's energy mix. In fact, geothermal energy is the second largest contributor to Indonesia's renewable energy mix after hydro power. Despite its large potential, the development of geothermal energy is often still faced with complicated bureaucracy and regulations. Hence, PYC aims to facilitate RE development in Indonesia through various efforts, including participation in its feasibility studies and legal aspects mediation.



### **ERIA-PYC Joint Research on Manufacturing Review: Energy**

PYC supported ERIA in research on reviewing energy issues, challenges and opportunities in the manufacturing industry. The research was a part of the arrangement of the National Medium-term Development Plan (RPJMN) 2020-2024 and the Government Work Plan (RKP) 2020. The research aimed to provide alternative solutions which are beneficial to achieve the government target in the manufacturing sector. It mainly covered the government accomplishments, relevant policies and issues, policy comparisons, policy and institutional role evaluations in developing manufacturing industries, especially linked to supply, demand and efficiency of energy.



### **Natuna Seabed Maritime Infrastructure Feasibility Study**

The collaborative research between Purnomo Yusgiantoro Center (PYC), Indonesia Defense University (UNHAN) and Bandung Institute of Technology (ITB) went through consecutive events including several Focus Group Discussions (FGDs) and field research since August 2017 up to October 2017. The research focused on a microanalysis of the maritime infrastructures in the Natuna Sea, Indonesia. The research report was presented at the seminar on October 10, 2017, in Nusantara Hall, Urip Sumoharjo Building, Ministry of Defense of the Republic of Indonesia and was attended by the Minister of Defense of the Republic of Indonesia.

# PUBLICATIONS

Through its publications, PYC aims to make its research output or information accessible to the public. PYC has released several publications including data center, podcast, books and journal to provide reliable information regarding the energy sector for free.



## **PYC Data Center**

PYC understands the importance of a reliable data in the energy sector. Through PYC Data Center, it facilitates energy stakeholders to access data for free.

Website: <https://datacenter-pyc.org/>



## **Indonesian Journal of Energy**

Indonesian Journal of Energy (IJE) is a peer-reviewed journal published twice a year by PYC. The journal is a multi-disciplinary journal in energy research that aims to be an accurate source of information for analysis, reviews and evaluations related to energy. The journal covers extensive research with a strong focus on energy economics, modeling, integrated systems, while also covers energy planning, law and policy. Up to date, PYC has published eight journals since 2017.

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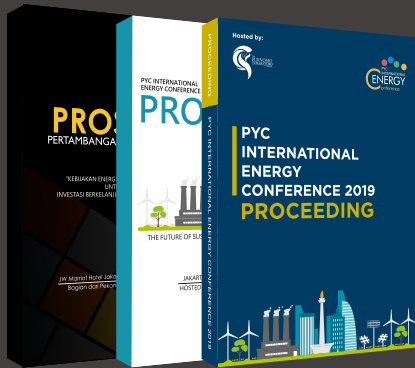
**ENERGY DRINK**

*Your Favorite Energy Podcast*

## **Energy Drink by PYC**

Energy drink is a podcast by PYC aiming to provide casual discussions on the hottest topic of the energy sector. We also provide Energy 24/7 as a weekly update of Indonesia's energy sector every Saturday. It is available on Youtube, Spotify and Apple Music.

Check our  
publication here



### Proceedings

The proceeding contains selected papers and/or materials presented during the International or National Energy Conference that was hosted by PYC. The materials include photos, infographics and essays from the conference. The list of our proceedings are:

- International Energy Conference (IEC) 2017 Proceeding
- International Energy Conference (IEC) 2019 Proceeding
- Indominergy Proceeding



### Books

Purnomo Yusgiantoro Center (PYC) has also launched several books. The discussions in the books involved topics such as renewable energy data in Indonesia and the theory and application of energy economics. Prof. Purnomo Yusgiantoro also published a book depicting his experiences as the Minister of Energy and Mineral Resources in 2000-2009. The list of our books are:

- Ekonomi Energi: Teori & Aplikasi
- Indonesia Renewable Energy Booklet 2019
- PYC Indonesia Energy Kaleidoscope 2020
- PYC Indonesia Energy Kaleidoscope 2021
- Rekam Jejak Dua Periode ESDM: Mengukir Dan Mengenang Masa Transisi 2000-2009

# EVENTS, FORUMS & DISCUSSIONS

PYC believes that conversation and information exchange would help people to understand the complexity of energy issues. By means of that, PYC held various international events, forums and discussions regularly. This is to facilitate knowledge sharing among stakeholders, involving government, private sectors, academics and researchers.

- PYC International Energy Conference in 2017, 2019 and 2021
- Women in Energy 2017
- Renewable Energy Innovation Forum 2018
- PYC Millennial Talk: Energy Security 101 2019
- Energy Condition in Indonesia: An Energy Economics Perspective 2019
- Alternative Energy Policy for Manufacturing Industry 2019
- Energy Efficiency towards SNI ISO 50001 2019
- PYC 4th Anniversary Webinar Series: Geopolitik Energi di Laut Cina Selatan: Kekuatan Diplomasi 2020
- The Enight - New (Energy) Normal: How Pandemic Reshapes Indonesia's Energy Sector 2020
- The Enight - Rethinking Energy-Climate Relations in Indonesia 2020
- The Enight - Sovereign Wealth Fund 2021
- The Enight - Ketahanan Energi Nasional 2021





# OPINION ARTICLES



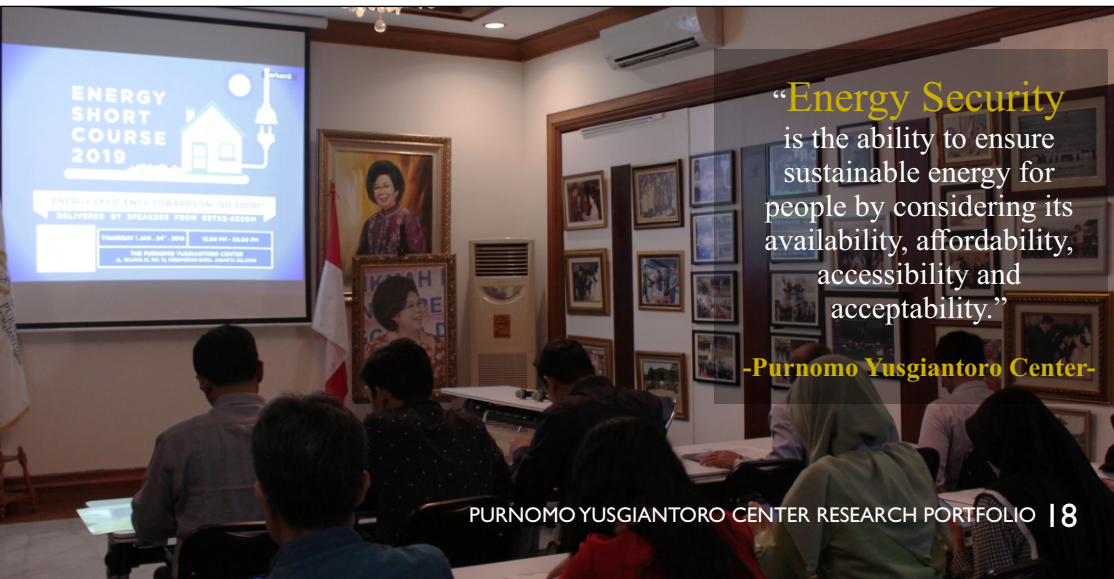
The following list is an opinion written by PYC Researchers.

For the full article, please scan the QR Code or visit:

<https://www.purnomoyusgiantorocenter.org/category/the-opinion/>

- Securities Crowdfunding for Community Energy
- Does Nuclear Power Have a Chance in Indonesia?
- Why Indonesia and Japan Must Collaborate on Hydrogen
- The Importance of The South China Sea: Energy Perspective
- Indonesia's Transition to Clean Energy Will Be Slow but Rewarding
- Coal Diversification to Secure Indonesia's Progressive Energy Demand
- Corporate Green Bond for Financing Green Energy Projects in Indonesia
- Indonesia's Political Will Is the Key to A Successful Carbon Tax Implementation
- How Crowdfunding Can Accelerate Indonesia's Renewable Energy Development
- Indonesia's Energy Transition: Electric Vehicles Opportunity for The Transportation Sector
- Indonesia's Car Sales Tax Cut May Harm the Environment, Requiring Another Policy to Reduce Emissions
- Enhancing Indonesia's Energy Security Through the Establishment of Geothermal Holding Company
- etc.

If you have opinions to share through our website and social media, please read our requirements at [bit.ly/PYC-OPINION](https://bit.ly/PYC-OPINION) For submission.



**“Energy Security** is the ability to ensure sustainable energy for people by considering its availability, affordability, accessibility and acceptability.”

**-Purnomo Yusgiantoro Center-**

# PARTNERSHIPS

PYC opens for new collaboration with institutions that have the same mission to develop Indonesia's energy and natural resources sector. The Center has already collaborated with international and national institutions, mostly on conducting joint-research activities. Along with what we have achieved, we continue to look for more future collaborations and partnerships.

For more information, please contact us through [research@pycenter.org](mailto:research@pycenter.org).

## Our Partners:



Ministry of Energy and  
Mineral Resource  
of Indonesia



Embassy of  
The Republic of Indonesia  
in Sofia, Bulgaria



Institut Teknologi  
Bandung



Ikatan Alumni Teknik Kimia  
Institut Teknologi Bandung



Indonesia  
Defense University



Universitas  
Gadjah Mada



International Power Supply  
Bulgaria



Economic  
Research Institute  
for ASEAN and East Asia



Heriot Watt  
University



Indonesia Green



Universitas  
Pertamina  
Universitas Pertamina



Yayasan Indonesia CERAH





## RESEARCH/PROJECT COLLABORATION OPPORTUNITIES

The Center welcomes any opportunities to explore the possibilities to work with other parties because the best value will be achieved by working together.

### **What can be proposed for collaboration?**

#### **1. Outreach programs**

i.e. seminar, workshop and conference

#### **2. Capacity building programs**

i.e. short courses, workshops, and/or dialogues with government officials, industry players, and/or academics.

#### **3. Collaborative research and project**

i.e. research fellowships, joint publications and internships.

### **Why collaborate with us?**

As a non-profit organization, PYC focuses on the quality of the program in a professional capacity. The Center opens to new ideas, allows for great flexibility and creativity in crafting collaborations that suit the needs. The team is structured to prioritize a strong and long relationship with our partners and collaborators.

By collaborating with PYC, partners and collaborators will gain access to Indonesia's energy stakeholders, receive the most updated energy sector issues and a comprehensive review from the PYC research team.



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